ADDITIONAL CONTENT—
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- Adverse Childhood Experiences, Other Psychosocial Sources of Adversity, and Quality of Life in Vulnerable Primary Care Patients
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- A Tale of Two Immunodeficiencies: A Case of Multiple Myeloma Associated with Profound Immune Defect Mimicking Common Variable Immunodeficiency Syndrome
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- Refining the Definition of Polypharmacy and Its Link to Disability in Older Adults: Conceptualizing Necessary Polypharmacy, Unnecessary Polypharmacy, and Polypharmacy of Unclear Benefit

COMMENTARY
- Learning in Humans versus Hierarchies

NARRATIVE MEDICINE
- Patient’s View of the Challenges and Blessings of Her Dissociative Disorder

GRAPHIC MEDICINE
- Comics as Reflection: In Opposition to Formalistic Recipes for Reflective Processes

See back cover for additional content including articles found only online at www.thepermanentejournal.org
3.2 Threats to the essential practice area of Preventing Inappropriate pharmaceutical Orders in Older Adults in the Ambulatory Setting

Methodology

Participants/Setting

A retrospective cohort study was conducted at an integrated delivery system with a clinical provider order entry system. A total of 2,754 inpatient hospital admissions for patients aged 65 and older were included. The study period was from 2017 to 2019. The electronic medical record system includes a comprehensive medication history, drug allergy screening, and clinical decision-making support tools.

Data Analysis

The study utilized statistical analysis software (SAS Institute, Cary, NC) to compare baseline characteristics and outcomes between the two groups. A chi-square test was used to compare categorical variables, and a t-test was used to compare continuous variables. A p-value of <0.05 was considered statistically significant.

Results

The study found that patients with a drug allergy history were less likely to receive inappropriate medications (10.2% vs. 15.2%, p<0.01). Additionally, patients who received drug allergy testing were more likely to receive appropriate medications (14.1% vs. 10.2%, p<0.05).

Conclusion

The study suggests that drug allergy history and testing are associated with reduced inappropriate medication orders in older adults. Further research is needed to determine the impact of these interventions on patient outcomes.

12.2 CME EVALUATION FORM

Visit www.cpmed.org for information and/or rates for placing an announcement here, please contact angela@b2group.com.
After reading a book-length, graphic memoir (an illness story in comic form), a form which engages clinicians in ways different from other mediums, clinicians who read My Degeneration gained insight into the psychosocial effects of Parkinson disease on patients and their loved ones. The book helped facilitate deeper understanding of patients’ experiences living with Parkinson disease and fostered greater empathy and self-reflection.

Narrative Medicine
47 Health Care Practitioners and Families Writing Together: The Three-Minute Mental Makeover.

David G Thoele, MD; Cemile Gunalp; Danielle Baran, PhD; Jamie Hamis, MD; Douglas Moss; Ramona Donovan MS, RD, CCRC; Yi Li, MS; Marjorie A Getz, PhD

Eight practitioners led 96 patient/family members in Three-Minute Mental Makeover (3MMM) activities and study surveys. Patients/family members and practitioners reported reduced stress compared with baseline ($p < 0.001$). A significant improvement in communication was reported by practitioners. Of patients/families using expressive writing, 88% reported that the 3MMM activity was helpful, and reduced stress for practitioners, patients, and families.

Haloperidol and Prostate Cancer Prevention: More Epidemiologic Research Needed.

Halley M Oyer, PhD; Bruce Fireman, MA; Stephen K Van Den Eeden, PhD; Gary D Friedman, MD, MS; Laurel A Habel, PhD; Ninah Achacoso, MS; Christina M Sanders, PhD; Steven Ko, MD; Vicki Y Chiu, MS; Jana Dicker, MD; Davida Becker, PhD, MS; Philomena Cho, MD

Primary care practitioners at 3 medical offices participated: 51 in the control group, 65 in the intervention group (educational lecture, emailed antimicrobial guidelines, prescriptions audited with feedback). Intervention group participants (65) had 5262 eligible acute uncomplicated cystitis (AUC) encounters, and control group participants (51) had 5473. At baseline, ciprofloxacin was prescribed at 29.7% (intervention) and 33.7% (control). After intervention, ciprofloxacin was prescribed at 10.8% in the intervention group and 34.3% in the control group. This led to a reduction in the use of Ciprofloxacin in the intervention group.

CME credits are available online at www.tpcme.org. The mail-in CME form can be found on page 112.
CASE REPORTS

80 Postvasectomy Scrotal Pain and Hematospermia, a Possible Harbinger for Vasectomy Failure and Recanalization: A Case Report. Tyler Kem, MD; Daniel Artenstein, MD; Charles Shapiro, MD

To our knowledge, there is no symptom complex that has been identified and described that is predictive of early recanalization and vasectomy failure. Delayed postvasectomy scrotal pain associated with hematospermia may be a sign of vasal recanalization. We propose that this symptom complex should prompt an investigation for vasal recanalization, during which the patient should be instructed to refrain from intercourse without the use of an additional method of contraception.

83 Confusion vs Broca Aphasia: A Case Report. Regina Wang, MD, MPH; Christi Wiley, MD

Broca aphasia presents with impaired expression of spoken and/or written language and is often caused by infarction in the Broca area in the frontal lobe. A 76-year-old woman was brought to the Emergency Department with confusion and slurred speech that began in the morning. Magnetic resonance imaging confirmed recent infarct involving left frontal and occipital lobes, coinciding with the Broca area. The patient was able to communicate via writing and eventually made an uneventful recovery of speech.

86 Health and Wellness Coaching and Psychiatric Care Collaboration in a Multimodal Intervention for Attention-Deficit/Hyperactivity Disorder: A Case Report. Elizabeth Ahmann, ScD, RN, PCC, NBC-HWC; Katherine Smith, MPH, ACC, NBC-HWC; Laurie Ellington, MA, LPC, RCC, PCC, HMCT; Rebecca O’Pile, PhD, MS, CHWC, CWP

Using the CARE guidelines designed to improve transparency and accuracy in health research reporting, this case report was based on a systematic review of data collected from the point of care, during an 8-week collaboration between a psychiatrist and a health and wellness coach. This is the first case report that illustrates beneficial outcomes and the promising role of health and wellness coaching in assisting individuals with attention-deficit hyperactivity disorder in achieving successful behavior change.

COMMENTARY

94 Learning in Humans versus Hierarchies. Mihal Emberton, MD, MPH, MS

We first need to connect the patterns of how humans learn and solve problems and the patterns of leadership in hierarchies to find the pathways that drive organizational learning vs conformity. With this operationalized framework, we can now teach supervisors how to recognize the clues and evidence that result from our belief-behavior systems to sub-sequently convert conformity processes into learning processes, generating organizational innovation and growth as well as employee engagement, loyalty, and trust.

NARRATIVE MEDICINE

99 A Patient’s View of the Challenges and Blessings of Her Dissociative Disorder. Bonnie Armstrong, MA, ACC

People who live with dissociative disorders and a history of childhood trauma are less rare than commonly thought and can be challenging for unfamiliar medical practitioners. On the basis of my own experiences, I offer in this article some instructive anecdotes and tips for health care practitioners on how to work with patients with a trauma-related diagnosis such as a dissociative disorder.

GRAPHIC MEDICINE

108 Comics as Reflection: In Opposition to Formulaic Recipes for Reflective Processes. Jack Whiting, MSc

The importance of reflection in the continued learning and professional development of health care professionals is imparted to medical students soon after they begin their training. However, in both undergraduate and postgraduate medical training, reflection is most commonly “assessed” in extended pieces of formal writing—something that can inhibit natural approaches to reflective practice. In opposition to formal, standardized approaches to reflection, it is argued that comics can mesh congruously with multiple approaches to reflection and, as such, can promote legitimate natural reflective processes, which may appeal to health care professionals.

Stories and poems with illustrations from the upcoming book 100 Little Stories of Big Moments published by The Permanente Press. Most of the stories and poems were written by clinicians in 15 minutes in writing workshops about meaningful moments in their work and life of practicing medicine. To better communicate health care experiences, our intention is to use graphic images with simple clinician or patient stories. Professional artists were asked to create a visual representation of the story.

106 Wilderness Meeting. Christine Walden, MD
OUTLINE

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MATERIALS AND METHODS

RESULTS

DISCUSSION

CONCLUSION

AUTHOR AFFILIATIONS

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An ORGANIZATION OF ANATOMICAL DIFFERENCES IN THE HUMAN COLON

ORIGINAL RESEARCH & CONTRIBUTIONS

Outcomes of Robotic Hysterectomy for Treatment of Benign Conditions: Influence of Patient Complexity

Lisa J Herrinton, PhD; Tina Raine-Bennett, MD, MPH; Liyan Liu, MS; Stacey E Alexeeff, PhD; Wilfredo Ramos, MD; Betty Suh-Burgmann, MD

ABSTRACT

INTRODUCTION

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RESULTS

CONCLUSION

INTRODUCTION

In the US, laparoscopic hysterectomies now comprise most hysterectomies.1-4 In the past decade, uptake of the robotic platform has been rapid. Although robotic hysterectomy offers ergonomic advantages over conventional laparoscopy, the differences in clinical outcomes appear to be marginal with substantially higher cost.1,5-8 However, the robot may offer advantages for complex patients.9 Studies comparing outcomes of robotic and conventional laparoscopic hysterectomy for benign conditions have been limited. Past studies have not fully adjusted for surgeon factors, were limited by small numbers of surgeons,10-12 focused on low-volume surgeons,13-16 and did not assess complex patients.17,18 We conducted a retrospective, longitudinal, cohort study in a community-based setting to compare outcomes after robotic vs conventional laparoscopic hysterectomy. The analysis stratified complex and noncomplex patients and accounted for surgeon factors.

METHODS

Setting

Kaiser Permanente Northern California (KPNC) is an integrated health care system that provides capitated services and uses an Epic-based electronic medical record (Epic Systems, Verona, WI). Hysterectomies are performed at 23 hospitals, and more than 90% of these surgical procedures are minimally invasive. Four hospitals have a robotic platform. An e-consult system implemented in 2013 enables referral of patients with benign gynecologic disease for robotic hysterectomy when the surgery is expected to take longer than 180 minutes, or for patients defined as complex, that is, with a high body mass index (particularly ≥45 kg/m²), suspected moderate to severe endometriosis or pelvic adhesions, large uterus (≥700 g), wide width of lower uterine segment, or large posterior myoma.

Study Population

The retrospective cohort study included women aged 20 to 69 years at hysterectomy performed from January 1, 2011, to September 30, 2015, who had 1 year or more enrollment in KPNC before surgery. We excluded women undergoing hysterectomy with concomitant procedures for treatment of incontinence or uterine prolapse; women with a discharge diagnosis of cancer within 30 days before hysterectomy; and women who underwent an unplanned laparoscopic procedure on the uterus, a radical hysterectomy, or a hysterectomy because of malignancy (see Supplemental Table 1). We also excluded women who were pregnant 30 days or less before hysterectomy or had concurrent procedures for maternity care and delivery.

Consistent with the e-consult system implemented in 2013, we defined complex patients as having a body mass index of 45 kg/m² or greater, uterine weight of 700 g or more, or past diagnosis of adhesions. We did not have information on the severity of endometriosis, the width of the lower uterine segment, or the location of the myoma.

Intervention and Measures

Conventional laparoscopic hysterectomy and robotic hysterectomy were identified as specified in Supplemental Table 1.

Keywords: blood loss, complex patients, minimally invasive hysterectomy, robotic hysterectomy, robotic vs conventional laparoscopic hysterectomy, surgical complications in hysterectomies
Study outcomes were obtained from the electronic medical record and operative report and included blood loss; length of stay; 90-day readmission, reoperation, and operative complications, including gastrointestinal tract, urinary tract, vascular, renal-electrolyte, and nonoperative site infections; and other surgical and medical complications. Operational definitions are provided in Supplemental Table 1. We analyzed operative time (minutes from incision start to closure). For robotic hysterectomy, the operative time includes manipulator placement, docking, and the surgery itself, including morcellation.

Patient-level covariates included age, self-reported race/ethnicity, and body mass index, obtained from inpatient or outpatient encounters during the year before the hysterectomy. Uterine weight was ascertained using natural language processing of the pathology report. History of gynecologic diagnoses and procedures and the Charlson Comorbidity Index were obtained using diagnostic and procedure codes recorded during the year before hysterectomy (see Supplemental Table 1). The indication for hysterectomy was determined using inpatient diagnoses recorded on the day of hysterectomy (see Supplemental Table 1), using the following hierarchy: Leiomyoma first, followed by uterine bleeding, endometriosis, pelvic pain, hyperplasia, and finally, other.

Surgeon-level covariates included age, race, sex, year at start of practice with KPNC, number of years between the end of training and the start of practice, and past hysterectomy volume (time-dependent variable). Surgeons who performed laparoscopic hysterectomies for cancer removal were included if they had performed at least 1 hysterectomy with an indication for benign disease. Surgeons who performed at least 1 robotic hysterectomy during the study period were classified as “robotic surgeons”; all other laparoscopic surgeons were classified as “conventional surgeons.”

Statistical Analysis
We compared robotic and conventional hysterectomy separately for complex and noncomplex patients. For the analysis of blood loss, we fit mixed-effects regression models (multilevel models) with adjustment for patient and surgeon characteristics. Patient characteristics included year of surgery; age; race/ethnicity; body mass index; uterine weight; past diagnosis of endometriosis, adhesions, or uterine bleeding; and past genitourinary or abdominal surgery or cesarean delivery. As described in the following paragraph, for patients undergoing conventional surgery, we accounted for the surgeon’s past volume of conventional hysterectomies, and for patients undergoing robotic surgery, we accounted for the surgeon’s past volume of robotic hysterectomies. In addition, we adjusted for the surgeon and the hospital using random covariates. The random covariate for surgeon allowed each surgeon to have his/her own mean blood loss, separate from his/her past surgical volume.

The surgeon’s past volumes for conventional and robotic surgery were computed as time-varying covariates that were updated with each new patient. For example, a robotic surgeon’s volume after his/her first robotic hysterectomy at KPNC was counted as 1, whereas his/her volume after the 75th robotic hysterectomy was counted as 75. We began these counts on the later of either 2005, when the electronic medical record was implemented, or the day the surgeon joined the Health Plan. The calculation of route-specific volume included cancer cases, even though cancer cases were excluded from the study population. Cut points to define volume as low, medium, or high were determined by analyzing the association of surgical volume with operative time, a measure of surgeon learning. These analyses, performed separately for conventional and robotic cases, used generalized additive mixed models to account for clustering of patients within surgeons and clustering of surgeons within hospitals, spline-smoothing random effects, and patient-level factors. We defined cut points for low, medium, and high volume on the basis of the shape of the splines separately for conventional and robotic surgeons.

Length of stay longer than 2 days, and readmission, reoperation, and complications through 90 days were analyzed as dichotomous outcomes. We used the Kaplan-Meier method to compute incidence. Follow-up started on the date of surgery and ended on the date of outcome, death, disenrollment from the Health Plan, the 90th day after the surgery, or the end of the study on September 30, 2015. Because these outcomes are relatively rare

![Figure 1. Inclusion of study population.](https://example.com/image.png)
and sample size was limited, these analyses did not account for surgeon factors or hospital.

All analyses were performed using statistical software (SAS 9.3, SAS Institute Inc, Cary, NC; and R 3.2.2, The R Foundation). The Kaiser Permanente institutional review board approved this project (CN—14-1832-H) on April 15, 2014.

RESULTS

The study included 7345 patients who met inclusion criteria, of which 6785 (92%) underwent conventional laparoscopic and 560 (8%) underwent robotic hysterectomies (Figure 1). Overall, 1836 patients (25%) met the criteria for being a complex patient, including 236 (42% of 560) undergoing robotic

Table 1. Characteristics of 560 robotic and 6785 conventional laparoscopic hysterectomy cases, Kaiser Permanente, 2011 to September 30, 2015, percentage

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Complex</th>
<th>Noncomplex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>Conventional (n = 1600)</td>
<td>Robotic (n = 236)</td>
</tr>
<tr>
<td>Indication</td>
<td>Conventional (n = 1600)</td>
<td>Robotic (n = 236)</td>
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<tr>
<td>Leioyoma</td>
<td>58</td>
<td>54</td>
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<tr>
<td>Uterine bleeding</td>
<td>20</td>
<td>27</td>
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<tr>
<td>Endometriosis</td>
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<td>5</td>
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<tr>
<td>Pelvic pain</td>
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<td>3</td>
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<td>Hyperplasia</td>
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<td>9</td>
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<tr>
<td>Other indication</td>
<td>8</td>
<td>3</td>
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<tr>
<td>Past diagnosis</td>
<td>Adhesion</td>
<td>64</td>
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<tr>
<td>Cervical</td>
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<tr>
<td>Dyspareunia</td>
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<tr>
<td>Endometriosis</td>
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<td>44</td>
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<td>Genitourinary</td>
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<td>20</td>
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<tr>
<td>Hyperplasia</td>
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<td>14</td>
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<tr>
<td>Hypertrophy</td>
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<td>22</td>
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<tr>
<td>Leioyoma</td>
<td>81</td>
<td>78</td>
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<tr>
<td>Ovarian disease</td>
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<td>35</td>
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<td>Pelvic NOS</td>
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<td>Ovarian</td>
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<td>Past procedure</td>
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<td>Cesarean delivery</td>
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<td>0.8</td>
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<tr>
<td>Genitourinary</td>
<td>7</td>
<td>8</td>
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</table>

+ Complex was defined as any patient with at least 1 of the following conditions within 1 year before surgery: Body mass index ≥ 45 kg/m², uterine weight ≥ 700 g, or past diagnosis of adhesions.
+ p < 0.0001.
+ p < 0.01.
+ p < 0.05.
+ Information on uterine weight was missing for 16 patients who underwent robotic hysterectomy and 353 patients who underwent conventional laparoscopic hysterectomy.
+ For those with multiple indications, we assigned a single indication using the following hierarchy: Leiomyoma first, followed by uterine bleeding, endometriosis, pelvic pain, hyperplasia, and finally, other.
+ Other indication includes noninflammatory disease, pelvic inflammatory disease, uterine disorder NOS, other disorders of the female genital tract, prophylactic ovary/gland removal, and genetic susceptibility to malignant tumor. Other past diagnoses include uterine NOS, fistula, hematometra, synchie, and malposition.
+ NOS = not otherwise specified; PID = pelvic inflammatory disease.
procedures and 1600 (24% of 6785) undergoing conventional laparoscopy (Table 1). Robotic hysterectomies were performed more commonly in more recent years (p < 0.0001) and among women with complex disease (p < 0.0001; Table 1). Among complex patients, conventional and robotic cases were similar in frequency with respect to age and race/ethnicity. Robotic surgery patients were more likely to have 2 or more Charlson comorbidities (p < 0.0001) and body mass index greater than or equal to 45 kg/m² (p < 0.0001). More robotic cases involved a history of endometriosis (p < 0.01), pelvic inflammatory disease (p < 0.05), pelvic disease not further specified (p < 0.05), hyperplasia (p < 0.0001), and genitourinary disease (p < 0.05). Conventional cases were more likely to have a past abdominal procedure (p < 0.0001). Among noncomplex patients, those undergoing robotic surgery were older (p < 0.0001), were disproportionately nonwhite (p < 0.01), had greater body mass index (p < 0.05), were more likely to have an indication of hyperplasia (p < 0.0001), and had more complicated histories with respect to past diagnoses.

The study included 376 surgeons, of which 31 had performed at least 1 robotic hysterectomy during the study period ("robotic surgeons") and 345 had performed only conventional laparoscopic hysterectomies ("conventional surgeons"); Table 2). Robotic and conventional surgeons were similar in age, sex, race/ethnicity, year at start of practice with KPNC, and number of years between the end of training and start of practice with KPNC. By the end of the study period, the conventional surgeons performed an average total of 52 hysterectomy cases (range = 1–530 cases).

In contrast, the robotic surgeons performed an average total of 94 robotic cases (range = 1–373 cases) and an average of 251 conventional cases (range = 1–701 cases). Eleven of the robotic surgeons (35%) and 2 of the conventional surgeons (1%) were gynecologic oncologists, and we therefore performed sensitivity analyses excluding the gynecologic oncologists.

Operative time was used as an outcome in an analysis that used splines to define cut points for the surgeon’s time-varying volume (low, medium, high). These results are shown in Figure 2.
for conventional and robotic hysterectomy, after adjustment for patient characteristics, surgeon, and hospital random effects. For the operative time of conventional surgery, the slope reflects the average performance of 345 individual surgeons across 6432 conventional surgeries (after excluding 353 patient records with missing uterine weight), and the intercept reflects their first conventional surgery. For the operative time of robotic surgery, the slope reflects the average performance of 31 individual surgeons across 544 robotic surgeries (after excluding 16 records with missing uterine weight), and the intercept reflects

### Table 3. Change in mean operative time (minutes), by patient characteristics, after adjustment for patient characteristics and surgeon volume, Kaiser Permanente, 2011-2015

<table>
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<th>Characteristic</th>
<th>Complex patients (n = 1770)</th>
<th>Noncomplex patients (n = 5206)</th>
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<td>&gt;2</td>
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* Positive numbers indicate increase in operative time; negative numbers, decrease in operative time. Adjustment was performed using mixed-effects regression modeling. The multilevel regression model was adjusted for surgeon and hospital identifiers using random covariates. The model was also adjusted for the surgeon’s volume separately for robotic and conventional hysterectomy using information from 2005 or the surgeon’s date of joining Kaiser Permanente (whichever was later) to each patient’s index date (time-varying covariate). For robotic surgeons, low volume was defined as ≤ 24 cases, medium (proficient) as 25-74, and high volume as ≥ 75 cases before the current patient. For conventional surgeons, low-volume was defined as ≤ 49 cases, medium volume as 50-199, and high-volume as ≥ 200 cases before the current patient.

* Complex was defined as body mass index ≥ 45 kg/m², uterine weight ≥ 700 g, or past diagnosis of adhesions.

* p < 0.0001.

* p < 0.05.

* p < 0.01.

* The analysis excluded 369 patients with missing information on uterine weight. The average unadjusted operative times were 152 min (95% CI = 146-157 min) for 544 robotic cases and 157 min (CI = 155-158 min) for 6432 conventional cases.

* Other indication includes noninflammatory disease, pelvic inflammatory disease, uterine disorder NOS, other disorders of the female genital tract, prophylactic ovary/gland removal, and genetic susceptibility to malignant tumor.

* Other past diagnoses include uterine NOS, fistula, hematometra, synchiea, and malposition.

CI = confidence interval; NOS = not otherwise specified; PID = pelvic inflammatory disease.
their first robotic surgery, with the average number of conventional procedures before the first robotic surgery being 232. The 2 intercepts are similar, suggesting that a surgeon performing his/her first robotic case had about the same operative time as a surgeon performing his/her first conventional case. Operative time decreased as volume increased for both groups, but the rate of decrease was greater for robotic surgeons, indicating a more rapid learning curve together with a lower floor, and this difference was statistically significant (p = 0.01). For the robotic surgeons, we observed a modest rise and fall of operative time between 100 and 300 surgeries; this curve was based on relatively small numbers, and the wide confidence band around the curve shows that the true trend may be anywhere in that band, and may actually be flat between 100 and 300 surgeries. On the basis of these splines, we defined low volume as less than or equal to 49, medium as 50 to 199, and high as 200 or more cases for conventional surgeons. For the robotic surgeons, we defined low volume as 24 or fewer cases, medium as 25 to 74, and high as 75 cases or more.

The average operative time was 152 minutes (95% confidence interval [CI] = 146-157 minutes) for robotic hysterectomy and 157 minutes (CI = 155-158 minutes) for conventional laparoscopic hysterectomy, a significant difference (p < 0.0001). In operative time, complex patients averaged 190 minutes (CI = 187-194 minutes) and noncomplex cases averaged 144 minutes (CI = 141-147 minutes, p < 0.0001). The adjusted association of mean operative time with patient characteristics is shown in Table 3, where –7 minutes, for example, indicates that robotic hysterectomy was faster by 7 minutes. Patient factors that contributed to longer operative times included body mass, uterine weight, past diagnosis of adhesions, and history of a past genitourinary procedure (all p < 0.0001). A later year of surgery was associated with shorter operative time.

Differences in operative times in relation to surgical approach, patient complexity, and surgeon volume are shown in Table 4. For both robotic and conventional surgeons, average operative times decreased with increasing level of volume. For complex patients, high-volume conventional surgeons were 28 minutes faster (CI = 15-42 minutes) than low-volume conventional surgeons, and high-volume robotic surgeons were 52 minutes faster (CI = 31-75 minutes) than low-volume robotic surgeons. After controlling for the surgeon’s volume, patient characteristics, and hospital, high-volume surgeons treating complex patients with robotic hysterectomy were 21 minutes (CI = 0-43 minutes, p < 0.05) faster than surgeons using conventional hysterectomy. For noncomplex patients, high-volume conventional surgeons were 18 minutes faster (CI = 11-25 minutes) than low-volume conventional surgeons, and high-volume robotic surgeons were 25 minutes faster (CI = 11-39 minutes) than low-volume robotic surgeons, and high-volume robotic surgeons were 8 minutes faster (CI = 3 minutes slower to 19 minutes faster) than high-volume conventional surgeons.

Unadjusted blood loss averaged 100 mL for complex patients and 90 mL for noncomplex patients (Figure 3). In complex patients who underwent conventional surgery, the odds of blood loss of 51 mL or greater was not related to the surgeon’s volume (Table 5). In contrast, in complex patients who underwent robotic surgery and in noncomplex patients who received conventional or robotic surgery, the odds ratio for blood loss of 51 mL or greater declined sharply with increasing volume. Overall, robotic surgery was associated with lower blood loss for both complex patient (adjusted odds ratio = 0.20; CI = 0.08-0.53) and noncomplex patients (adjusted odds ratio 0.12; CI = 0.06-0.27).

For both complex and noncomplex patients, robotic cases and conventional cases were similar in average length of stay and risks of readmission by 90 days, reoperation, and most complications (Supplemental Table 2). Among noncomplex cases, robotic surgery was associated with complications of the urinary tract (5.2% vs 3.2%, p = 0.04). The analysis assessed injury to pelvic organs (n = 24, 9% of urinary complications), peritonitis (n = 0, 0%), stricture or kinking of the ureter (n = 2, 0.8%), urinary tract infection (n = 204, 77%), and urinary complications not otherwise specified (n = 35, 13%). The frequency of urinary complications,

![Figure 3. Distribution of blood loss (mL) in relation to robotic (RLAH) and conventional total laparoscopic abdominal hysterectomy (TLAH).](image-url)
Outcomes of Robotic Hysterectomy for Treatment of Benign Conditions: Influence of Patient Complexity

DISCUSSION

In a longitudinal study of robotic and conventional laparoscopy, we observed an association for complex patients of faster operative time for high-volume robotic surgeons. We also observed an association of lower risk of blood loss with robotic surgery for complex and noncomplex patients, and an association of robotic surgery with the risk of a urinary tract complication in noncomplex patients. For both complex and noncomplex patients, the longest operative times were associated with low-volume surgeons.

<table>
<thead>
<tr>
<th>Table 5. Adjusted odds ratio and 95% confidence interval (CI) for the relationship of surgical approach and patient characteristics with blood loss of ≥ 51 mL, logistic regression analysis, Kaiser Permanente, 2011-2015</th>
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</thead>
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<tr>
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* Complex defined as body mass index ≥ 45, uterine weight ≥ 700 g, or past diagnosis or adhesions.

+ Per year is the change in odds for each year, ie, a decrease in the odds by 0.92 for surgery year and an increase in odds by 1.02 for age. Thus, the OR for a 5-year change in age is 0.92^5 = 0.51.

+ The analysis excluded 389 patients with missing information on uterine weight and 46 patients with missing information on blood loss and included 536 robotic cases and 6594 conventional cases. Each of the 2 multilevel models (complex, noncomplex) was adjusted for key patient characteristics including year of surgery; age; race/ethnicity; body mass index; uterine weight; past diagnosis of endometriosis, adhesions, or uterine bleeding; and past genitourinary or abdominal surgery, cesarean delivery. In addition, we adjusted for surgeon and hospital by using random covariates. The random covariates account for the natural ability of the surgeon, separate from their volume, and for differences across hospitals.

+ We coded each surgeon’s volume separately for robotic and conventional hysterectomy using information from 2005 or the surgeon’s date of joining Kaiser Permanente (whichever was later) to each patient’s index date. Thus, it was a time-varying covariate. For robotic surgeons, low was defined as ≤ 24, medium-volume as 25-74, and high-volume as > 75 cases before the current patient. For conventional surgeons, low was defined as ≤ 49, medium-volume as 50-199, and high-volume as ≥ 200 cases before the current patient. NOS = not otherwise specified; OR = odds ratio; PID = pelvic inflammatory disease.
Notwithstanding our finding for urinary tract complication, our results for complications are broadly consistent with a Cochrane review that found little difference between surgical approaches (relative risk = 1.23, 95% CI = 0.44 to 3.46). Only 1 past report of New York discharges clearly documented how International Classification of Diseases, Ninth Revision, codes were used to define outcomes, and we aligned our definitions with that approach. Our outcome definitions were also consistent with past studies of complications after conventional and vaginal laparoscopic hysterectomy. Our study differs from past observational studies in that we ascertained the patient’s complexity using clinical information. Other large observational studies used claims captured in the National Inpatient Sample, statewide databases, and large insurance databases. These studies did not have information on the patient’s complexity and did not detail their definitions, making comparisons difficult. Several smaller studies set in 1 or 2 institutions used chart reviews to assess complications. The large number of patients and transparent definitions we used for complications are strengths of the present study.

Our results for the robotic approach are consistent with those of a Dutch study that found robotic surgery was 18 minutes faster than conventional surgery after adjusting for the patient’s body mass index (2 min/unit > 20 kg/m², p < 0.001), uterine weight (0.2 min/g > 80 g, p < 0.001), and history of abdominal surgery (history vs no history, 12 minutes, p = 0.02). The study included 171 robotic hysterectomies performed during 2002 to 2014 for benign (42%) and malignant (58%) indications and differed from ours in including oncology cases and in not considering surgeon factors. A second study used a statewide Michigan database to analyze 1338 robotic hysterectomies performed for benign indications. They were compared with conventional laparoscopic and vaginal hysterectomies after propensity score matching on 10 patient-level variables and 2 hospital-level variables. Surgical time was longer for robotic surgery (compared with nonrobotic: 2.3 vs 2.0 hours, p < 0.001). However, the study did not have information on patient complexity or the surgeon’s volume. A hospital-based study gave evidence that robotic surgery can be more rapid than conventional laparoscopic surgery once a surgeon has become proficient, after approximately 75 procedures. However, the interaction of robotic surgery with surgeon volume has not been assessed in other reports, to our knowledge. Future studies should consider this interaction when one is deciding how to analyze robotic and conventional surgeries.

The present study could not account for several important factors. First, robotic surgeons had performed an average of 232 conventional surgeries before performing their first robotic surgery. This represents intensive training that alone may have improved their operative time. Second, the study included only 31 robotic surgeons, and our experience may not generalize entirely to other settings, although many patients in our study were treated by low-volume surgeons. Third, although we carefully examined and adjusted for the patient’s clinical history using 8 indications, 16 past diagnoses, and 3 past procedures, it is possible that unobserved factors or residual confounding may account for some component of patient selection for robotic surgery. For example, we did not have information on the patient’s severity of endometriosis, and although we adjusted for history (yes/no), we could not control for severity. If robotic patients were more complex and we underestimated complexity, the study would have understated the association of the robotic approach with operative time. In contrast, if robotic patients were less complex, the study would have overstated the association.

A cost analysis was outside the study’s scope. Our health care system originally purchased the robotic surgical systems for treatment of prostate cancer and conditions other than benign uterine disease, so that the systems represented a sunk (nonrecoverable) cost. One recent analysis of costs using hysterectomy data from Brigham and Women’s Hospital during 2009 observed significantly different operating room costs, with vaginal hysterectomy at $26,690; abdominal, $31,084; laparoscopic, $33,879; and robotic $43,794. The mean total patient costs were $31,934 for vaginal, $38,312 for laparoscopic, $43,622 for abdominal, and $49,526 for robotic hysterectomy.

In 2015, the American College of Obstetricians and Gynecologists together with the Society of Gynecologic Surgeons issued an opinion concerning the role of robotic surgery in gynecology. They identified the need for research to determine which patients are likely to benefit from robot-assisted surgery. Our study is helpful in identifying the level of benefit that can be provided to complex patients through use of a high-volume surgeon, the robotic approach, or both.

CONCLUSION

Results of this study suggest that for women with complex disease, the robotic approach to hysterectomy, when used by a higher-volume surgeon, may be associated with shorter operative time and slightly less blood loss, but is not associated with lower risk of complications.

Disclosure Statement

The author(s) have no conflicts of interest to disclose.

Acknowledgments

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How to Cite this Article


References

Removal of the Uterus

The operation of laparotomy was performed by Dr Burnham … This is the first operation for removal of the uterus by abdominal section that resulted in recovery. Though the operation was made on an erroneous diagnosis … the error, it seems to me, was an excusable one, when it is remembered that this happened twenty-five years ago, at a time when very little was known of the pathology of uterine tumors.

Chronic pancreatitis (CP) is a risk factor for pancreatic adenocarcinoma (PA). However, little is known about factors related to development of PA in CP. To evaluate factors associated with PA in CP.

Methods: A national insurance database of 120 million US patients was used. Adults with an International Classification of Diseases, Ninth Revision (ICD-9) code for CP (577.1) from January 1, 2009, to December 31, 2014, were identified. Patients’ age, sex, and ICD-9 codes for PA, bile duct obstruction, alcohol use, diabetes mellitus before and after diagnosis of CP, obesity, tobacco use, and type of insurance were obtained. Patients with CP without a unique identification number, missing dates for insurance coverage period, and with duration to end of follow-up or development of PA less than 2 years were excluded. The Cox proportional hazards regression model was used for analysis.

Results: The final analysis had 30,555 patients with CP including 219 patients (0.72%) with PA. The Cox proportional hazards regression model showed that in patients with CP age (hazard ratio [HR] = 1.07; 95% Confidence Interval [CI] = 1.03-1.1), male sex (HR = 2.1; 95% CI = 1.25-3.54), tobacco use (HR = 1.88; 95% CI = 1.1-3.23), and having commercial insurance (HR = 4.26; 95% CI = 1.63-11.11) were associated with a subsequent medical claim for PA. Duration of bile duct obstruction (HR = 0.999; 95% CI = 0.998-0.999) and presence of diabetes mellitus before CP (HR = 0.35; 95% CI = 0.19-0.63) were inversely related to subsequent diagnosis of PA. The database maintained by the University of Kentucky contained deidentified information regarding all health care-related claims made for 120 million patients based on International Classification of Diseases, Ninth Revision (ICD-9) billing and coding system from January 1, 2009, to December 31, 2014. The database also had information on start and end dates of insurance coverage and medication prescriptions for all these individuals during the same period. Each patient had a unique patient identification number that was not linked to any identifiable patient information, including medical record number, Social Security number, date of birth, or medical insurance. This database has been validated and used in previous publications.

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Keywords: chronic pancreatitis, epidemiology, pancreatic cancer
Inclusion Criteria and Data Extraction

All the patients with an ICD-9 code for CP (577.1) between January 1, 2009, and December 31, 2014, along with the date of initial claim were identified in the data set. Demographics (age at the time of CP diagnosis and sex), type of insurance (commercial vs Medicare), and ICD-9 codes for PA (157.0-157.3), if present, were obtained for each patient. ICD-9 codes for the presence of other risk factors of PA, including obesity (278.00), tobacco use (305.1), alcohol use (303.9, 305), and diabetes mellitus (DM; 250.00), were obtained for each patient. We previously reported an association between bile duct obstruction and PA (odds ratio [OR], 7.72) in patients with CP. Therefore, the ICD-9 code for bile duct obstruction (576.2), when present, was obtained to further examine this association. Statins have been reported to decrease the risk of PA in the general population. To explore the association between statin use and PA in patients with CP, details about statin use (start and end dates of any statin prescription) were also obtained for each patient. Lastly, we wanted to explore any association between liver cirrhosis and PA in patients with CP. Therefore, ICD-9 codes for hepatic cirrhosis (571.2, 571.5, 571.6) were obtained. The date of the first medical claim made for each diagnosis was also obtained for each patient.

Exclusion Criteria

Patients younger than age 18 years at the time of initial CP claim, patients with unknown sex, and patients with missing dates of initial claim for any of the diagnoses, or patients with missing dates for start or end of the insurance coverage were excluded. Patients with CP but without PA who had less than 730 days of follow-up after the initial diagnosis of CP was made were excluded, which ensured a minimum period of follow-up after the diagnosis of CP. Similarly, patients with CP and PA for whom the medical claim for CP was made less than 730 days before the medical claim for PA were excluded (Figure 1) to ensure that patients who may not actually have CP but have pancreatic parenchymal changes induced by PA that can mimic CP were excluded.

Data Processing

During the initial data screening, 65,571 duplicate entries were removed from the data set using the unique patient identification number. In patients with CP and PA, the presence of various exposures was adjusted on the basis of the timing of diagnosis of PA to reduce bias from overestimation. Therefore, bile duct obstruction, obesity, cirrhosis, and tobacco use in patients with PA were treated as not present if their initial medical claim was made after the medical claim for PA. Because CP itself can lead to DM, DM was categorized into DM diagnosis before CP, DM diagnosis after CP, and no DM. Statin use was treated as a binary variable as never use vs ever use. For patients with CP and PA, ever use of statin was considered as present if the statin prescription was given 90 days or more before the medical claim for PA. For patients with CP but without PA, ever use of statin was considered as present if the statin prescription was given 90 days or more after a medical claim for CP was made.

Statistical Analysis

Descriptive statistics were used to perform exploratory analyses. Categorical data were described as proportions and analyzed using the $\chi^2$ test. Continuous data were described as mean (standard deviation [SD]) or median (range) and analyzed using the $t$-test or Wilcoxon rank sum test, depending on the distribution of the variable. Time-to-event analysis was performed using the Cox proportional hazards regression model to analyze the effect of demographics and other variables in patients with CP on time
Factors Related to Development of Pancreatic Adenocarcinoma in Patients With Chronic Pancreatitis on Long-term Follow-up: A Database Study

RESULTS

A total of 111,169 (92.6 per 100,000; 95% CI = 92.1–93.1 per 100,000) adult patients had a medical claim of CP in the database. Of these patients, 80,614 were excluded because of missing unique identification number (n = 28), missing dates for insurance coverage period (n = 1879), CP duration less than 730 days in patients without PA (n = 79,378), and medical claim for CP made less than 730 days before the medical claim for PA (n = 5929). Some of the excluded patients had more than 1 criterion for exclusion (Figure 1). A total of 111,227 (92.7 per 100,000; 95% CI = 92.2–93.2 per 100,000) adult patients had medical claims for PA in the database during the study period.

The final analysis included 30,555 patients with CP, and 219 (720 per 100,000; 95% CI = 630–820 per 100,000) patients had PA at least 730 days after the diagnosis of CP. Median duration of follow-up for the entire cohort was 1225 days (range, 730–2256 days). Median duration between the medical claim for CP and the subsequent claim for PA was 1076 days (range, 733–2256 days). Incidence of PA in patients with PA was 2.016 per 1000 person-years (95% CI = 2.015–2.017 per 1000 person-years).

Patients with CP with and without a medical claim for PA were compared with each other for differences in demographics and other variables (Table 1). There was a statistically significant difference in the mean age between the 2 groups. Patients with CP and PA were older (mean [SD] age, 59.6 [13.38] years) than patients with CP without PA (mean [SD] age, 55.1 [15.11] years; p < .001) at the time of first medical claim made for CP. A higher proportion of men with CP had a medical claim for PA (59.82% vs 47.86%; p < .001). Similarly, a higher proportion of patients with CP with a medical claim for PA had medical claims for tobacco use (34.25% vs 26.09%; p < .006) and bile duct obstruction (30.59% vs 10.07%; p < .001) compared with patients with CP without PA. Obesity was present less commonly in patients with CP and PA (11.87% vs 22.32%; p < .001). Patients with CP and PA more commonly had Medicare insurance (36.07% vs 25.07%; p < .001) and less commonly had commercial insurance (63.93% vs 74.93%; p < .001) than patients with CP without PA. The median duration of bile duct obstruction was significantly shorter in patients with CP and PA (422 days; Q1 42 days, Q3 961 days) compared with patients with CP without PA (1116.5 days; Q1 730 days, Q3 1502.5 days; p < .001). No difference was found in the proportion of patients with medical claims for alcohol use (p = 0.17), DM before or after CP (p = 0.22) or cirrhosis (p = 0.11), or ever use of statin (p = 0.8) between the 2 groups.

The Cox proportional hazards regression model showed that increasing age (hazard ratio [HR] = 1.07; 95% CI = 1.03–1.11) was independently associated with diagnosis of PA in patients with CP. Similarly, male sex (HR = 2.1; 95% CI = 1.25–3.54), tobacco use (HR = 1.88; 95% CI = 1.1–3.23), and having commercial insurance (HR = 4.26; 95% CI = 1.63–11.11) were
Factors Related to Development of Pancreatic Adenocarcinoma in Patients With Chronic Pancreatitis on Long-term Follow-up: A Database Study

DISCUSSION

This is the first study to evaluate the incidence of PA in patients with CP in the US (720 per 100,000) on the basis of a national deidentified database of 120 million patients with commercial or Medicare insurance. Pancreatic cancer incidence in the general population of this data set during the same period was 92.7 per 100,000 indicating that incidence of PA in patients with CP was 7.8 times the PA incidence in the general population. This estimate is similar to previously reported literature. The data regarding incidence of PA in patients with CP are limited. A European observational study of 2015 patients with CP found that PA developed in 56 patients (2.8%) undergoing long-term follow-up. This estimate is slightly higher than in our study, which can be a result of the difference in demographics, risk factor profile of the study populations, and length of follow-up after diagnosis of CP. The present study has a large and diverse population; therefore, the results could be generalized to populations with commercial or Medicare insurance in the US.

This is also the first study to evaluate factors associated with the diagnosis of PA in patients with preexisting CP for 730 days or longer. Some of the risk factors for PA were found to be similar between the general population and patients with CP. The incidence of PA increases with increasing age in the general population. According to the Statistics, Epidemiology and End Results program, the incidence of pancreatic cancer increased exponentially for every 5-year increase in age after the age of 45 years. Increasing age was found to be associated with PA in patients with CP in this study, with each year increase in age after the diagnosis of CP increasing the chance of subsequent PA by 7% (Table 2). Tobacco use is also a proven risk factor for PA in the general population (OR = 1.2; 95% CI = 1.0-1.13). In our study, tobacco use increased the chance of subsequent diagnosis of PA by 88% (Table 2).

The present study found a difference in the risk factors for PA between the general population and patients with CP. No difference in risk of PA has been found between men and women in general population, when adjusted for other risk factors. The present study found that men with CP were 2 times more likely to have a subsequent diagnosis of PA even after adjusting for other risk factors for PA. DM has been reported to be associated with an increased risk of PA in the general population in a meta-analysis of 35 cohort studies (RR = 1.94; 95% CI = 1.66-2.27). In the present study, patients with CP and DM before CP had 65% less chance of having subsequent PA compared with patients with CP without DM. The precise reason for this observation is not clear. However, it could be hypothesized that patients with CP without preexisting DM may be more prone to developing malignant tumors at a cellular level because of differences in inflammatory and/or gene regulation-related factors. Increasing body mass index is an independent risk factor for PA in the general population (RR = 1.10; 95% CI = 1.07-1.14). However, obesity was not associated with PA in patients with CP in this study. Evidence regarding statins and risk for pancreatic cancer has been mixed. Some studies have found that statin use decreases the risk of PA in the general population (ORs = 0.33-0.66). However, in the present study, statin use was not found to reduce risk of PA. In the present study, smoking (OR = 3.5) and heavy alcohol use (> 22 drinks per week for > 20 years; ORs = 3.1-4.2) were associated with increased risk of PA. However, in other studies, alcohol use was not associated with increased risk of PA. In the present study, alcohol use was not associated with increased chance of PA diagnosis in patients with CP. To date, no data are available on insurance status and risk of PA. Our study found that patients with CP with commercial insurance had a 3.9-fold chance of having subsequent PA compared with patients with CP on Medicare. Although insurance status by itself is not a risk factor for PA, this finding highlights the inherent difference in US patient populations even after adjustment for other risk factors for PA. This difference in populations may be ascribed to factors that could not be controlled for in this study (e.g., race) or other unknown confounders. Further studies are needed to verify these findings and to evaluate the factors responsible for difference in PA risk in patients with CP with different insurances.

The present study found that increasing duration of bile duct obstruction (by a factor of square of square of log transformation of bile duct obstruction in days) in patients with CP is inversely related to a subsequent medical claim for PA (HR = 0.999). This association does not imply causality but rather the significance of carefully screening patients with CP with new-onset bile duct obstruction for PA. The results also imply that the longer patients with CP have bile duct obstruction, the less likely it is to be related to underlying PA.

The present study has several strengths. The patients with CP were selected from a very large patient sample (15 million), representing a diverse population in the US. The rate of development of PA in patients with CP is low, and a large sample size allowed this estimate to be reliable with a narrow CI (0.72%; 95% CI = 0.63%-0.82%). The study had robust exclusion criteria. Patients with missing data for any of the variables were excluded, and only patients with data available for all the variables were included in the study. Patients with CP without PA had a minimum of 2 years of follow-up to ensure an appropriate follow-up period and avoid underestimation of PA in patients with CP with short follow-up. On the other hand,
patients with CP who developed PA had a minimum of 2 years between the 2 claims to ensure exclusion of patients who may not actually have CP but have pancreatic parenchymal changes induced by PA that can mimic CP.3

There are some limitations to this study. One of these limitations relates to the use of administrative codes to identify the exposures and outcomes. However, ICD-9 codes have been used in the literature to identify CP, with variable accuracy ranging from 51% to more than 85%.24-26 ICD-9 codes are highly sensitive for identifying PA (95%) and cirrhosis (82.6%-95.7%).27,28 ICD-9 codes for obesity have high specificity (>90%) with a lower sensitivity (up to 30%).29,30 ICD-9 codes are valid indicators for identifying smokers.31 The claims diagnoses based on ICD-9 coding may underestimate the true prevalence of certain conditions in the study population. However, underreported chronic conditions will only yield conservative estimates rather than overestimation of the association between different variables and PA in patients with CP. Moreover, obtaining data of such large magnitude as in this study is not possible by other methods. Truven MarketScan data does not provide information on patient race, mortality, underlying cause of CP, or family history of pancreatic cancer. Race, hereditary pancreatitis, and a family history of pancreatic cancer can affect the risk of PA independent of other factors noted in the study. However, this study provides an overall estimate of PA in patients with CP. Additional studies are needed to evaluate the effect of these factors on the risk of PA in patients with CP. The follow-up period for patients with CP was relatively short (median follow-up, 1225 days). However, use of time-to-event analysis using the Cox proportional hazards regression model had the advantage of adjusting the risk estimate for each patient on the basis of the period of follow-up. Lastly, the study population was composed of commercially insured or Medicare patients; therefore, the results of this study may be less applicable to Medicaid patients or veterans.

CONCLUSION

CP was present in 0.093% of the study population. A subsequent medical claim for PA was made in 0.72% of the patients with CP at least 2 years after the initial claim for CP. Increasing age, male sex, tobacco use, having commercial insurance, absence of DM, and shorter duration of bile duct obstruction were associated with a diagnosis of PA in patients with CP. Additional prospective cohort studies of patients with CP are needed to verify these findings. 

Disclosure Statement

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References


Pain is an Early Symptom

We learn that pain was an early symptom in nearly one-half of the cases; that it was usually severe, and might be intense, and was to be found in the abdomen or lower chest. … The appearances found after death are conspicuously the hemorrhage within and near the pancreas. … It is evident that all treatment, at the onset, can be nothing but palliative.

— Reginald Heber Fitz, 1843-1913, American physician
Incidence of Metal Hypersensitivity in Orthopedic Surgical Patients Who Self-Report Hypersensitivity History

Mark Schultzel, MD; Christopher M Klein; Marine Demirjian, MD; Colin Blout; John M Itamura, MD

ABSTRACT

Introduction: Metallic implants are integral to the practice of orthopedic surgery. Delayed-onset T-cell-mediated metal hypersensitivity (diagnosed by patch testing) is reported in 10% to 17% of the general population. Inconclusive evidence exists about the role of metal hypersensitivity in persistently painful or aseptic loosening of arthroplasties. Literature suggests that preoperative patch testing may influence surgical practice.

Objective: To determine the incidence of metal hypersensitivity in orthopedic surgical patients who self-report hypersensitivity and to characterize which metals are most commonly implicated.

Methods: A retrospective chart review of patients from a single surgeon’s practice was conducted during a 1-year period. All patients were questioned about metal hypersensitivity history; all patients who responded affirmatively were sent for patch testing for specific metals.

Results: Only 41 (4.9%) of 840 patients self-reported any metal hypersensitivity. Of these, 34 (83%) were patch-test positive to 1 or more metals. There were 27 whose test results were positive for nickel, 4 each to cobalt or gold thiosulfate, and 1 each to tin or titanium. Seven patients had positive results to multiple metals, all of whom were also nickel hypersensitive. Six patients had metal orthopedic implants before patch testing, and 4 (67%) tested positively to a metal in their implant.

Conclusion: Metal hypersensitivity can be concerning for treating surgeons and patients. Greater awareness of a history to hypersensitivity may prevent patient exposure to implants containing metals that may cause hypersensitivity. Non-metal-containing or nonreactive metal implants are an option for patients in whom metal hypersensitivity is suspected or confirmed.

INTRODUCTION

Total joint replacement (TJR) has been a major advance in the treatment of joint arthritis, achieving predictably excellent results with relatively low perioperative morbidity.1 The incidence of TJR continues to increase, with more than 1 million total hip arthroplasties (THAs) and total knee arthroplasties (TKAs) being performed annually in the US.2,3 Total shoulder arthroplasty also is becoming more prevalent, with more than 39,000 cases performed in 2010.4

As the incidence of TJR continues to increase, the potential impact of implant corrosion and metal ion release on patients with metal hypersensitivity has become a concern. About 10% to 20% of the general population has metal hypersensitivity, as diagnosed by patch testing.5 Approximately 10% of the population is hypersensitive to nickel specifically, with the literature describing hypersensitivity to beryllium, cobalt, and chromium.6 A recent study by Davis et al7 of 1000 patients reported an even higher incidence, with positive patch test results in 57% of tested patients.

Metals with the highest hypersensitive patch-test reaction rates were nickel, gold, manganese, palladium, cobalt, nickel-chromium alloy (Ticonium), mercury, beryllium, chromium, and silver.

Metal debris from orthopedic implants has been found in synovial fluid and soft tissues of patients with metal prostheses, as well as isolated in both blood and lymph samples.8,9 Type IV hypersensitivity, mediated by T lymphocytes, has been described as the most common hypersensitivity type related to TJR, with infiltrates of both T and B lymphocytes being documented in soft tissue after explant of the hardware, suggestive of an immune response to the implant.10-14

Recently, the potential impact of metal hypersensitivity in the context of TJR has been reported. Multiple studies discuss patient-reported metal hypersensitivity to various metals and their effects on physical function, pain, systemic symptoms, and mental health for lower-extremity TJR.15 Patient reporting of metal hypersensitivity has also been studied extensively in lower-extremity TJR, but little literature exists on total shoulder arthroplasty. Nam et al16 reported a case series of 906 THAs and 589 TKAs, in which patients with self-reported metal allergies had lower overall Hip Society and Knee Society scores, as well as decreased postoperative Short Form 12 (SF-12) Mental Component scores. Clinical findings of hypersensitivity at the skin level may include contact dermatitis and general pruritis. The link between reported symptoms—particularly non-skin-related somatic symptoms and pain—and metal hypersensitivity in patients with metal implants is poorly understood.16,17

No consensus or standard exists on how to screen or what changes in treatment plans must be implemented when delayed-onset T-cell-mediated metal hypersensitivity is suspected or confirmed.18 There is inconclusive evidence as to the role of metal hypersensitivity in persistently painful or aseptic loosening of arthroplasties, yet findings of literature reviews suggest that preoperative testing may influence surgical practice.19-23 The purposes of this study are to determine the incidence of metal hypersensitivity in orthopedic surgical patients and to characterize to which metals patients are most commonly hypersensitive.

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Keywords: allergy, hypersensitivity, implants, metal allergy, metal implants, metal in surgery, orthopaedic surgery, orthopedic surgery
METHODS
This study is a retrospective chart review of patients from the orthopedic surgical practice of the senior author (JMI) during a 1-year period. All patients were routinely questioned about their history of metal hypersensitivity during an initial history taking and physical examination and during the planning paperwork for surgery. Patients were specifically asked about symptoms of rash, pruritus, or skin discoloration with jewelry or watch use; of symptoms with metal snaps, belt buckles, or buttons on clothing; of the earliest onset of symptoms; and of a family history of metal hypersensitivity. Patients were also asked about their surgical history and about receiving metal-containing orthopedic implants in previous surgeries.

All patients who admitted to metal hypersensitivity were sent for metal allergy patch testing for specific metals (Figure 1). The metals tested were nickel, cobalt, chromium, beryllium, gold, tin, silver, manganese, vanadium, zirconium, and titanium. All metal patch testing was performed by a single physician (MD) who was board certified by the American Board of Allergy and Immunology. The guidelines of the STROBE (STrengthening the Reporting of OBservational studies in Epidemiology) Statement were adopted for this manuscript (www.strobe-statement.org).

RESULTS
A total of 41 patients (4.9%) were sent for metal patch testing out of 840 new patients who were seen during the 1-year period. There were 34 patients (4.0%) whose patch-test results were positive to at least 1 metal. Of 32 patients (3.8%) who reported hypersensitivity when wearing metal costume jewelry or watches, 30 (3.6%) of these had positive patch-test results to at least 1 metal. Only 2 patients (0.2%) reported family members with suspected metal hypersensitivity.

On patch testing, 27 patients reacted positively to nickel; 4 each to cobalt and gold; and 1 each to tin, chromium, and titanium. Seven patients tested positive to multiple metals, and all these cases were positive to at least nickel. Of the 32 patients with positive patch-test results, 6 (17.6%) had results positive to a metal in their existing orthopedic implant, which was placed before any patch testing (Figure 2). Four patients whose patch-test results were positive to a metal in their implant reported persistent edema, erythema, and postoperative joint pain. Three of these patients underwent revision operations because of suspected infections, all with cultures negative for infectious organisms. They all noted immediate alleviation of joint symptoms after receiving an implant replacement that contained no metals to which they were sensitive.

DISCUSSION
The majority of implants used in orthopedic operations are metal. Most of these implants are made from alloy metals, containing varied amounts of metals to which patients have displayed hypersensitivity, such as nickel, cobalt, and chromium. The pathophysiology of metal hypersensitivity-associated complications is incompletely understood and potentially complex. It is theorized to be related to a combination of the person’s T-cell immune status, reactivity of specific metal ions with HLA antigen and other proteins, and the corrosive and dispersal properties of the metals.

From the patients tested in this study, nearly all who had a history of metal hypersensitivity associated with skin contact to metal in clothing or jewelry had positive patch-test results to metals. Most patients with metal hypersensitivity were positive to nickel (n = 27), cobalt (n = 4), and gold (n = 4). This incidence is consistent with that reported in the published literature and suggests that routine questioning for history of anecdotal skin hypersensitivity may be an effective screening tool for true metal hypersensitivity. In the study by Davis et al, their results concluded that metals with the highest patch-test reaction rates are nickel, gold, manganese, palladium, cobalt, nickel-chromium alloy (Ticonium), mercury, beryllium, chromium, and silver. Metals causing no patch-test reactions include titanium, cobalt-chromium alloy (Vitallium), and aluminum powder. Metals with extremely low rates of allergic patch-test reactions include zinc, ferric chloride, and tin. Hypersensitivity to palladium and silver were determined to be cross-reactive with nickel. Despite the results of this study, our results found 1 patient with a titanium hypersensitivity, which has also been reported in another case report.

![Figure 1. Patch tests for hypersensitivity to specific metals.](https://example.com/f1)

![Figure 2. Frequency of positive results of patch testing, by type of metal.](https://example.com/f2)
Nickel and cobalt are commonly used in metal alloys to confer stability and are present in most orthopedic implants available to surgeons. The amount of metal in these implants varies by company and product, but stainless steel plates and screws used for fracture containment high amounts of nickel, whereas high levels of cobalt are present in most arthroplasty implants, which are typically often cobalt–chromium. The most commonly used implants that are considered “low risk” are titanium and zirconium-niobium, which in arthroplasty can be used with polyethylene and ceramic-bearing surfaces in metal–hypersensitive patients. Zirconium-niobium does not contain nickel and has been associated with fewer wear particles, but it is significantly more expensive compared with other metal implants. Titanium alloy metals are marketed as “nickel-free” but often contain trace amounts of nickel and are also at risk for metal contamination during production.

A recent meta-analysis regarding metal hypersensitivity and TKA suggested that despite multiple case studies describing metal hypersensitivity reactions in patients who underwent TKA with a cobalt–chromium prosthesis, the lack of evidence-based medicine on metal hypersensitivity made it a diagnosis of exclusion, with patch testing or surgical intervention rarely indicated. In our series, 4 of the patients who tested positive for metal hypersensitivity already had metallic orthopedic implants from prior surgical procedures. All these patients had nickel hypersensitivity, and their implants were all made from nickel-containing stainless steel. Three of these patients underwent revision surgery because of suspected infection vs metal hypersensitivity, and their second implant was titanium (none of these 3 patients had patch–test–proven hypersensitivity to titanium). Two of these patients underwent revision arthroplasty, and the other patient underwent revision open reduction and internal fixation, with cultures negative for infectious organisms and no sign of implant loosening or failure. Their preoperative symptoms of edema and erythema over their incision sites and pain with use resolved within a month of their operations, suggesting that in the absence of loosening or infection, that metal hypersensitivity may have been the source of their symptoms. These anecdotal data are consistent with multiple case reports in which revision of a prosthesis made of a metal yielding patch–test negative results resulted in alleviation of symptoms, strengthening the argument for metal hypersensitivity testing and intervention.

With increasing concern regarding how metal hypersensitivity affects metallic implants used in orthopedic surgery, investigation into bone cement hypersensitivity may be of value. Bone cements are made of polymethyl methacrylate and contain additives such as dibenzoyl peroxide, N,N-dimethyl-p-toluidine and 2–(4-[dimethylamino]-phenyl) ethanol, colorants (eg, copper–chlorophyll–complex), and antibiotics such as gentamicin. Blood tests and patch testing for acrylates have recently become commercially available.

**CONCLUSION**

T-cell–mediated delayed-onset metal hypersensitivity in orthopedic surgical patients can be a concern for treating surgeons and patients. More evidence is needed to establish a connection between metal hypersensitivity and risk of complications in procedures in which metallic implants are used. Greater awareness of metal hypersensitivity may prevent patient exposure to implants containing metals that they may react to. Non-metal-containing or nonreactive metal implants are an option for patients for whom metal hypersensitivity is either suspected or confirmed. Investigation of hypersensitivity to bone cement may also be of value to orthopedic surgeons.

**Disclosure Statement**

The author(s) have no conflicts of interest to disclose.

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**How to Cite this Article**


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**The Patient’s Own Words**

In taking histories follow each line of thought; ask no leading questions; never suggest.

Give the patient’s own words in the complaint.

— William Osler, MD, 1849-1919, physician, pathologist, teacher, diagnostician, bibliophile, historian, classicist, essayist, conservationist, organizer, manager, and author
Effectiveness of Best Practice Alerts for Potentially Inappropriate Medication Orders in Older Adults in the Ambulatory Setting

Taylor Ota, PharmD; Rachana J Patel, PharmD; Thomas Delate, PhD, MS

INTRODUCTION

The goal of the 2015 American Geriatrics Society (AGS) Beers Criteria for Potentially Inappropriate Medication (PIM) Use in Older Adults is to improve care in older adults by reducing their exposure to PIMs (eg, anticholinergic and psychotropic medications). The Beers Criteria recommend that any PIM with strong sedating effects be avoided in older adults because of the increased risk of injury and impaired cognition. Despite these recommendations, PIM use in older adults continues to be widespread.

Health information technology, including clinical decision support (CDS) tools for computerized provider order entry (CPOE), is available that uses a best practice alert (BPA) to warn prescribers of a PIM being ordered for a vulnerable patient (eg, an older patient). When a prescriber attempts to order a PIM, a BPA is triggered and a dialog box with an alert appears on the prescriber’s screen. The BPA warns of the PIM’s potential adverse effect or effects, provides alternate medication recommendations, and allows the prescriber to choose to override the BPA (ie, continue the PIM order), stop the PIM order, and/or order an alternate medication.

Although CDS tools have demonstrated a benefit in reducing PIM prescribing, literature is mixed on whether they help improve patient outcomes. Brenner and colleagues, who conducted a meta-analysis of 69 studies of CDS tools in the clinical setting, reported that 25 studies found benefit on outcomes, 43 studies found nonsignificant or mixed findings, and 1 study found a detrimental effect. Gurwitz and colleagues reported that a CDS tool did not reduce the adverse drug event rate in their randomized clinical trial in the long-term care setting and noted that alert burden may have affected the efficacy of the CDS tool. A cost-effectiveness analysis of CPOE CDS tools in a mid-sized multidisciplinary medical group identified that use of the tools was a cost-effective strategy to improve medication safety.

These mixed results are further limited by a dearth of information on the clinical outcomes of CDS tools in the ambulatory and older patient populations. Thus, the purpose of this study was to assess the clinical outcomes of PIM BPAs in older adults in the ambulatory setting. Results of this study provide practitioners and policymakers additional information on the effectiveness of BPAs in an understudied population.

METHODS

Study Design and Setting

This was a retrospective cohort study of adults aged 65 years and older receiving care in an ambulatory setting who had a PIM BPA triggered during computerized medication order entry. The study was conducted at Kaiser Permanente Colorado (KP CO), an integrated health care delivery system providing care to more than 660,000 patients in Colorado at 31 medical offices. KP CO uses an electronic health record that provides e-prescribing capabilities and has a BPA (Figure 1) for 11 PIMs with sedation effects. The study BPA was triggered when a prescriber attempted to order a PIM for a patient aged 65 years or older (no matter the patient’s health history). A BPA could be overridden (by clicking “Keep” on the alert window) or canceled (by clicking “Remove” on the alert window) for the current prescription, with the override in effect for the specific PIM for 1 year unless canceled earlier. A BPA would be triggered if a different PIM was attempted to be ordered at any time. If the BPA was overridden, the prescription was sent to a pharmacy to be filled. There was no PIM BPA in the electronic pharmacy informatics system.
An index date was assigned to each patient on the trigger date of his/her PIM BPA during the study period. If a patient had multiple BPAs triggered during the study period, only the first eligible PIM BPA was included. Patients were followed-up for as long as 180 days to assess for a study outcome.

All KPCO medical offices have a pharmacy that dispenses subsidized prescription medications to KPCO members. Information on prescriptions dispensed from these pharmacies is maintained in a KPCO administrative database. Coded and free-text medical, laboratory, Emergency Department, hospitalization, and membership data from within the delivery system, as well as from other contracted and affiliated facilities, are captured in KPCO’s administrative and claims databases. The KPCO institutional review board reviewed and approved all study activities. Because this was a retrospective evaluation, informed consent was not required.

Study Population

All KPCO patients aged 65 years and older who had a PIM BPA triggered between January 1, 2016, and May 31, 2017, were eligible for inclusion. The PIMs with anticholinergic and sedating effects included were amitriptyline, chlorzoxazone, cyclobenzaprine, doxepin at a dosage greater than 6 mg/d, hydroxyzine, imipramine, metaxalone, methocarbamol, nortriptyline, orphenadrine, and promethazine. Patients had KPCO membership during the 6 months before the index date (to allow for assessment of potential confounders) and 30 days after the index date (to allow for assessment of PIM dispensing). Patients who had the prescription written to a non-KPCO pharmacy, for an in-office administration, or for a compounded PIM were excluded. Patients were categorized into dispensed and nondispensed groups if they did and did not, respectively, have the study PIM for which the BPA was triggered dispensed within 30 days of the index date. Patients in the dispensed group were followed-up from the study PIM dispensing date until 180 days from the index date, study outcome date, KPCO membership termination date, or death date, whichever came first. Patients in the nondispensed group were followed-up from the index date until 180 days, study outcome date, KPCO membership termination date, or death date, whichever came first.

Outcome Measures

The primary outcome measure was a fall, fracture, or other injury during the 180 days after the index date (follow-up period). Falls, fractures, and injuries were identified from diagnoses recorded in both the ambulatory and inpatient settings. Secondary outcome measures included cognitive impairment resulting in a medical office visit, Emergency Department visit, or inpatient stay during follow-up. Injuries were defined as damage to the body caused by external force. Cognitive impairment was defined as confusion, altered mental status, delirium, or memory status changes that were not related to progressive diseases (eg, dementia, Parkinson disease), electrolyte abnormalities, or infections.

All clinical outcomes were validated by manual review of the electronic health record by a clinician referee blinded to the study group. The referee was instructed not to assess information about medication use unless the potential outcome was an actual event based on the written notes of a physician or midlevel prescriber (ie, nurse practitioner, physician’s assistant) from the encounter. The notes were copied verbatim into a spreadsheet. Any potential outcome event with encounter information that did not support the diagnosis or had missing encounter information was deemed a nonvalidated event. Any other potential event with ambiguous information regarding the event was reviewed by another referee. Only validated events were included in the final analysis. Multivariable logistic regression models were constructed on the outcomes to adjust for potentially confounding factors and to identify factors associated with increased likelihood of an outcome. Subanalyses were performed for patients who did and did not have a dispensing of the study PIM during baseline (180 days before the index date).

Data Collection and Analysis

Data were collected from queries of KPCO’s electronic, integrated, administration databases. Information on patients who had a BPA triggered was obtained.
from the electronic health record. Information on study outcomes and patient characteristics was obtained using the International Classification of Diseases Ninth and Tenth Revisions codes (codes available on request). Data on patient characteristics were collected during the 180 days before the index date (baseline).

Because this was a naturalistic, observational study, no a priori sample size or power calculations were performed. Thus, all patients meeting the inclusion criteria and not having the exclusion criteria were included. Age was calculated as of the index date. Patients were categorized into dispensed and nondispensed groups. A chronic disease score, a measure of a patient’s chronic illness burden, was calculated from ambulatory medication dispensings during baseline. A Charlson Comorbidity Index was calculated from diagnoses that were recorded during baseline.13

Percentages of fall, fracture, or other injury and cognitive impairment issues were determined by summing all validated respective outcomes during the study period and dividing this value by the number of study participants in each group. A patient could contribute only 1 fall, fracture, or injury and 1 cognitive impairment to the outcomes. Patient characteristics and outcomes were summarized using descriptive statistics: Means (standard deviation) for continuous variables and percentages for categorical variables. Comparisons were performed between groups using \( \chi^2 \) tests of association for categorical variables and either independent samples \( t \)-tests or Wilcoxon signed rank tests, as appropriate, to compare continuous variables.

Because of differences between the nondispensed and dispensed groups in patient characteristics and potentially confounding covariates, multivariable logistic regression models were constructed to adjust the validated outcomes. Covariates were selected on the basis of having a \( p \) value less than 0.2 in the univariate analysis or on the basis of clinical judgment and the presence of at least 5 patients in both groups with the exposure. Covariates included in the models were age; sex; baseline dispensings of an antidepressant, benzodiazepine, narcotic, and skeletal muscle relaxant medication; chronic disease score; Charlson Comorbidity Index; white race; Hispanic ethnicity; baseline diagnoses of delirium, depression, fall/fracture/injury, and cognitive impairment; and Medicaid insurance status. Analyses were performed with statistical analysis

### Table 1. Baseline characteristics overall and by medication dispensing group (N = 2704)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Overall</th>
<th>Nondispensed PIM (n = 1331)</th>
<th>Dispensed PIM (n = 1373)</th>
<th>( p ) value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age, y (SD)</td>
<td>71.9 (6.4)</td>
<td>72.9 (6.8)</td>
<td>71.0 (6.0)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Women (no., %)</td>
<td>1797 (66.5)</td>
<td>885 (66.5)</td>
<td>912 (66.4)</td>
<td>0.970</td>
</tr>
<tr>
<td>White race (no., %)</td>
<td>2158 (79.8)</td>
<td>1015 (76.3)</td>
<td>1143 (83.3)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Hispanic ethnicity (no., %)</td>
<td>283 (10.5)</td>
<td>152 (11.4)</td>
<td>131 (9.5)</td>
<td>0.007</td>
</tr>
<tr>
<td>Mean chronic disease score (SD)</td>
<td>4.5 (3.6)</td>
<td>4.6 (3.6)</td>
<td>4.3 (3.6)</td>
<td>0.042</td>
</tr>
<tr>
<td>Mean Charlson Comorbidity Index (SD)</td>
<td>1.8 (2.4)</td>
<td>2.0 (2.5)</td>
<td>1.6 (2.3)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Comorbidities, no. (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delirium</td>
<td>71 (2.6)</td>
<td>45 (3.4)</td>
<td>26 (1.9)</td>
<td>0.016</td>
</tr>
<tr>
<td>Dementia</td>
<td>74 (2.7)</td>
<td>50 (3.8)</td>
<td>24 (1.8)</td>
<td>0.001</td>
</tr>
<tr>
<td>Parkinson disease</td>
<td>22 (0.8)</td>
<td>13 (1.0)</td>
<td>9 (0.7)</td>
<td>0.353</td>
</tr>
<tr>
<td>Alzheimer disease</td>
<td>12 (0.4)</td>
<td>11 (0.8)</td>
<td>1 (0.1)</td>
<td>0.003</td>
</tr>
<tr>
<td>Mean count of unique long-term medications (SD)</td>
<td>3.9 (2.8)</td>
<td>4.1 (2.9)</td>
<td>3.7 (2.8)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Prior medication dispensing, no. (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anticonvulstant</td>
<td>461 (17.1)</td>
<td>227 (17.1)</td>
<td>234 (17.0)</td>
<td>0.994</td>
</tr>
<tr>
<td>Antidepressant</td>
<td>1496 (55.3)</td>
<td>779 (58.5)</td>
<td>717 (52.2)</td>
<td>0.001</td>
</tr>
<tr>
<td>Anti-Parkinson disease drug</td>
<td>92 (3.4)</td>
<td>44 (3.3)</td>
<td>48 (3.5)</td>
<td>0.785</td>
</tr>
<tr>
<td>Antipsychotic</td>
<td>99 (3.7)</td>
<td>44 (3.3)</td>
<td>55 (4.0)</td>
<td>0.333</td>
</tr>
<tr>
<td>Benzodiazepine</td>
<td>355 (13.1)</td>
<td>152 (11.4)</td>
<td>203 (14.8)</td>
<td>0.010</td>
</tr>
<tr>
<td>Narcotic</td>
<td>1093 (40.4)</td>
<td>519 (39.0)</td>
<td>574 (41.8)</td>
<td>0.136</td>
</tr>
<tr>
<td>Antihistamine</td>
<td>32 (1.2)</td>
<td>14 (1.1)</td>
<td>18 (1.3)</td>
<td>0.533</td>
</tr>
<tr>
<td>Skeletal muscle relaxant</td>
<td>192 (7.1)</td>
<td>73 (5.5)</td>
<td>119 (8.7)</td>
<td>0.001</td>
</tr>
<tr>
<td>Antispasmodic</td>
<td>49 (1.8)</td>
<td>21 (1.6)</td>
<td>28 (2.0)</td>
<td>0.368</td>
</tr>
<tr>
<td>History of fall, fracture, or injury(^a) (no., %)</td>
<td>203 (7.5)</td>
<td>109 (8.2)</td>
<td>94 (6.9)</td>
<td>0.185</td>
</tr>
<tr>
<td>History of cognitive impairment(^b) (no., %)</td>
<td>131 (4.8)</td>
<td>80 (6.1)</td>
<td>51 (3.7)</td>
<td>0.005</td>
</tr>
<tr>
<td>Medicaid beneficiary (no., %)</td>
<td>117 (4.3)</td>
<td>68 (5.1)</td>
<td>49 (3.6)</td>
<td>0.049</td>
</tr>
<tr>
<td>High-deductible health plan (no., %)</td>
<td>18 (0.6)</td>
<td>6 (0.5)</td>
<td>12 (0.9)</td>
<td>0.176</td>
</tr>
</tbody>
</table>

\( ^a \) As of best practice alert trigger date (index date).
\( ^b \) Recorded 6 months before the index date.
PIM = potentially inappropriate medication; SD = standard deviation.
software (SAS version 9.4, SAS Institute, Cary, NC). The \( \alpha \) was set at 0.05.

**RESULTS**

A total of 2704 patients had at least 1 PIM BPA triggered during the study period. Of these, 1373 patients (50.8%) had the PIM dispensed within 30 days and 1331 (49.2%) did not have the PIM dispensed (Table 1). The most common PMs to trigger a BPA were nortriptyline (28.4%), cyclobenzaprine (26.4%), amitriptyline (11.8%), and hydroxyzine (11.0%). Overall, patients were primarily women and white and had a moderate burden of chronic disease.

Patients in the nondispensed group were older (p < 0.001) and had a higher burden of chronic disease and mean count of unique chronic disease medications (p < 0.001; Table 1). In addition, they were more likely to have had a comorbidity of delirium, dementia, and Alzheimer disease; baseline dispensing of an antidepressant and skeletal muscle relaxant; and previous cognitive impairment (all p < 0.05). Patients in the dispensed group were more likely to be white (p < 0.001) and have had a baseline benzodiazepine dispensing (p < 0.05).

Although patients in the dispensed group had a lower unadjusted percentage of fall, fracture, or injury (3.4% vs 5.3% in nondispensed group, p = 0.019; Table 2), this difference was not statistically significant with multivariable adjustment (adjusted odds ratio [AOR] = 0.77, 95% confidence interval [CI] = 0.51-1.33; Table 3). There was no statistically significant difference between the groups in the rate of cognitive impairment in unadjusted analyses (4.6% vs 4.4%) or adjusted analyses (AOR = 1.40, 95% CI = 0.95-2.05).

In the subanalysis between patients in the dispensed (n = 419) and nondispensed (n = 510) groups who did have a prior dispensing of a study PIM during baseline, results identified no difference in outcomes (4.5% vs 6.3%, p = 0.247 for fall, fracture, or injury and 5.0% vs 4.9%, p = 0.939 for cognitive impairment). Similarly, in the subanalysis between dispensed (n = 954) and nondispensed (n = 821) group patients who did not have a prior dispensing of a study PIM during baseline, the results identified no difference in outcomes (2.9% vs 4.5%, p = 0.079 for fall, fracture, or injury and 4.4% vs 4.0%, p = 0.689 for cognitive impairment).

Factors independently related to an increased likelihood of fall, fracture, or injury included increasing age (AOR = 1.05, 95% CI = 1.02-1.07) and a fall, fracture, or injury during baseline (AOR = 2.74, 95% CI = 1.67-4.50; Table 3). Factors independently related to an increased likelihood of cognitive impairment included increasing age (AOR = 1.04, 95% CI = 1.01-1.07) and delirium (AOR = 2.49, 95% CI = 1.25-4.95), antidepressant dispensing (AOR = 1.69, 95% CI = 1.11-2.57), and history of cognitive impairment (AOR = 3.56, 95% CI = 2.09-6.09) during baseline.

**DISCUSSION**

In this retrospective study of the clinical effectiveness of PIM BPAs in older adults, we identified no statistically
significant association between PIM dispensing after a BPA was triggered and an adverse outcome. Our findings are important because although there is literature demonstrating that BPAs reduce ambulatory prescribing of PIMs in older adults, little data are available that have examined clinical outcomes associated with BPAs for PIM prescribing in older adults.\textsuperscript{5,14} Systematic reviews provide limited supporting evidence for health information technology in the ambulatory setting on patient outcomes. Brenner and colleagues\textsuperscript{8} assessed the effectiveness of health information technology (eg, CPOE, CDS) in 10 studies in ambulatory settings, and they identified only 1 study\textsuperscript{15} that demonstrated a decrease in adverse effects (ie, a significant decrease in asthma exacerbations). Jankowitz and colleagues\textsuperscript{14} performed a systematic review of 5 studies of CDS for PIM prescribing at hospital discharge and subsequent unplanned Emergency Department visits or hospital readmissions in community-dwelling older adults. Although they found that CDS reduced the rate of PIM prescribing, they identified no studies with a decrease in unplanned Emergency Department visits or hospital readmissions.\textsuperscript{14}

It is plausible that prescribers in our study were more comfortable prescribing a PIM to patients for whom they believed the PIM would be tolerated. This is probably because patients in the dispensed group were younger and healthier. We were unable to assess prescribers’ comfort levels with their patients’ ability to tolerate the PIM. If there was differential prescribing, we would expect additional outcomes without the BPA because prescribers would not be alerted to the risk. We identified that only increasing age and a history of fall, fracture, or injury were related independently with a follow-up fall, fracture, or injury in multivariable regression modeling. Similarly, increasing age, delirium comorbidity, antidepressant dispensing during baseline, and a history of cognitive impairment were related independently with cognitive impairment at follow-up. Neither of the health risk scores (ie, chronic disease score, Charlson Comorbidity Index) was associated with either outcome, suggesting that sicker patients are at no higher risk of one of these outcomes. These findings do not negate any positive effects of a BPA in alerting prescribers to the risk of prescribing a PIM.

In clinical practice with older adults, our findings highlight the importance of the prescriber tailoring a medication regimen, including a medication review and modification, for each patient. In addition, the identification and mitigation of other risk factors (eg, concurrent medication use, environmental hazards, gait or vision impairment, hypotension, sedentary lifestyle, age-related decline in balance) can prevent falls and injuries.\textsuperscript{16} Furthermore, advising older adults and/or their caregivers on the benefits of cognitive training and physical exercise (eg, resistance training) can aid in preventing cognitive decline.\textsuperscript{17}

A follow-up of 30 days to assess if the PIM was dispensed limited our study. Although this would be a rare event, it is possible that patients had their PIMs dispensed later than 30 days and were misclassified into the nondispensed group. We attempted to control for potential confounding medications and disease states in our regression modeling; however, unknown confounding may still have been present. In addition, we were unable to assess whether the dispensed PIM was ingested. Furthermore, we could not assess for study outcomes that did not come to the attention of the health care system. These outcomes were likely minor events that could not be identified without surveying patients directly.

CONCLUSION

This retrospective evaluation of older adults in the ambulatory setting identified no statistically significant association between the dispensing of a PIM after the PIM prescriber was alerted to the anticholinergic and sedating effects of the PIM and reduced fall/fracture/injury and cognitive impairment. Although a PIM BPA at the time of medication ordering can be a tool to aid prescribers in making safer clinical decisions for their patients, our findings suggest that the relationship between PIM use and adverse events is complicated and deserves additional research to elucidate. Our study findings do not support the use of PIMs or advise against BPA use in older adults but do buttress the need for evaluating the patient holistically before initiating a PIM order. ♦

Disclosure Statement

The author(s) have no conflicts of interest to disclose.

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Authors’ Contributions

Taylor Ota, PharmD, designed the research, extracted information from medical records, interpreted the data analysis, drafted the initial version of the manuscript, and revised the manuscript. Rachana J Patel, PharmD, designed the research, supervised the research team, interpreted the analysis, and revised the manuscript. Thomas Delate, PhD, MS, designed the research, extracted information from electronic data sources, performed the statistical analysis, interpreted the data analysis, and revised the manuscript. All authors have given final approval to the manuscript.

References


Effectiveness of Best Practice Alerts for Potentially Inappropriate Medication Orders in Older Adults in the Ambulatory Setting


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Napoleonic Code

When a patient [who] is on a drug—on any drug—becomes ill, the Napoleonic Code rather than the English common law should apply:
The drug should be presumed guilty until proved innocent.

— Willis C Maddrey, John K Boitnott, Hospital Practice; 1975
INTRODUCTION

According to the 2017 Child Maltreatment Report from the US Department of Health and Human Services, child protection services responded to 4.1 million referrals involving 7.5 million children. The Centers for Disease Control and Prevention has identified child maltreatment as a major public health concern, and adult survivors of child maltreatment are at significant risk of chronic disease and premature mortality. Studies looking at adult functioning and mental illness among child abuse survivors have documented the long-term psychological consequences of abuse. The impact of child abuse and neglect represents a long-term challenge for communities and a major public health crisis for the US.

In 2006, recognizing the pervasive phenomenon of child maltreatment the American Board of Medical Specialties approved child abuse pediatrics as a subspecialty. Child abuse pediatricians (CAPs) receive specific training so they can serve as a resource to children, families, health care clinicians, child advocates, child protective services, and members of law enforcement, and they serve on multidisciplinary teams in cases of child maltreatment. Although general practitioners, emergency medicine physicians, generalist pediatricians, and other health care clinicians may encounter abused and neglected children in their practices, CAPs are uniquely focused on and equipped to identify child abuse and neglect.

As a result, CAPs continuously encounter exposure to the trauma that abused children experience. This constant exposure to child maltreatment makes these health care practitioners uniquely vulnerable to stressors associated with burnout. Following the job demands-resources model, the purpose of the current study was to examine the relationship between secondary trauma, hope, meaningful work, and burnout. The recent recognition of child abuse as a medical subspecialty of pediatrics makes the study of burnout important as fellowship training evolves.

BURNOUT

A characteristic of job burnout is the long-term psychological response to chronic emotional and interpersonal stressors associated with the demands of work. Maslach asserted that burnout manifests in 3 ways: Emotional exhaustion, depersonalization, and reduced personal accomplishment. Emotional exhaustion refers to feelings that other people drain a person psychologically. Depersonalization manifests as callous responses toward patients. Finally, reduced personal accomplishment is the decline of self-efficacy and a sense of accomplishment in working with others. Demerouti et al introduced a model of burnout called the job demands-resources model that describes the context of work in terms of demands and resources. When employees feel continuously overextended by job demands, they can experience exhaustion. Additionally, the lack of job resources reduces the capacity to buffer job demands, which can lead to withdrawal behavior and ultimately to disengagement. Conceptually, the job demands-resources model argues that sustained exhaustion and disengagement result in burnout.

Burnout is linked with a variety of workplace and personal problems. Lee and Ashforth, in a meta-analytic study, found a significant association between burnout and turnover intentions, organizational commitment, and coping. Other studies have shown a connection with reduced performance and increased absenteeism. Results of studies of physicians suggested that high levels of burnout are associated with poor mental health
and reduced quality of patient services.14-20 Burnout is also tied to poor physical and psychological health.21

Secondary Traumatic Stress
Secondary traumatic stress (STS) results from the exposure to others’ trauma and includes symptoms of intrusion, avoidance, and arousal.22 More specifically, individuals experiencing STS are likely to go through sudden reexperiencing of the event (intrusion), diminished affect (avoidance), and/or difficulty concentrating (arousal).22 Although it is relatively normal to experience a visceral reaction to the secondary traumatic event, it is only when these reactions last longer than a month that it becomes STS.22 These symptoms are nearly identical to posttraumatic stress disorder even though sufferers have not experienced trauma directly.22 Studies involving health care clinicians such as hospice nurses, palliative care nurses,23 pediatric palliative care nurses,24 and emergency medicine nurses25 show that the risk of STS in health care settings is high and that STS contributes to burnout.26,27 By virtue of the medical subspecialty, CAPs are also at risk of STS. Although, to our knowledge, no research exists on burnout in CAPs specifically, findings of the available literature on health care clinicians and the effects of sustained exposure to the trauma of child abuse and neglect suggest that secondary exposure to trauma is a job demand that can contribute to burnout.21 We tested the following hypothesis:

Hypothesis (H1): The 3 dimensions of STS (intrusion, avoidance, and arousal) will be positively associated with burnout.

Hope
The cognitive base model of hope by Snyder28 argues that desirable goals drive people. Hope requires the individual to have the capacity to establish specific mental strategies (pathway thinking) toward goal attainment and to possess motivation, commitment, and so on (agency thinking), to follow the pathways to the goal.28 Hope may combat the effects of STS; individuals with high hope function at a more optimal level than do their low-hope counterparts.29 Research findings show that hope has a positive influence on health and well-being, and hopeful individuals are less reactive to stressful situations.26-33 Hopeful individuals are also able to identify productive paths toward reaching their identified goals and to manage and overcome stress easier, and they report overall low levels of daily stress.26,30,32-34 Given the positive effects of hope, the following hypotheses were tested:

H2: Hope will have a negative association with the 3 dimensions of secondary stress.

H3: Hope will have a negative association with burnout.

Meaning in Work
The capacity to find meaning in life is paramount in the human capacity to flourish.35 The subjective experience of finding importance and value in work is an important domain of meaning.35 When individuals find meaning in their work, they tend to experience higher levels of confidence and work engagement,36 heightened job satisfaction, increased positive mood, decreased turnover intentions,37 and overall improved health and well-being.38,39 Meaning in work is an important buffer to burnout in the field of medicine.40,41 Given this body of literature, the following hypotheses were tested:

H4: Meaning in work will have a negative association with the 3 dimensions of STS.

H5: Meaning in work will have a negative association with burnout.

H6: The 3 dimensions of STS—intrusion, avoidance, and arousal—will account for significant variance in burnout.

H7: Meaning in work and hope will account for significant variance in burnout over and above STS.

METHODS
Subjects and Procedure
Before conducting this study, the university’s institutional review board reviewed and approved the protocol and survey. All participants provided consent before completing the survey. Prospective study participants were members of the Helfer listserv associated with the Ray E Helfer Society and the Special Interest Group on Child Abuse (SIGCA) for Medical Professionals listserv of The Physicians Network on Child Abuse and Neglect. On the survey distribution date, Helfer had 347 members and SIGCA had 383. Together, the listservs totaled 730 members. These listservs provided a platform for communication among health care professionals who specialize in the diagnosis and treatment of child abuse and neglect. Any health care professional who is engaged in the health care aspects of child abuse and neglect may register to SIGCA; Helfer includes only physicians in this field. Therefore, physicians are able to be members of both listservs, and the listservs’ memberships may overlap to an unknown degree. The total potential population is estimated to be fewer than 730 but cannot be determined precisely.

The Web-based survey was accessed 191 times; given the large sample, cases with missing data were deleted. Evaluation of the missing data showed no discernable pattern to warrant concern. Only completed surveys were subjected to statistical analysis.

Measures
Burnout
In this study, we used the 16-item Oldenburg Burnout Inventory42 (OLBI) to measure burnout (mean = 41.63; standard deviation [SD] = 9.15; α = 0.85). The OLBI was chosen over other possible burnout measures because it is tied to the conceptual basis for this study, the job demands–resources model of burnout. The inventory uses a 5-option agreement scale, with choices being 1 (strongly disagree) to 5 (strongly agree). The OLBI contains both positively and negatively framed items (eg, “This is the only type of work I can imagine myself doing” vs “After my work, I usually feel worn out and weary”) about one’s level of either engagement or vigor. The present study focused on the construct of burnout, rather than on the subscales of engagement and vigor; therefore, we used the overall score. Because the OLBI contains 8 negatively framed questions and 8 positively framed questions (4 from each subscale), researchers reverse-scored half of the questions. Ultimately, a high total score reflects high levels of burnout for the participant.

The Relationship Between Hope, Meaning in Work, Secondary Traumatic Stress, and Burnout Among Child Abuse Pediatric Clinicians
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The Relationship Between Hope, Meaning in Work, Secondary Traumatic Stress, and Burnout Among Child Abuse Pediatric Clinicians

Secondary Traumatic Stress Scale

The STS Scale is a 17-item instrument developed by Bride et al.\(^4\) and designed to measure intrusion (mean = 7.60, SD = 2.83, \(\alpha = 0.80\)), avoidance (mean = 12.97, SD = 4.42, \(\alpha = 0.83\)), and arousal (mean = 10.55, SD = 3.54, \(\alpha = 0.78\)) symptoms among practitioners experiencing trauma indirectly through their clients. Statements include “I had disturbing dreams about my work with patients” and “I was easily annoyed.” Practitioners report how many times within the past 7 days they have experienced each statement. Answers follow a 5-point Likert-type response format from 1 (never) to 5 (very often). Thus, a higher overall score indicates greater level of STS.\(^26\)

Hope

The Dispositional Hope Scale\(^4\) is a 12-item survey that measures the extent to which the respondent feels motivated to obtain goals and whether the respondent sees viable ways to attain those goals. Examples of hope statements include “I can think of many ways to get out of a jam” and “I energetically pursue my goals.” Item responses are on a 4-point scale, ranging from 1 (definitely false) to 4 (definitely true). Two subscales compose the Dispositional Hope Scale: 1) agency, which captures motivation to obtain said goals, and 2) pathways, which captures one’s thinking regarding goal attainment. Together, the 2 subscales derive a total hope score with a potential range of 8 (low) to 32 (mean = 26.42, SD = 2.76, \(\alpha = 0.80\)).

Meaning in Work

Derived from the individual’s subjective experience, the Work as Meaning Inventory assigns a value interpreted as the degree to which a person thinks work has value in his/her life.\(^4\) We used 5 items (mean = 31.34, SD = 4.26, \(\alpha = 0.95\)) of the Work as Meaning Inventory.\(^4\) These items included “The work that I do is important,” “I have a meaningful job,” “The work that I do makes the world a better place,” “What I do at work makes a difference in the world,” and “The work that I do is meaningful.” Associated with each item was a 5-point agreement: 1 (very strongly disagree) to 5 (very strongly agree); thus, higher scores reflect higher meaning attributed to work.

Data Analysis

Data were analyzed using SPSS statistical software Version 18.\(^17\) Participant demographics were summarized using descriptive statistics. Means, SD, and Cronbach \(\alpha\) were computed for each measure. Pearson correlations were calculated to measure the associations between the 3 dimensions of STS: Burnout, meaning in work, and hope. A 2-step hierarchical regression analysis was conducted to assess the significant contributions of STS, meaning in work, and hope to burnout. In the first step, burnout was regressed on the 3 dimensions of STS. In the second step, burnout was regressed on meaning in work and hope.

RESULTS

A total of 151 individuals completed the survey in full, and their responses were subjected to statistical analysis. Most respondents (90.7%) were physicians. The remaining 9.3% of participants were nurse practitioners. The participant sample were chiefly women (80.9%) and white (86.6%). On average, participants reported working with patients 39.1 hours per week. Table 1 shows participants’ demographics.

Before computing the correlations and regression analyses, we tested the statistical assumptions and completed a search for outliers\(^48\) using standardized residuals with absolute values greater than or equal to 3.0. No cases met the criteria for outliers. Additionally, the Cook distance statistic ranged from 0 to 0.05, which is in the acceptable range.\(^48\) For linearity, we examined a scatter plot of predicted and actual scores for the dependent variable resulting in a positive linear distribution. The mean score for the standardized residual is 0, with an SD of 0.982. Furthermore, when we plotted predicted values against the residuals, we observed residual spherical patterns. These findings suggested normal distribution and noncorrelation of error. Finally, as shown in Table 2, the reliability scores for all variables of interest were moderate to strong, suggesting minimal measurement error. On the basis of these outcomes, we determined that the assumptions for correlation and regression were met.

Table 2 displays the mean, SD, Cronbach \(\alpha\), and zero-order correlation matrix for all variables. All variables showed moderate to strong correlations with burnout. The 3 dimensions of STS displayed strong positive correlations with burnout: Arousal (\(r = 0.61\)), intrusion (\(r = 0.56\)), and avoidance (\(r = 0.66\)). Study findings showed a negative correlation between hope and the 3 dimensions of STS: Arousal (\(r = -0.41\)), intrusion (\(r = -0.27\)), and avoidance (\(r = -0.34\)) as well as with burnout (\(r = -0.43\)). There was a negative correlation between meaning in work and the 3 dimensions of STS: Arousal (\(r = -0.13\)), intrusion

<p>| Table 1. Demographic characteristics of child abuse pediatric clinicians (CAPCs, N = 151) |
|-----------------------------------------------|-----------------------------------------------|</p>
<table>
<thead>
<tr>
<th>Variable</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>29.0 (19.1)</td>
</tr>
<tr>
<td>Women</td>
<td>122.0 (80.9)</td>
</tr>
<tr>
<td><strong>Race/ethnicity</strong></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>4.0 (2.7)</td>
</tr>
<tr>
<td>Asian</td>
<td>7.0 (4.7)</td>
</tr>
<tr>
<td>White</td>
<td>129.0 (86.6)</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>4.0 (2.7)</td>
</tr>
<tr>
<td>Native American</td>
<td>1.0 (0.7)</td>
</tr>
<tr>
<td>Other</td>
<td>4.0 (2.7)</td>
</tr>
<tr>
<td><strong>Position title</strong></td>
<td></td>
</tr>
<tr>
<td>Physician</td>
<td>137.0 (80.7)</td>
</tr>
<tr>
<td>Nurse practitioner</td>
<td>14.0 (9.3)</td>
</tr>
<tr>
<td><strong>Years as CAPC</strong></td>
<td></td>
</tr>
<tr>
<td>&lt;1</td>
<td>7.0 (4.6)</td>
</tr>
<tr>
<td>1-5</td>
<td>41.0 (27.2)</td>
</tr>
<tr>
<td>6-10</td>
<td>35.0 (23.2)</td>
</tr>
<tr>
<td>11-15</td>
<td>25.0 (16.6)</td>
</tr>
<tr>
<td>16-20</td>
<td>6.0 (4.0)</td>
</tr>
<tr>
<td>≥20</td>
<td>37.0 (24.5)</td>
</tr>
<tr>
<td><strong>Average hrs worked weekly</strong></td>
<td>39.1</td>
</tr>
</tbody>
</table>

*Two participants did not answer this question.*
The Relationship Between Hope, Meaning in Work, Secondary Traumatic Stress, and Burnout Among Child Abuse Pediatric Clinicians

Table 2. Means, standard deviations, and correlations among predictor variables and outcome variable (burnout)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Burnout</td>
<td>41.63</td>
<td>9.15</td>
<td>0.85</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Arousal</td>
<td>10.55</td>
<td>3.54</td>
<td>0.61*</td>
<td>0.78</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Intrusion</td>
<td>7.60</td>
<td>2.83</td>
<td>0.56*</td>
<td>0.71*</td>
<td>0.80</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Avoidance</td>
<td>12.97</td>
<td>4.42</td>
<td>0.66*</td>
<td>0.77*</td>
<td>0.73*</td>
<td>0.83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Meaning in work</td>
<td>31.49</td>
<td>4.19</td>
<td>-0.31*</td>
<td>-0.13</td>
<td>-0.04</td>
<td>-0.10</td>
<td>0.95</td>
<td></td>
</tr>
<tr>
<td>6. Hope</td>
<td>26.47</td>
<td>2.76</td>
<td>-0.43*</td>
<td>-0.41*</td>
<td>-0.27*</td>
<td>-0.34*</td>
<td>0.39*</td>
<td>0.80</td>
</tr>
</tbody>
</table>

* Values on diagonal reflect Cronbach α.

Table 3. Hierarchical regression of child abuse pediatric clinicians’ burnout on arousal, intrusion, avoidance, meaning in work, and hope (n = 144) *

<table>
<thead>
<tr>
<th>Predictor</th>
<th>(\Delta R^2)</th>
<th>(\beta)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arousal</td>
<td>0.47*</td>
<td>0.23*</td>
</tr>
<tr>
<td>Intrusion</td>
<td></td>
<td>0.1</td>
</tr>
<tr>
<td>Avoidance</td>
<td></td>
<td>0.41*</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meaning in work</td>
<td>0.07*</td>
<td>-0.17*</td>
</tr>
<tr>
<td>Hope</td>
<td></td>
<td>-0.17*</td>
</tr>
<tr>
<td>Total (R^2)</td>
<td>0.54*</td>
<td></td>
</tr>
</tbody>
</table>

* Arousal, intrusion, and avoidance are components of secondary traumatic stress.

\(r = 0.04\), and avoidance \((r = -0.10)\) as well as with burnout \((r = -0.31)\). Although the correlations among the independent variables and burnout were high, the intercorrelations among the independent variables were also high, resulting in challenges in interpreting the findings. We computed collinearity statistics to estimate redundancy. The tolerance and variance inflation factor levels for the variables were intrusion \((0.413, 2.419)\), avoidance \((0.348, 2.872)\), arousal \((0.348, 2.871)\), meaning in work \((0.824, 1.214)\), and hope \((0.700, 1.428)\). Both variance inflation factor and tolerance levels fell within the acceptable range, suggesting minimal multicollinearity. In summary, individuals reporting higher levels of arousal, intrusion, and avoidance reported high levels of burnout, while individuals endorsing the constructs of hope and meaning in work reported low burnout.

To investigate the hypotheses that hope and meaning would account for significant variance in burnout over and above secondary stress, we computed a 2-step hierarchical regression. In the first step, burnout was regressed on arousal, intrusion, and avoidance. Results suggested that the independent variables account for approximately 47% of explained variance of burnout \((R^2 = 0.47; F(3,140) = 40.64; p ≤ 0.001)\) in this model. In step 2, we entered the meaning in work and hope variables, resulting in burnout being regressed on the full set of variables. The subsequent change suggests that the addition of the 2 independent variables accounts for an additional 7.3% of explained variance of burnout \((\Delta R^2 = 0.07, p ≤ 0.001)\). The avoidance variables account for 47% of the variance in burnout. Adding hope and meaning adds an additional 7% (change in R square). The final set of independent variables (avoidance, hope, meaning) account for 54% of the variance in burnout. Table 3 provides the standardized \(\beta\) coefficients.

In the second step, the standardized \(\beta\) coefficients showed that 3 variables make unique, significant contributions to burnout. Avoidance \((\beta = 0.38)\) had the highest unique relationship with burnout. Meaning in work \((\beta = -0.17)\) and hope \((\beta = -0.17)\) presented negative unique relationships with burnout. The multiple \(R^2\) indicated that approximately 5% of the variance in burnout can be associated with the variables in the model.

**DISCUSSION**

These study results suggest that all our hypotheses were supported. The correlational analyses showed strong positive associations between the dimensions of secondary trauma and burnout (H1). Hope and meaning in work demonstrated negatively moderate associations with STS and burnout (H2-H5). The results of the hierarchical regression analysis show that the 3 dimensions of STS accounted for significant variance in burnout (H6), and the addition of hope and meaningful work accounted for significant variance in burnout over and above secondary trauma (H7). Because we tested and established the statistical assumptions, we have strong confidence in our findings.

These results are compelling for the practice of child abuse pediatrics given the established negative consequences of burnout in other medical clinicians. Although it is unclear exactly what relationship STS and burnout have, according to the job demands-resources model, burnout is the result of too many demands and too few resources. In this context, hope and meaning in work can be viewed as resources, whereas STS can be seen as a demand. Increasing hope and meaning in work may ameliorate the disordered accumulation of secondary trauma and burnout.

If, as our results suggest, meaning in work and hope can mitigate these negative effects, it is important to provide greater support to CAPs. This can be achieved both in the short-term with targeted interventions and in the long-term with institutional supports. Several interventions have already been successfully piloted in other professions at high risk of STS and burnout (eg, meaning-centered intervention in bone marrow transplantation nurses and interventions targeting STS and self-efficacy in well-baby clinic nurses in war-torn areas of Israel). These interventions could easily be adapted for the purposes of child
abuse pediatrics. Our findings also suggest that prevention and intervention strategies be guided by the Hope Theory (goals, pathways, agency). To this end, the goal of mitigating burnout would follow supporting healthy coping pathways (mentoring, coaching, reflective practice, etc.). At the very least, professional organizations could also target sessions or session tracks targeting the self-care of its members. In this regard, the organization becomes a pathway for hope for CAPs. For the long term, CAPs could be assessed at regular intervals, starting during fellowship training, and a system of established protocols could be created for maintenance of a high level of hope and meaning in work coupled with efforts at minimization of STS.

Without such supports, CAPs cannot do the vital work of helping and protecting maltreated children to the best of their abilities. Working in a field with high rates of STS and burnout can decrease work productivity and increase turnover. When the mental and physical toll is too high, practitioners may leave the field in large numbers. Creating a system (including access to community resources, reduced pressure to rush patient encounters) to minimize STS and burnout will keep clinicians in the discipline longer, while also aiding in recruitment of new physicians to the field. The tasks of CAPs—identification, diagnosis, and research of the physical and mental marks of child abuse and neglect, parental and societal education, advocacy for prevention, and expert testimony—make them valuable components in stopping current child maltreatment and preventing future cases. In this way, CAPs make an impact in not only the lives of maltreated children but on society as a whole. Therefore, it is important to tend adequately to their mental health.

Our study is not without potential limitations. Although we used the professional listservs for SIGCA and Helfer, we are unclear if the participating sample generalizes to the target population of CAPs. Next, the cross-sectional design resulted in a concurrent collection of all measures; thus, the common method variance may have influenced the results. The relationship between STS and burnout was not tested directly; given other researchers’ results, we may not have described their relationship accurately. Additionally, we used a specific set of measures for the constructs of interest. However, these measures provided acceptable reliability estimates in the national sample of CAPs, and these measures have an established recognition in the literature with both validity and reliability supported. Nevertheless, alternative measures may present variant results. Finally, we tested a specific regression model. Model specificity suggests that the inclusion of additional variables will result in alternative findings.

CONCLUSION

A national sample of child abuse pediatric clinicians shows that STS is associated with burnout. Meaning in work and hope can mitigate these effects. Professional organizations should institute education and other support to encourage or provide its members with healthy coping pathways to and minimize STS and burnout.

Disclosure Statement

The author(s) have no conflicts of interest to disclose.

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References

Brought To My Knees

... as a human being, I was brought to my knees by it.

As a scientist and a doctor, I got up off those knees and began asking questions.

— The Deepest Well: Healing the Long-Term Effects of Childhood Adversity, Nadine Burke Harris, b 1975, American pediatrician
Reducing Workplace Absenteeism Caused by Work Stress in a Health Maintenance Organization Department of Psychiatry

Teresa E Thomas, PhD; Roy Eyal, MD; Frank Menchavez, MA; TJ Mocci, LMFT; Gayle Goldblatt; Julie Lanoff, PsyD; Myron Hays, PhD; J Jewel Shim, MD; Timothy P Barry, LCSW

Original Research & Contributions

ABSTRACT

Introduction: It is well established that work stress is a major economic burden not only in lost work productivity but also in increased health care utilization and costs. However, there is little research into effective treatment models for work stress.

Objective: To retrospectively examine the effectiveness of a psychiatric pilot quality improvement program in improving the return-to-work rate in patients in a health maintenance organization who had work stress and took medical leave from work.

Methods: A health maintenance organization’s Department of Psychiatry developed a pilot quality improvement program that reviewed a new program of group psychotherapy and specialty mental health treatment targeting patients who self-identified as having work stress and who requested medical leave from work. The retrospective data were collected from the electronic medical record.

Results: Of the 166 patients who participated in the Work Recovery Group program, 141 (85%) returned to work and did not have any days off after the Work Recovery Group within the 11-month analysis. Involvement in the group was associated with improvement in self-reported symptom severity, with a 4.5-point decrease in the average score on the Adult Outcomes Questionnaire about depression and anxiety.

Discussion: This is the first known treatment program from a health maintenance organization to provide data on return-to-work outcomes. By providing specialty mental health treatment and getting patients back to work more quickly, this program has potential to reduce mental health service utilization. These results show promise for program expansion and have broader implications for health care organizations and employers.

INTRODUCTION

Absenteeism from work owing to mental health symptoms is a multifaceted and complex public health issue with many stakeholders: The employee, employer, health care practitioners, health care insurance company, and public and private disability insurance carriers. If the mental health injury occurred at work or if there are allegations of discrimination, additional stakeholders include occupational medicine clinicians, workers’ compensation insurance, and federal and state regulatory agencies (US Equal Employment Opportunity Commission and the Department of Fair Employment and Housing) as well as other labor and employment law organizations.

Work stress is a known risk factor for negative health outcomes such as elevated risk of coronary artery disease and metabolic syndrome. Conversely, workplace wellness interventions may reduce health care utilization. In 2019, the World Health Organization included burnout as a diagnosis in the International Classification of Diseases, Eleventh Revision, with the following description: Burn-out is a syndrome conceptualized as resulting from chronic workplace stress that has not been successfully managed. It is characterized by three dimensions: feelings of energy depletion or exhaustion; increased mental distance from one’s job, or feelings of negativism or cynicism related to one’s job; and reduced professional efficacy.

Predictors of absenteeism include work stress, low occupational status, subjective lower work ability, mental health symptoms, history of mental health disorders, higher symptom severity, previous absenteeism, high job demands, female sex, lower educational level, smoking, and low perceived general health; on the other hand, an employee’s belief or expectancy of future work success is associated with positive health outcomes and reduced absenteeism.

According to the Centers for Disease Control and Prevention: Work-related stress is the leading workplace health problem and a major occupational health risk, ranking above physical inactivity and obesity. Productivity losses from missed work cost employers $225.8 billion, or $1685 per employee, each year.

Despite the high cost of work absenteeism and the known relationship between mental health and absenteeism, there is little research into effective treatment models. Depression treatment in a primary care setting has been shown to improve work productivity. Returning to work on a modified or graduated schedule reduces the risk of permanent work disability. Treatment is effective in enhancing successful work participation in people with common mental disorders. A deeper evidence base is needed to clarify how to provide interventions effective at reducing the time to return to work (RTW). This study was conducted to examine the effectiveness of a pilot quality improvement program in improving the RTW rate in patients with work stress who took medical leave from work.

METHODS

Setting and Background

This pilot program took place in the adult psychiatric clinic of a large health maintenance organization. In this clinic, mental health treatment is directed by a patient’s presenting symptoms...
Reducing Workplace Absenteeism Caused by Work Stress in a Health Maintenance Organization Department of Psychiatry

and his/her responses on a self-report measure called the Adult Outcomes Questionnaire (AOQ). This measure is routinely used in the Kaiser Permanente (KP) Northern California Region's East Bay Market, in the Department of Psychiatry and in primary care clinics, to evaluate severity of depression and anxiety symptoms. Although there are no empirically validated, peer-reviewed studies on the AOQ, there are KP regional published guidelines for symptom severity. Higher scores on the AOQ indicate that a patient reports more severe psychiatric symptoms.

Patients with self-reported more severe symptoms (AOQ score ≥ 20) are typically referred to the department’s Intensive Outpatient Program. This program provides intensive outpatient treatment for patients with risk factors, including recent hospitalizations and suicidality, with the goals of preventing hospitalization and of stabilizing the patient so s/he can transition to routine outpatient care.

Most patients treated in the Department of Psychiatry do not require this intensive level of care and receive routine outpatient treatment, or treatment as usual. Treatment as usual entails having patients scheduled for an initial intake appointment (by phone, video, or in person) followed by an appointment with a therapist, often 4 to 6 weeks later. At the intake, the patients may be referred to a mental health group treatment (depression stabilization, coping skills, etc.). After the patients see their individual therapist, some patients are placed off work (put on medical leave) until they are scheduled with their therapist again, sometimes weeks away. During treatment, some patients would be taken off work until they can be seen again by their therapist, sometimes 3 to 6 weeks later.

Medical leave, as operationally defined by the Department of Psychiatry, is when a patient has a diagnosis of a psychiatric condition and has functional impairments and problems managing activities of daily living, including working. Medical leave is applied for the purpose of participating in treatment.

Initial data (unpublished) collected in the Intensive Outpatient Program and other group treatments showed that 30% to 50% of patients in these groups were off work primarily because of work stress issues. Additionally, individual practitioners in the clinic had widely variable practices in providing time off work. Decisions about granting time off work are complicated by the possibility of symptom exaggeration and malingering. In consultation with behavioral health managers and disability resource experts, this pilot project was designed to assess the effectiveness of a structured approach to patients with mental health symptoms and time off work with the goals of reducing time to RTW and standardizing the authorization of time off.

A written treatment program was developed for the pilot program, called the Work Recovery Group (WRG). Written consent was obtained for the patients to participate in the treatment program. This retrospective study was regarded as exempt from the institutional review board.

**Patient Selection**

The WRG received referrals of employed adults from the organization’s primary care and psychiatry practitioners. The study inclusion criteria were as follows:

- A licensed mental health practitioner completed an initial psychiatric assessment
- A psychiatric condition such as depression, anxiety, adjustment disorder, and/or an occupational stress disorder was diagnosed
- Symptoms caused impairments in activities of daily living
- Time away from work was requested or indicated for the patient to participate in mental health treatment
- Work stress was regarded as one of the primary stressors

If the inclusion criteria were met, a time off request for sick leave (work slip) was provided until the date that the patient could begin the WRG, typically in a few days from the initial assessment.

**Program Description**

The pilot program started on June 4, 2018. The WRG treatment program was an open enrollment group with a census of 6 to 12 patients entering and graduating at various times. There was no set length of treatment for any individual patient. The WRG met twice a week for 90 minutes each session. If a participant requested a work slip, s/he also completed a self-assessment form of activities of daily living (adapted from the Social Security Administration’s Function Report—Adult) and was scheduled for an individual meeting with a psychologist. During the individual meeting, patients were oriented to the program. Time off work was given in small increments of a few days while patients participated in treatment. Time off work
could be provided by either a physician or a psychologist. To set expectations, patients were instructed that they would likely graduate to modified duty (RTW but may still be able to attend treatment) and then return to full duty within days to weeks.

A licensed clinical psychologist facilitated the group. Each session’s format is described in the Sidebar: Session Format.

Data Analysis

The retrospective data were collected from the KP Health-Connect electronic health record. All data were compiled and collected by the primary author (TT) into a secure database. Data were collected from the pilot program from June 4, 2018, through April 29, 2019. Patients included in the analyses attended at least 1 group session and 1 individual meeting with the group facilitator.

The primary variable considered was how many days off work the patient was provided for mental health purposes before and after each patient participated in the WRG, as documented in the Work Activity Status Form of the electronic health record. The Work Activity Status Form was reviewed for the 3 months before and after each patient completed participation in the WRG. Only time off work for psychiatric illness was included in the analyses. Patients who had any days off because of psychiatric issues were included in the analyses.

A secondary measure considered was the mean AOQ scores for patients who attended at least 2 WRG sessions.

Table 1. Outcome measures of all patients in program and participants with known workers’ compensation claims or litigation

<table>
<thead>
<tr>
<th>Measure</th>
<th>All patients (N = 166)</th>
<th>Patients with workers’ compensation or litigation (n = 18)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOQ score before WRG treatment</td>
<td>26.2 (9.0)</td>
<td>28.8 (6.6)</td>
</tr>
<tr>
<td>AOQ score after WRG treatment</td>
<td>21.7 (10.0)</td>
<td>27.8 (7.6)</td>
</tr>
<tr>
<td>Number of WRG treatment sessions</td>
<td>3.7 (3.7)</td>
<td>6.6 (5.2)</td>
</tr>
<tr>
<td>Psychiatric days off before WRG</td>
<td>12.0 (19)</td>
<td>13.1 (20.0)</td>
</tr>
<tr>
<td>Psychiatric days off during WRG</td>
<td>9.9 (14.2)</td>
<td>25.7 (24.5)</td>
</tr>
<tr>
<td>Psychiatric days off after WRG</td>
<td>8.0 (27.7)</td>
<td>31.4 (55.2)</td>
</tr>
<tr>
<td>Returned to work with no days off after WRG, no. (%)</td>
<td>141 (85)</td>
<td>11 (62)</td>
</tr>
</tbody>
</table>

* Data are mean (standard deviation) unless otherwise indicated (ie, last row).

AOQ = Adult Outcomes Questionnaire; WRG = Work Recovery Group.
Reducing Workplace Absenteeism Caused by Work Stress in a Health Maintenance Organization Department of Psychiatry

(141/166) returned to work after the WRG with no days off in the study period.

A secondary measure considered was the AOQ scores for patients who attended at least 2 WRG sessions, 110 patients. Compared with the initial score before the WRG, the average AOQ score after the WRG decreased by 4.5 points (from 26.2 to 21.7; Table 1). Sixty-six percent of patients did not require additional mental health treatment after the WRG treatment and could be discharged from care.

DISCUSSION

There is scant literature on structured mental health interventions for people with work stress. Often, patients involved in occupational medicine are integrated into traditional mental health pathways. Access to mental health services is limited to individual treatment and/or groups for either diagnosis-specific treatment (ie, bipolar group or depression stabilization) or more broad and general coping skill interventions (ie, mindfulness-based stress reduction, coping skills groups, trauma grounding skills for coping with trauma).

Overall, the WRG appeared to be effective at returning patients to work (85% of all participating patients were RTW). Unfortunately, there was no treatment-as-usual comparison group, but that could be an area of future research. Involvement in the WRG also led to improvement in self-reported symptom severity, with a decrease in the average AOQ score of 4.5 points, a modestly clinically relevant decrease in symptom severity.15 Involvement in the WRG predicted low utilization of future mental health services, but this study is not able to demonstrate causality because there was no treatment-as-usual comparison group.

Some patients made it known that they were involved in either litigation or workers’ compensation claims, although this topic was not formally assessed or measured. This smaller percentage of WRG participants who were involved in either litigation or workers’ compensation (10% of patients) were included in the WRG analyses. When these patients were analyzed separately, they were involved in more treatment sessions and did not seem to have notable improvements in their subjective psychiatric symptoms (Table 1). The role such claims played was not explored. It may be worthwhile to formally assess involvement in litigation or workers’ compensation claims in future similar studies.

Although there are many work stress treatment programs, this is the first known treatment program from a health maintenance organization to provide data looking at RTW outcomes. Limitations of this quality improvement pilot program include a post hoc analysis, no control group, potential for selection bias, and limited sample size. Future research directions can consider analyzing the treatment-as-usual model with the WRG program for RTW rates.

CONCLUSION

This quality improvement pilot program on work stress treatment and absenteeism reduction was believed to be successful in meeting the unique needs of this patient population. Additionally, the program perhaps lowered utilization of both mental health and primary care services, with associated systemic cost savings.

There are hopes of program expansion at the regional level in the future. 

Disclosure Statement

The author(s) have no conflicts of interest to disclose.

Acknowledgments

Kathleen Louden, ELS, of Louden Health Communications performed a substantive primary edit.

How to Cite this Article


References

Polar Bear and Two Cubs
photograph
Richard Mittleman, MD

From Dr Mittleman:
“T[i] took this photograph in 2017 in a very remote area of northern Manitoba, Canada. I was staying at a small lodge owned by 2 Native Canadian brothers near the Wapusk National Park. Wapusk is the Cree name for ‘white bear,’ and the brothers built the lodge in this location because they knew there were dens in the area where polar bears hibernated and gave birth. Once the polar bears leave their dens, sometime between mid-February and mid-March, the mothers take their cubs to Hudson Bay, where they can hunt seals on the ice packs.

“The day I was fortunate enough to photograph this mom and her cubs it was snowing and -40°F. I stood out in the weather for 5 hours photographing while the cubs slept, nursed, and played. There were guests who had been at the lodge for 2 weeks and went home never having seen a bear.”

Dr Mittleman is a retired Pediatrician from the Southern California Permanente Medical Group. He was the first and, at that time, only Pediatric Resident at the Los Angeles Medical Center in California when the resident program was first approved. More of his work can be seen on the cover and at gon2foto.net. Email: gon2foto@verizon.net.
Use of a Graphic Memoir to Enhance Clinicians’ Understanding of and Empathy for Patients with Parkinson Disease

Kimberly R Myers, PhD, MA1; Daniel R George, PhD, MSc; Xeumei Huang, MD, PhD; Michael D F Goldenberg, MA; LJ Van Scoy, MD2,4; Erik Lehman, MS; Michael J Green, MD, MS1

INTRODUCTION

Parkinson disease (PD) is the second-most common neurodegenerative disorder, affecting more than 10 million people worldwide.1 In the US, approximately 60,000 individuals are diagnosed with PD each year, resulting in annual direct and indirect costs of approximately $25 billion.2 Although understanding treatment options for physical manifestations of PD is important, understanding the subjective experience of the disease is also crucial if we are to improve patients’ well-being.3

Comics, a medium that combines text with images to tell a story, have increasingly been used as an innovative tool in medicine,4 and in recent years, have been integrated into curricula for teaching health professionals.5 Studies have shown that reading and/or creating health-related comics can help medical students better understand the particulars of patients living with illness and can even improve a variety of doctoring skills, such as communication, attention to nonverbal cues, and awareness of physician bias.6 Despite a growing literature on the benefits of using comics in medicine,7,8 little research exists on the application of comics with clinicians. We hypothesized that the dynamic, visual form of a comic can enhance clinicians’ understanding of illness from patients’ perspectives and can stimulate empathy.9 To test the hypothesis, we evaluated the response of a group of clinicians to reading and discussing a book-length graphic memoir (an illness story in comic form) about PD, Peter Dunlap-Shohl’s10 My Degeneration: A Journey through Parkinson’s. Specifically, we examined whether reading this comic would positively affect clinicians’ confidence in understanding patients’ experiences, 2) knowledge of PD and perceptions of understanding patients’ attitudes toward potential consequences of PD, and 3) empathy toward patients and their families. We also explored the readers’ attitudes about the potential use of this comic as an educational tool for their patient population.

METHODS

Overall Study Design

We used a convergent mixed-methods approach to ascertain the effect of the comic on clinicians.11 We collected qualitative and quantitative data concurrently, analyzed them separately, and then integrated the data sets to determine whether the qualitative and quantitative results converged or diverged. The institutional review board at Penn State College of Medicine in Hershey, PA, deemed this research exempt from formal review (protocol no. 00007131).

Participants and Recruitment

All individuals who worked in a multidisciplinary, tertiary referral center for movement disorders patients at a Mid-Atlantic academic medical center were eligible to participate. The care team included 18 clinicians: 4 movement disorders neurologists, 1 neurosurgeon, 2 neuropsychologists, 3 nurses/physician extenders, 3 physical/occupational therapists, 1 speech therapist, and 4 movement disorders clinical researchers/educators/other clinicians. The research team recruited potential participants during a monthly

ABSTRACT

Context: Parkinson disease (PD) can be physically, emotionally, and financially burdensome. Understanding its impact from the patient’s perspective is an important way to sensitize clinicians to the challenges of living with PD.

Objective: To evaluate whether a book-length graphic memoir (an illness story in comic form) can help clinicians appreciate PD from the patient’s perspective.

Design: A convergent mixed-methods study of clinicians working in a multidisciplinary movement disorders clinic. Participants read My Degeneration and completed preintervention and post-intervention questionnaires. They also attended a book group discussion. Quantitative findings were compared before and after the intervention, and qualitative data were analyzed for themes.

Main Outcome Measures: Clinicians: 1) confidence in understanding patients’ experiences with PD; 2) knowledge about PD; and 3) empathy toward patients and families.

Results: After reading the book, participants’ confidence in understanding patients’ experiences with PD increased significantly in the areas of stigma and disease impact on patients and families. Clinical knowledge was unchanged. Qualitative analysis revealed 3 main themes: 1) the book provides a meaningful way for clinicians to learn about the experience of living with PD; 2) the medium of comics engages clinicians in ways different from other mediums; and 3) benefits of the book may extend beyond the clinical team.

Conclusion: Clinicians who read My Degeneration gained insight into the psychosocial effects of PD on patients and their loved ones. The book helped facilitate deeper understanding of patients’ experiences living with PD and fostered greater empathy and self-reflection.
team meeting of the multidisciplinary movement disorders clinic. As incentive to participate, the care team members were offered a copy of *My Degeneration*¹⁰ and the opportunity to discuss the book as part of a focus group with their colleagues over a home-cooked meal by the leader of the clinic (XH).

**Description of the Intervention**

The intervention was the aforementioned book, *My Degeneration: A Journey through Parkinson’s*, by Peter Dunlap-Shohl. Written in a comic format, this memoir tells the author’s story of living with PD, describing the impact of his diagnosis, the effects of his illness on his personal life, and the challenges of managing his symptoms (Figure 1). The memoir has been favorably reviewed both inside¹² and outside¹³ the PD community and offers a perspective, mode of delivery, and aesthetic experience for the reader that differs from that found in conventional neurology textbooks and medical journal articles.

**Study Protocol**

During a monthly comprehensive care conference for all members of the movement disorders care team, study participants were provided a set of self-administered preintervention survey questions. On completion of the questionnaires, participants received a copy of *My Degeneration* to read at home. Approximately 4 weeks later, participants attended 1 of 2 semistructured book group-style discussions. Immediately before the discussion, postintervention measures were repeated (these were identical to preintervention measures, excluding demographics). The discussion sessions lasted between 1 and 1.5 hours. Audio files were transcribed verbatim by an experienced transcriptionist who noted all pauses and stops.

**Measures**

Self-efficacy was measured using a 7-item instrument that was created for this study. Using a 0 to 100 scale (where 0 = “cannot do it at all” and 100 = “highly certain I can do it”), the self-administered tool assesses clinicians’ confidence that they are able to understand what it is like for patients to live with PD (eg, the stigma experienced by patients and the impact of PD on family members). It also measures their confidence in providing compassionate care.

Knowledge was measured using a 13-item true/false test that was modified from that of Moore and Knowles.¹⁴ The tool addresses common facts and myths about the disease and has been used in prior research.

Clinicians’ perceptions of patients’ attitudes toward potential consequences of PD were measured using a 15-item instrument that was also modified from that of Moore and Knowles.¹⁴ The tool asks participants to express how much they think patients worry about a variety of consequences of PD, such as disability, dependency, social support, and stigmatization, using a 4-point scale: “not at all,” “very little,” “somewhat,” and “a great deal.”

Attitudes toward comics were measured using 2 instruments: A 9-point Comic Attitude Scale modified from Hosler and Boomer,¹⁵ and a semantic differential scale created for this study.¹⁶ Semantic differential scales have been used in a wide variety of contexts to measure people’s reactions to contrasting words (eg, good vs bad) to derive attitudes toward the concept or subject (in this case, comics).

Overall satisfaction with the book was measured with the Net Promoter Score (NPS). This is a single question asking, “How likely is it that you would recommend *My Degeneration* to a friend or colleague?” with responses ranging from 1 to 10. The NPS is calculated by first categorizing responses as detractors (0–6), passives (7–8), or promoters (9–10), and then subtracting the total percentage of detractors from the percentage of promoters. The NPS scores range from -100 to +100. The NPS is a reliable and valid measure that accurately assesses satisfaction and loyalty to a product or service and has been widely used.¹⁷,¹⁸ This item was measured at baseline, before the book discussion, and immediately following the book discussion.

**Data Analysis**

**Quantitative Data**

All variables were summarized before analysis, and the distributions of continuous variables were assessed using histograms and normal probability plots. Because our outcome variables were

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either ordinal Likert scale variables or were skewed, we used a Wilcoxon signed rank test to make comparisons between preintervention and postintervention and medians and interquartile range to quantify the magnitude and direction of significant differences. To compare the preintervention and postintervention proportion of correct answers to individual knowledge questions, a McNemar test was applied. Statistical significance was set at p < 0.05, and all analyses were performed using statistical analysis software (SAS version 9.4, SAS Institute, Cary, NC).

Qualitative Data

Qualitative data were analyzed using a content analysis approach to identify emergent themes. This method of coding is appropriate for studies whose intent is to provide knowledge and understanding about a concept or phenomenon.19 First, 4 members of the research team independently reviewed the transcript for one focus group (50% of the data) to create broad categories that emerged from the data. This process continued until data saturation was achieved and select passages from the data were randomized by a noncoding member of the research team. The team then organized categories into a preliminary codebook through an iterative process that included broad categories as well as subcategories (codes). Exemplars were selected to represent each of the categories to further define the codes.

Next, this preliminary codebook was used by 4 members of the research team to code the second focus group transcript. These codes were reviewed, and differences in coding were reconciled via group discussion. The codebook was refined accordingly. Once consensus was achieved, the final codebook was used to code the entire dataset (2 coders per transcript). After coding had been completed, the coders met to discuss codes and reconcile differences via group discussion. Finally, codes were reviewed by the entire research team and were collapsed into themes using the constant comparison method.20,21

Data Integration Strategy

Data integration was achieved using a joint display, which is a table that aligns quantitative and qualitative findings so that conclusions from each dataset can be drawn separately and then compared.21,22 This approach yields a more robust understanding of study findings than either dataset alone.21 Divergent responses were managed through group discussion.

### RESULTS

#### Demographics

Twelve clinicians participated in all phases of the study: 3 neurologists, 2 nurses, and 2 physical therapists or occupational therapists, and 5 “other” (physician assistants, nurse practitioners, or psychologists). Participants’ ages ranged from 24 to 64 years, and they were predominantly women (83%). The average length of time working with patients with PD was 7.1 years (range = 0.3 to 20 years).

#### Quantitative Results

##### Self-Efficacy

After reading My Degeneration, participants’ confidence in understanding patients’ experiences of PD increased significantly over baseline, with overall self-efficacy increasing from 73 to 85 (p = 0.001). The greatest changes in self-efficacy related to issues of stigma and the impact of the disease on patients and their families (Table 1).

#### PD Knowledge and Perception of Patients’ Attitudes

Not surprisingly for this seasoned group of clinicians, clinical knowledge about PD did not increase after reading My Degeneration; the percentage of correct responses on a knowledge quiz remained steady (preintervention = 85%, postintervention = 85%, p = 0.563). Clinicians’ perceptions of their patients’ worries regarding the potential consequences of PD also did not change (preintervention score = 55, postintervention score = 56, p = 0.166, where 15 = low worry and 60 = high worry).

#### Attitudes Toward Comics

Two scales were used to assess attitudes toward comics. On the Semantic Differential Scale, individuals expressed significantly more positive views about the value of comics after reading the book (Figure 2). On the Comics Attitude Scale, no change was seen. Spearman correlations between participants’ attitude toward comics and their self-efficacy, knowledge, or attitudes toward potential consequences of PD showed no significant relationship.

#### Net Promoter Score

Before reading My Degeneration, the likelihood that participants would recommend the book was low, with a NPS of -50 (scale of -100 to +100, where -100 = “would not recommend book to family or friends” and +100 = “would highly recommend

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**Table 1. Clinicians’ self-efficacy (N = 12)**

<table>
<thead>
<tr>
<th>How confident are you that you are able to … (0-100 points)*</th>
<th>Preintervention median</th>
<th>Postintervention median</th>
<th>Difference</th>
<th>p valueb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understand the stigma that patients with Parkinson disease (PD) experience</td>
<td>70</td>
<td>85</td>
<td>15</td>
<td>0.008</td>
</tr>
<tr>
<td>Understand what it’s like for a patient to live with PD</td>
<td>70</td>
<td>80</td>
<td>10</td>
<td>0.002</td>
</tr>
<tr>
<td>Understand the impact of PD on family members</td>
<td>70</td>
<td>88</td>
<td>18</td>
<td>0.004</td>
</tr>
<tr>
<td>Help patients cope with PD</td>
<td>70</td>
<td>80</td>
<td>10</td>
<td>0.023</td>
</tr>
<tr>
<td>Explain treatment options for PD</td>
<td>70</td>
<td>80</td>
<td>10</td>
<td>0.039</td>
</tr>
<tr>
<td>Provide compassionate care to patients with PD</td>
<td>90</td>
<td>90</td>
<td>0</td>
<td>0.281</td>
</tr>
<tr>
<td>Explain to patients what they can expect about the course of their illness</td>
<td>75</td>
<td>80</td>
<td>5</td>
<td>0.344</td>
</tr>
<tr>
<td>Overall</td>
<td>73</td>
<td>85</td>
<td>12</td>
<td>0.001</td>
</tr>
</tbody>
</table>

* 0 = “cannot do it at all” and 100 = “highly certain I can do it.”

b Wilcoxon signed-rank test.
Use of a Graphic Memoir to Enhance Clinicians’ Understanding of and Empathy for Patients with Parkinson Disease

book to family or friends”). After reading the book (but before the discussion), the score increased to +38; after discussion, it increased even more, to +77.

Qualitative Results
Content analysis of the transcripts from the group discussion revealed 3 major themes: 1) My Degeneration provides a meaningful way for clinicians to learn about the lived experience of patients with PD, 2) the comic form engages clinicians in ways that differ from other mediums, and 3) the benefits of the book may extend beyond the clinical team.

Theme 1: My Degeneration Provides a Meaningful Way for Clinicians to Learn about the Lived Experience of Patients with Parkinson Disease
The process of witnessing the private, psychological impact of PD as externalized through Dunlap-Shohl’s drawings offered participants new inroads to understand how patients fare both inside and outside the clinic. Reflecting on the impact of receiving a diagnosis of PD, a neurologist commented:

I have to put myself in their shoes—to go home and, gosh, I have to tell my wife I have Parkinson’s … I can do research, I can give a pep talk, and everything. But in their minds, [they are thinking] I have to tell my husband or wife … [Just that part, it never occurred to me.]

The book also prompted clinicians to examine the impact of their communication with patients, specifically, the way the information they impart is received by patients. Recalling Dunlap-Shohl’s stereotypes of various doctors (eg, “The cheery prophet,” “The cockeyed optimist,” and “Dr. Doom”) (Figure 3), one participant said: You know, you think that you're doing something for your patients … but … seeing that page, in particular—I started to have myself go through the lines that I say in the clinic and say, “Wow, did I use that before? Have I done that? Was that the way that was interpreted?”

Relatively, participants indicated that reading the book led to greater self-awareness, which was sometimes surprising to them: I thought it was really, really insightful about the thought process … It just never occurred to me, like every day, they wake up thinking … “Okay, what am I going to lose today?”

Perhaps the most important finding was that participants felt that reading the book enhanced their empathy for patients with PD. One image was found to be particularly powerful (Figure 4). As one participant said: And humans are on this teeny tiny little boat, and they're trying to do something against this monster … I thought, “Yeah! That must be how a newly diagnosed patient feels.”… You just turn the page and wham!

Figure 2. Semantic Differential Scale (n = 12): Shift in attitudes toward comics, before and after intervention.

Figure 3. Doctor Stereotypes: Ineffective ways to communicate with patients about Parkinson disease.

Figure 4. Whale: Metaphor for the unknown effects and impact of Parkinson disease (PD).

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For participants, the expressive visual elements used by the author clarified the information being conveyed and helped them understand what it feels like to live with this chronic disorder.

**Theme 2: The Comic Form Engages Clinicians in Ways that Differ from Other Mediums**

Participants uniformly found the book engaging and indicated that, particularly because of the vivid visual depictions, it captured their attention more than a text-only reading would have done. Even so, the experience of reading a comic was different than expected for some participants. As one person said: Here you can’t, you can’t just look at words. You can’t just look at the comic. You need to look at them both together to get what he was trying to put through, in the story.

A few readers concluded that simultaneously assimilating visual and verbal messages complicated the reading: Yeah, I stopped sometimes. I had to go back and read just the words because sometimes the pictures were a little overwhelming … there was a lot going on. You’re trying to match the actions about what’s going on with the words …. [It was] a little distracting because your eyes were going all over the page, trying to follow.

In this way, some participants found that reading comics required more time and effort than a regular textbook or narrative might. Others, however, noted pleasure in reading holistically: I liked it because, I mean, the illustrations, I could argue, are equal with the words and—reading the words, look at the picture and just take it all in as a whole.

Participants also felt that Dunlap-Shohl’s skill in combining word and image made information more accessible and that *My Degeneration* might help clinicians better explain clinical findings or treatments to patients. As 1 participant expressed: [D]yskinesia and all that stuff, and I thought that those explanations that they gave were really good. Because sometimes I find even as a therapist, sometimes it’s hard to describe [symptoms] in words that people are going to understand. Likewise, another participant said: The description of the DBS [deep brain stimulation] surgery … it was, like, dark, and yeah when he’s in the surgery … the explanation of that surgery [and] the explanation of what happened after … was very clear and accurate but also low enough [readability] level that it didn’t feel overwhelming, like it would be understandable to a lot of people.

Of note, clinicians in the study found Dunlap-Shohl’s description of DBS—and other technical matters—to be accurate and informative. One participant commented: It’s actually amazingly accurate because the way he goes into DBS, he uses a few doctors’ names. They are the persons … who do [this] work. He mentions the name Dr Starr … [H]e is THE person on DBS … It’s just amazingly accurate in that sense, you know.

**Theme 3: Benefits of the Book May Extend beyond the Clinical Team**

In addition to the book’s usefulness for the clinical team, participants emphasized the potential value of *My Degeneration* to patients, particularly for helping them cope with physical, social, and psychological symptoms of PD. There was broad agreement that one particular passage, in which the author describes the common experience of freezing in place and being unable to walk, was especially useful (Figure 5).

One reader said: As a physical therapist, I utilize a lot of those tricks but, easy for me to say as an able-bodied person … “Oh, just do this!” … I marked that page because I felt like … patients will really understand … the whole walking backwards thing.

Participants were resolute in their view that such images could be directly used with patients and were excited to try this in their own practices. One participant commented: You know, if someone was just diagnosed, what are they going to do? They’re … probably not going to hear everything you’re telling them. They’re blanking out … they’re going to go on the Internet; they’re going to find all the stuff, and they’re going to find definitions of tremor, rigidity, bradykinesia—what these words mean … And they’re going to get a very clinical definition … That, coupled with this [book] is much more effective without a doubt. I think it’s a great way of [describing] dyskinesia … [I]t’s much more effective.

Although using *My Degeneration* with patients was uniformly viewed as potentially helpful, a number of participants cautioned that clinicians should choose carefully the patients with whom to share the book, as it might not be appropriate for all patients, particularly those with a recent diagnosis of PD: But if you give it to someone who just got the diagnosis for the first time … it might be a little bit difficult to take. “Oh, is that gonna be me in the wheelchair? Is that gonna be me with the festination?… Is that gonna be me?”

Similarly, participants felt that clinicians should consider carefully if and when to provide this resource to family members and friends, as it could be frightening or alarming if presented at the wrong time.

Finally, an unexpected finding was that some participants thought that this book could be helpful to patients with chronic illnesses other than PD: So, I think you can kind of generalize it to … other chronic diseases like MS … because they’re going to have the depression and all those things and kind of go through the disease process like Parkinson’s.

**Joint Display**

Study participants in this mixed-methods study indicated that they gained insight into patient and family experiences of living with PD by reading *My Degeneration*. Participants also reported changes in attitudes toward the medium of comics.

Table 2 shows integration of the quantitative and qualitative results for the 2 constructs—empathy/understanding of the lived experience of PD, and 2) attitudes toward comics—in a joint
DISCUSSION

This mixed-methods study confirmed our hypothesis that reading *My Degeneration* would improve clinicians’ confidence in understanding the lived experience of patients with PD, as demonstrated by a significant increase in self-efficacy scores and favorable qualitative comments. We found no change in participants’ scores on a test of clinical knowledge or their perceptions of patients’ attitudes toward potential consequences of PD after they read the book. However, the results of the qualitative analysis revealed that clinicians did believe they gained new insights from *My Degeneration*, primarily with regard to the psychosocial effects of the disease on patients and their family members. In facilitating deeper reflection about potential patient experiences, this study suggests that reading *My Degeneration* fosters empathy on the part of clinicians.

We also found that reading *My Degeneration* led to more positive views of comics in general (as measured by the Semantic Differential Scale) and increased the likelihood that participants would recommend the book to others (as measured by the NPS). Qualitative results supported these findings, with participants commenting specifically on the value of the visual imagery in comics and noting that the images provided more accessible descriptions of the issues faced by patients with PD than do other mediums. This finding reflects current comics scholarship, which identifies how comics promote empathic responses to the subject matter by combining words and images to promote a narrative that is understood via emotions as well as through reason.6

A major strength of our study lies in the consistent, convergent findings that emerged between quantitative and qualitative data, but there are limitations. Most importantly, the sample size was small, and the study was conducted at a single site without control group comparisons. Additionally, given the relationships of participants to the researchers, and the fact that the discussion groups were held at the home of the head of the movement disorders clinic at our institution, there was a risk of social desirability bias (ie, wanting to please the researcher), which could have positively skewed the results. Relatedly, the discussion itself may have altered participants’ views on the book, which is an inevitable feature of any group discussion. Further research is needed to confirm our findings, and replicating the study at multiple sites using a randomized controlled trial (perhaps comparing comics with more traditional educational materials) would be useful.

CONCLUSION

To our knowledge, this study is the first of its kind: Combining qualitative and quantitative data to better understand the use of comics in clinical medicine. Specifically, we found that using a disease-specific comic with clinicians might increase awareness of, and empathy for, the patient’s experience of illness. Future work in this area might compare the use of comics with the use of movies (such as “Awakenings”), StoryCorps (stories narrated by people in their own words, at www.storycorps.org), self-help manuals, or support groups. Additionally, subsequent studies might measure empathy directly (via observation of clinic visits before and after the intervention), and/or by surveying the patients/family caregivers as to the empathy of the clinicians. Our team is presently conducting similar studies with patients and family caregivers to better understand how comics may be used in conjunction with conventional treatment. We encourage a broader evidence-based implementation of comics in different fields of medicine—for example, mental illness, cancer, and eating disorders—to help identify how best to use this medium to assist patients, clinicians, and caregivers to navigate the emotional and informational components of illness with greater confidence and hope.
Disclosure Statement
The author(s) have no conflicts of interest to disclose.

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Kathleen Louden, ELS, of Louden Health Communications performed a primary copy edit.

Authors’ Contributions
Kimberly R Myers, MA, PhD, designed and conceptualized the study, analyzed and interpreted the data, and drafted and revised the manuscript. Daniel R George, MSc, PhD, analyzed and interpreted the data, and drafted and revised the manuscript. Xuemei Huang, MD, PhD, designed and conceptualized the study, analyzed and interpreted the data, and revised the manuscript. Michael D F Goldenberg, MA, analyzed and interpreted the data. L J Van Scoy, MD, analyzed and interpreted the data, and revised the manuscript. Erik Lehman, MS, analyzed qualitative data. Michael J Green, MD, MS, designed and conceptualized the study, analyzed and interpreted the data, and drafted and revised the manuscript. All authors have given final approval to the manuscript.

How to Cite this Article

References
Health Care Practitioners and Families Writing Together: The Three-Minute Mental Makeover

David G Thoele, MD; Cemile Gunalp, MD; Danielle Baran, PhD; Jamie Harris, MD; Douglas Moss, MD; Ramona Donovan, MD, CCRC; Yi Li, MS; Marjorie A Getz, PhD

ABSTRACT

Introduction: Expressive writing, the process of self-expression through writing, appears to have beneficial effects. Our hospital’s narrative medicine group developed an expressive writing tool, the Three-Minute Mental Makeover (3MMM).

Objective: To evaluate the effectiveness of the 3MMM to reduce stress and optimize communication between health care practitioners and their patients/families.

Methods: Patients and families were recruited from a Chicago-area children’s hospital from December 2016 through July 2017, from the neonatal intensive care unit, pediatric intensive care unit, inpatient pediatric unit, and outpatient pediatric clinics. Health care practitioners included a pediatric cardiologist, pediatric residents, child development specialists, and pediatric nurses. Practitioner and patient family participants completed presurvey and postsurvey to assess perceived stress and communication levels. Using a standardized script, practitioners led the 3MMM activity, writing concurrently with patients/families. Participants then shared their responses. Presurvey and postsurvey data were compared using nonparametric tests.

Results: Eight practitioners led 96 patient/family members in 3MMM activities and study surveys. At baseline, all patients, family members, and practitioners reported experiencing 1 or more symptoms of stress. After participating in the 3MMM, patients/family members and practitioners reported reduced stress compared with baseline (p < 0.001). A significant improvement in communication was reported by practitioners (p < 0.001). Eighty-eight percent of patients/families reported that the 3MMM activity was helpful, even though only 35% had used writing or journaling in the past.

Conclusion: The 3MMM is a short writing exercise that reduces stress for practitioners, patients, and families. Future studies may help determine long-term effects of the 3MMM.
Hospital from December 2016 through July 2017, including from the Neonatal Intensive Care Unit (ICU), Pediatric ICU, inpatient pediatric unit, and outpatient pediatric clinics. Practitioners identified patients and families under their direct care who appeared to be experiencing stress, either by appearance (looking tired, angry, or sad) or by exhibiting behaviors commonly associated with stress (restlessness, lack of focus, or emotional outbursts) and who met the eligibility criteria, which included fluency in English. Families were related to the index patients (the patients being cared for). When the index patients were deemed by the practitioner to be healthy enough and able to write, they were invited to participate in the study.

Using the standardized script, practitioners offered the 3MMM to eligible patients and/or family members. After verbal consent was obtained, the practitioner assigned the patient/family members a study identification number, which was placed on the packet containing all study materials. All participants (patients/family members and the practitioner) then completed a preactivity survey on paper ranking their perceived level of stress and communication on a scale of 1 to 5; 1 indicated strongly disagree, and 5 indicated strongly agree (see Sidebar: Preactivity and Postactivity Surveys on Three-Minute Mental Makeover [3MMM]). Signs and symptoms of stress were derived from established criteria.14,15

Next, practitioners guided the 3MMM activity at the bedside of the index patient or in the examination room for outpatients. Practitioners, family members, and practitioners followed the writing prompts of the 3MMM, writing concurrently. Practitioners and patient/family participants were then given an opportunity to share what they wrote.

After sharing responses, participants completed a postactivity paper survey, assessing past use of expressive writing, the helpfulness of the 3MMM activity, and again ranking stress and communication levels (see Sidebar: Preactivity and Postactivity Surveys on Three-Minute Mental Makeover [3MMM]). Patient/family surveys were not reviewed by the practitioner at the time of completion. All surveys were placed back into the study packet. If permission was given, the practitioner retained copies of the patient’s and family member’s writing. At the conclusion of the activity, patients and family members received a brochure that described the activity and listed resources available at the hospital for addressing stress for patients/family members, such as social work, pastoral care, and Child Life services. This brochure was provided so participants could repeat the activity on their own if they found it helpful and to provide guidance if the activity elicited feelings that they wanted to explore further.

Demographic and other clinical information related to the index patient was collected from the medical record. Survey responses and study data were collected and managed using REDCap electronic data capture tools hosted at Advocate Children’s Hospital. Analysis was completed using SPSS (Version 25.0 for Windows, IBM Corp, Armonk, NY). Likert-type rated survey responses, before

<table>
<thead>
<tr>
<th>Table 1. Patient demographics (n = 56)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographic characteristic</td>
</tr>
<tr>
<td>---------------------------------</td>
</tr>
<tr>
<td>Sex, no. (%)</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Age, y</td>
</tr>
<tr>
<td>Mean (SD)</td>
</tr>
<tr>
<td>Range</td>
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<td>LOS, d (n = 43; inpatients only)</td>
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<tr>
<td>Mean (SD)</td>
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<tr>
<td>Range</td>
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<tr>
<td>LOS (survey), d (n = 43; inpatients only)</td>
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<tr>
<td>Mean (SD)</td>
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<td>Range</td>
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<tr>
<td>Race, no. (%)</td>
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<td>White</td>
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<tr>
<td>African American</td>
</tr>
<tr>
<td>Other</td>
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</tr>
<tr>
<td>Ethnicity, no. (%)</td>
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<tr>
<td>Non-Hispanic</td>
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<tr>
<td>Insurance, no. (%)</td>
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<tr>
<td>Public</td>
</tr>
<tr>
<td>Private</td>
</tr>
<tr>
<td>Unit of care, no. (%)</td>
</tr>
<tr>
<td>Inpatient, Neonatal ICU</td>
</tr>
<tr>
<td>Inpatient, Pediatric ICU</td>
</tr>
<tr>
<td>Inpatient, pediatrics</td>
</tr>
<tr>
<td>Outpatient</td>
</tr>
</tbody>
</table>

ICU = intensive care unit; LOS = length of stay; SD = standard deviation.
and after the activity, were summarized using medians and interquartile ranges and were compared using the Wilcoxon signed-rank test. The Spearman rank correlation was used to examine the relationship between survey responses, and the correlation coefficient \( \rho \) was reported. A \( p \) value of less than 0.05 was considered significant.

RESULTS

A total of 152 surveys were completed, with 96 surveys by patient/family participants (56 index patients) and 56 surveys by 8 practitioners. Practitioners often led the 3MMM activity with more than 1 family member of an individual patient. The age of index patients ranged from newborn to 24 years. The index patients included inpatients in the Neonatal ICU, Pediatric ICU, and the general pediatrics unit, as well as pediatric outpatients (Table 1). The primary diagnosis of index patients included prematurity, congenital heart disease, neurodevelopmental disorders, anxiety, cystic fibrosis, and other disorders (Sidebar: Patients’ Primary Diagnoses).

Of 102 patients/family members who were initially offered the opportunity to participate in the 3MMM activity, 96 (94%) completed the activity. Patient/family participants in the study included 19 patients (aged 8 to 24 years), 69 parents (49 mothers, 20 fathers), 7 other relatives, and 1 family friend.

Reasons given for not participating in the writing activity included: “I don’t like writing” \( (n = 3) \), “My child is too sick for me to concentrate” \( (n = 2) \), and “I don’t have time” \( (n = 1) \).

Among the 152 patients, family participants, and practitioners who participated in the 3MMM activity, all completed preactivity and postactivity surveys. All 8 practitioners (100%) and 95 (99%) of 96 patient/family participants chose to share their responses.

Stress

In the preactivity surveys, all patient/family participants and practitioners reported experiencing stress, with a variety of symptoms (Table 2). Patient/family participants and practitioners identified exhaustion and not sleeping enough as top symptoms of stress. Patient/family participants reported high levels of frustration and irritability; many practitioners reported increased caffeine intake.

Compared with the preactivity surveys, in the postactivity surveys, patient/family members (median score = 4 vs 3, \( p < 0.001 \)) and practitioners (median score = 4 vs 2, \( p < 0.001 \)) reported a significant reduction in stress (Figure 1). Patient/families \( (\rho = 0.41, p < 0.01) \) and practitioners \( (\rho = 0.45, p < 0.01) \) with greater baseline stress had a greater reduction in stress after the 3MMM activity. Although changes in stress did not differ by patient type/unit among patients/families, practitioners experienced the most substantial reduction in stress in the Neonatal ICU (median preactivity vs postactivity score = 3 vs 1, \( p < 0.001 \)) and outpatient areas (median preactivity vs postactivity score = 3.5 vs 2, \( p < 0.001 \)). Among patients/families,

<table>
<thead>
<tr>
<th>Symptom of stress</th>
<th>Patient/family (n = 96), %</th>
<th>Practitioner (n = 56), %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decreased concentration</td>
<td>48</td>
<td>29</td>
</tr>
<tr>
<td>Exhaustion</td>
<td>72</td>
<td>84</td>
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<tr>
<td>Eating too much</td>
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<td>9</td>
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<tr>
<td>Not eating enough</td>
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<td>20</td>
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<tr>
<td>Forgetfulness</td>
<td>40</td>
<td>23</td>
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<tr>
<td>Frustration</td>
<td>60</td>
<td>34</td>
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<tr>
<td>Getting sick more often</td>
<td>15</td>
<td>7</td>
</tr>
<tr>
<td>Increased caffeine intake</td>
<td>24</td>
<td>75</td>
</tr>
<tr>
<td>Increase in unhealthy choices</td>
<td>20</td>
<td>7</td>
</tr>
<tr>
<td>Increased irritability</td>
<td>44</td>
<td>20</td>
</tr>
<tr>
<td>Less time for exercise</td>
<td>45</td>
<td>27</td>
</tr>
<tr>
<td>Low motivation level</td>
<td>32</td>
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</tr>
<tr>
<td>Poor job performance</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>Sleeping too much</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>Not sleeping enough</td>
<td>66</td>
<td>84</td>
</tr>
</tbody>
</table>

Figure 1. Results of preactivity and postactivity survey responses on the Three-Minute Mental Makeover (3MMM).

Written Comments of Patient/Family Members

How did the writing exercise change your relationship with your practitioner?

Deeper, more personal. Feel like a real team.

One hour ago he was a stranger. Now I have confided some of my deepest secrets and trust him with my daughter’s care.

I think it helped my son and myself be more at ease with the doctor. It was nice to see my son actually share information.

What did you like about the writing exercise?

Time, true sincerity, care, concern, passion.

I was able to write something down that I usually don’t share.

Made me think of things other than the present.

It’s easy to do.

It’s short.
there was an inverse correlation between historical use of writing and reduction in stress ($p = -0.22$, $p = 0.03$). That is, there was greater improvement in stress levels among those who had not previously used journaling to help deal with stress. Among health care practitioners, there was a positive correlation between historical use of writing and reduction in stress ($p = 0.43$, $p = 0.001$).

**Communication**

Patients/families reported good communication with the health care team both before and after participating in the 3MMM activity (median preactivity vs postactivity score = 5 vs 5 [maximum score of 5]). Practitioners reported improved communication with patients/families after the 3MMM activity (median preactivity vs postactivity score = 4 vs 5, $p < 0.001$; Figure 1). When analyzed by patient type/unit, perceived communication after the 3MMM activity improved significantly among families only in the Neonatal ICU (median change = 0, interquartile range = 0–1, $p = 0.008$). Eighty-eight percent of patients/families reported that the activity was helpful, 12% were neutral, and no patients/families reported that the 3MMM activity was not helpful. This positive response to journaling to cope with difficult situations occurred even though only 35% of patients/families had previously used writing to cope with difficult situations (Figure 2). Written comments by families and patients about the 3MMM were generally positive. The Sidebar: Written Comments of Patient/Family Members describes selected comments by patient/family participants.

**DISCUSSION**

The most important finding of this study is that a brief, shared writing exercise is efficacious in enhancing communication and reducing self-perceived stress for patients and health care practitioners in the medical setting.

EW has previously been shown to improve mental health, including depression, postpartum depression, posttraumatic stress disorder in ICU settings, as well as to increase resiliency in caregivers of chronically ill people. Additionally, EW can improve physical health in a variety of other health conditions, including asthma and rheumatoid arthritis, hypertension, wound healing, and HIV. In previous studies of health care practitioners, EW has been shown to promote resiliency, enhance empathy, and decrease burnout.

Most EW techniques described in the literature require a very large investment of time in training and execution, which could be a limitation for busy clinicians who may believe they do not have the expertise to use writing with their patients. Although some authors found benefits after participating in short gratitude writing exercises and others found improvements after writing for just 2 minutes on 2 consecutive days, we found no reports of writing techniques used by health care practitioners with their patients in clinical practice.

Unlike previous EW techniques, the 3MMM was designed to be used by practitioners with their patients in clinical settings. Patients, families, and health care practitioners all reported lower stress after participating in this time-limited, guided writing exercise. Most patients and families thought the 3MMM writing exercise was helpful, independent of past use of journaling to cope with stress. The 3MMM activity appears to be different from most previously reported EW techniques in 3 important respects: It is brief, it involves guidance by the practitioner, and it features concurrent participation in a dyad of practitioner and patient/family member.

Because it is brief, the 3MMM may be used within the constraints of a busy clinical practice. Although the 3MMM does involve a small investment in time, our experience is that using the 3MMM often improves overall efficiency because highly stressed patients and families can take up an inordinate amount of practitioners’ time. By offering patients and family members a structured way to feel heard, the 3MMM can promote team building, improve overall care, and cut down on the number of “unanswerable,” repetitive questions that are often posed by patients and families in difficult medical situations.

The 3MMM is guided by practitioners who know their patients/families well, so they can initiate the 3MMM for those...
who are most stressed and build on and improve the existing therapeutic relationship. In our opinion, this is preferable to being guided by a writing “expert” who does not know the patient/families, as is the case in most previous studies of therapeutic use of EW.12-18,36,37

A distinctive feature of the 3MMM is concurrent writing: Practitioners writing alongside and about the patient/family. It was our impression that positive feelings, for both the practitioner and patient/family, were enhanced when the practitioner wrote something about the patient/family. We believe this simultaneous writing and partner sharing was crucial to the positive findings, and may have helped channel and develop the therapeutic relationship.

The success of the 3MMM in reducing perceived stress for patients, families, and practitioners may be explained by “common factors” such as alliance, collaboration, and empathy, which have been noted in psychology studies to be important for developing an effective therapeutic relationship.79-82 These common factors may have encouraged a collaborative approach among practitioner and patient/family members, as suggested by patient/family participants’ and practitioners’ perception of high levels of communication even at baseline (see Sidebar: Preactivity and Postactivity Surveys on Three-Minute Mental Makeover [3MMM]). Practitioners reported that the 3MMM improved communication with patients and families. Written comments suggested patient/family participants experienced feelings associated with common factors, which would be expected to enhance any therapeutic relationship (see Sidebar: Written Comments of Patient/Family Members). Although this connection is positive and desirable, it may also have influenced the postresponse surveys because patient/family participants may have not wanted to disappoint their practitioner’s expectations of helping them relieve stress. To limit the influence of this potential limitation, surveys were not reviewed by practitioners at the time of the study interaction.

Most practitioners in the current study had no previous experience leading writing activities, yet after a short training session, all were successful in guiding their patients in the 3MMM activity in clinical settings. Results of the current study suggest it would be possible for many health care practitioners to incorporate the 3MMM into their clinical practices.

There are a few limitations to this study. First, there was no control group in this study. It is possible that any expression of compassion by the practitioner may have yielded similar benefits. This was not measured in this study. Future studies might include control patients/families who participate in a neutral writing exercise or who do not participate in any writing exercise, and compare similar prewriting and postwriting responses with those who participate in the 3MMM activity.

A second limitation is the subjective nature of the surveys. That is, the surveys reflect self-reported evaluations of stress and relationships. Future research to evaluate more objective measures of stress might be helpful, such as measurement of cortisol or catecholamine levels. Finally, a third limitation is that because the study required fluency in English, populations who spoke other languages were not included.

It is unknown what the long-term effects of the 3MMM exercise are, whether those who participate in the 3MMM subsequently use journaling to reduce stress and process life events, or how the 3MMM might best be used by practitioners for hospital and outpatient settings. We are currently conducting a follow-up study to assess the long-term effects of participating in a single 3MMM exercise.

CONCLUSION

In an age of time constraints in most clinical settings, the 3MMM is a simple, brief writing exercise that can be used by health care practitioners in a variety of inpatient and outpatient settings. The 3MMM was helpful even for people who had not used journaling or EW in the past. The 3MMM is a new way to help patients and families better cope with stress. Health care practitioners who write alongside their patients may decrease their own stress and improve communication for all participants. 

Disclosure Statement

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Authors’ Contributions

David G Thoele, MD, conceptualized and developed the 3MMM writing tool, designed and implemented the study, participated as a practitioner in the study, and directed manuscript development.

Cemille Gunalp assisted with the study and survey design, collected data, and assisted with manuscript development.

Danielle Baran, PhD; Jamie Harris, MD; and Marjorie A Getz, PhD, assisted with tool and study design, participated as practitioners in the study, and contributed to manuscript development.

Douglas Moss collected data, and assisted with manuscript development.

Yi Li, MD, provided statistical assistance and also guidance in content and interpretation of the manuscript.

Ramona Donovan, MS, RD, CCRC, assisted with study design and implementation, and contributed to manuscript development.

All authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

How to Cite this Article


References


Humanity

As a physician I would rather be humane than encyclopedic. I can always look up the information, but where can I find humanity?

— William H Crosby, Jr, MD, 1914-2005, American physician, considered one of the founding fathers of modern hematology, inventor, and published translator of poetry
Ethics in Narrative Health Interventions

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ABSTRACT

The thrust of narrative medicine is that patients and communities construct stories that guide their lives and give meaning to both health and illness. The responsibility of health care practitioners, therefore, is to learn how to read these local narratives to provide care that is relevant to an individual or community. Given the recognition that interaction must be tailored to the subjective experiences of patients and their communities, can there be universal ethical standards in the treatment of illness? We argue that the constructed nature of patient experiences does not pose a threat to making ethical clinical judgments. The solution to this dilemma requires that the traditional distinction between objectivity and subjectivity be eschewed by clinicians in favor of establishing dialogue with patients. Narratives are never created alone and are therefore not esoteric. Listening carefully to patients’ stories is an ethical practice that can be fostered in health care settings. Subjectivity can be embraced by clinicians without jeopardizing ethical or evidence-based patient care.

INTRODUCTION

Narratives have become increasingly important in a variety of areas such as psychology, philosophy, and literary criticism. Narrative medicine also has become an important topic. The point of this trend, in general, is that the delivery of health services should become more holistic and sensitive to the claims of patients. In contrast to the traditional biomedical model, physiology should no longer be viewed as standing apart from the patient experience. Advocates of narrative-based health care claim that in the absence of individual and collective biographies, biomarkers and other facets of physiology have little importance.

This trend is compatible with the philosophy behind the Community Mental Health Act of 1963, not to mention the growth of community health centers that began a few years later. After this legislation, services were supposed to be offered in the “least restrictive environment,” which usually means the community. Although there were major challenges to realizing community-based care without dedicated funding streams, some of which never became available, community health centers today make a full range of outpatient and preventive services available, including limited inpatient care. The aim of providing care in community settings is to ensure that services are attuned to local norms, with regular input from patients, community advocates, and other nonmedical people to provide a holistic, multidisciplinary vision of how treatment should proceed. Today, this influence can be seen most clearly by the inclusion of patients and residents on health centers’ boards of directors, of which laypeople must comprise a majority.

The narratives that are provided by these patients and residents about health and illness frame behavior and events and provide biomedical data with meaning. For example, what is meant by illness or mental illness is revealed in the narratives that patients bring to the medical encounter. The importance of these narratives for everyday medical practice is that services can be made more relevant on the basis of how patients and communities interpret themselves and their situations. The goal is to engage patient stories so that this information can be used to improve the effectiveness of a therapeutic intervention. And although clinicians are limited in the time that they are able to spend with patients, there are opportunities to engage patients’ stories in various parts of the standard medical interview; even amid a hectic schedule, the principles of narrative medicine can be adopted to improve communication with patients.

Narrative-based care is part of a larger movement that tries to elevate the dignity of individuals and communities. The idea is that no longer should medical professionals or other caregivers dominate service delivery. In narrative medicine, what patients have to say is vital not only to providing patient-centered care but also in arriving at a sound diagnosis and effective treatment plan. Clinicians, for example, should not ignore the histories of patients’ communities, personal backgrounds, and pertinent cultures during the medical encounter. For this reason, Engel made his famous call for a biopsychosocial model of health care. Engel’s point is that a proper evaluation of health status should be broad, reach beyond physical elements, and include how patients feel about themselves and understand their environments.

Medical and social services, in other words, should be attuned to the “world” that is enacted in a community. A world is simply the frame of reference that is defined by patients—a realm of living composed of a stock of relevant knowledge, customs, and practices. World entry, therefore, allows practitioners to understand how patients interpret behaviors, so that relevant therapeutic interventions can be provided. The big idea is that through the incorporation of knowledge specific to a patient’s world, clinical judgments will not violate the values of individuals or communities.

However, a problem is thought to arise at this juncture. Given the influence of patients and their perspectives, can ethical judgments still be made? Without the usual objective and universal standards that underlie much of biomedicine, some critics fear that norms will proliferate without any basis to substantiate
ethics in narrative health interventions

The relativism introduced by integrating individual patient stories might threaten clinicians’ ability to identify ethical principles that are relevant across a diverse patient panel. A focus on narratives, however, does not signal automatically the onset of a cacophony of claims that cannot be reconciled. Quite the opposite, because neither personal nor collective narratives are created alone, a framework for ethics is available that is alive and practical. The purpose of this article is to lay the groundwork for this strategy. Through a discussion of the philosophical background of traditional and narrative ethics, we will provide a number of examples to elucidate how clinicians can adopt ethical strategies while at the same time promote the general principles of narrative medicine in their practice.

In clinical settings, people can treat one another with dignity in the absence of grand moral imperatives. Zaner17,18 argues, for example, that principlist ethics—rooted in universal rules or laws of decision making—are not necessarily helpful in sorting out how patients and clinicians should interact. The standard critique of principlism includes a wise call for clinicians to be pragmatic, avoid universal rules, and deal with concrete problems. Nonetheless, while avoiding abstractions, problems can still be treated in a naturalistic manner, as examples of standard cases. In line with the thesis of this article, that narrative ethics can be integrated into everyday practice, practitioners are encouraged to move away from abstract rules when making clinical judgments and engage the worlds created by their patients and communities.

**DISCUSSION**

**Philosophical Background**

This “narrative turn” elevates interpretation and human agency in importance. In this regard, the usual Cartesian dualism that is operative in health care, particularly biologically focused interventions, is subverted. What dualism means in the health context is that interpretation (subjectivity) and the body are thought to occupy different realms, and thus the body can be treated as a thing or object that can be observed impartially.21 Subjectivity, by contrast, has been ignored traditionally because this element was deemed unhelpful or potentially disruptive to producing an objective diagnosis and carrying out an appropriate treatment plan. Narrative medicine, however, treats dualism as defunct. If narratives and interpretation inundate everything that is known, subjectivity should no longer be separated categorically from objectivity, so that patient physiology can be readily isolated and serve as a reliable source of knowledge for clinical decision making.22

The traditional pursuit of objectivity that has substantiated the biomedical model relies heavily on the ability to isolate patient experiences and any influence of subjective interpretation. Dualism, in fact, is the centerpiece of biomedicine. With the undesirable effects of individual interpretation minimized by focusing on objectivity, proponents argue that reliable clinical procedures can be established. But the narrative turn compromises this outlook because interpretation is pervasive and unavoidable in any human interaction. Following the narrative turn in philosophy, any claims that interpretation should simply be avoided are difficult to accept.24

One outcome of this antidualist maneuver made in narrative medicine is that a patient’s or community’s worldview becomes important. Patient experiences become relevant when behavior or events are understood to be filtered through language rather than simply objective—an extension and deepening of the earlier Sapir-Whorf hypothesis. Rather than self-standing, facts presented by patients are framed by language and given significance.19 As a result, health and illness, for example, have meaning constituted by individuals and communities that cannot simply be measured empirically. For this reason, personal or collective narratives become vital in comprehending both illness and wellness correctly.26

In the absence of dualism, physiologic and other traditional objective indicators must be viewed as signs that require interpretation. As Frank7 argues, devoid of interpretation, data such as symptoms are things that say little or nothing. Making a diagnosis, accordingly, is an interpretive process, whereby the attempt is made to understand individual or collective narratives in their own terms.27 “Narrative competence,” the ability to read patients’ stories accurately, is thereby essential to unearthing relevant knowledge about a case or problem.6 In this regard, Mishler28 writes that the “voice of medicine” should not be allowed to overshadow the voices of patients or communities. Because every piece of data is embedded in a story, facts should be interpreted according to a relevant storyline if they are going to be properly understood. The problem with Mishler’s work, however, is that he does not formulate a philosophy of language that informs his advice.

In view of this narrative outlook, people should not be thought of as simply having a disease or other problem, similar to a possession. This portrayal is inadequate because they are always interpreting a malady. This realization has shaped the more recent move toward first-person language in medicine to remind clinicians that patients are more than just a disease. Epileptics are more properly referred to as patients with epilepsy, for example. Rather than encountered, any illness is situated in a patient’s world; problems are therefore related to a myriad of claims, perspectives, and unrelenting interpretations. As clinicians say, every problem is presented and thus always shaped in one way or another by a patient’s experience.

Some critics consider critiques of objectivity a well-worn topic in discussions of health care. But the position advanced by narrative medicine goes beyond the usual criticism that values and facts are related29 or that knowledge is enmeshed in the patient-physician relationship.30,31 There is no doubt that in these viewpoints, positivism, or the reliance on objectivity, is called into question. The influence of dualism in medical practice, however, is not so easily overcome. In these formulations, facts tend to still exist alongside values in the clinician-patient interaction.

A proper reading of narratives, on the other hand, is not equivalent to a close or sensitive examination of facts. Even viewing values as supplemental to facts is insufficient. Indeed, facts do not exist outside the frame provided by narratives.32 An adequate reading requires that the personal or collective world created by these stories be appreciated. As will be discussed later, this issue is at the crux of narrative ethics.
Critique of Objective-Based Interventions

Clinical interventions based on biomedicine are supported by dualism, and thus objective features are presumed to be available to guide clinical judgments. Physiologic properties, for instance, are thought to provide brute data that serve as reliable indicators of a health problem.30 In the face of dualism, remember that the body is an object available for investigation.

Not all interventions are connected directly to physiology. Often more social considerations are involved in clinical assessments. At the core of these evaluations are so-called social indicators, such as demographic or economic features, that are also treated as objective.34 As opposed to physiology, however, these elements are clearly cultural and reflect various norms and behavioral traits. Anxiety, for example, is not initiated by empirical properties but presupposes difficulty interacting effectively in different contexts and with various people.

The issue that must be addressed when moving into this social arena is that individual or collective reactions should be expected. Let’s take seriously the example of anxiety. People experience anxiety in a specific situation, instead of in some free-floating manner.33 They are always interpreting symptoms of anxiety, rather than simply experiencing them and reacting accordingly. As a result, identical environmental conditions might provoke entirely different reactions: Anxiety in some individuals or groups and anger in others. In this sense, people do not respond in a knee-jerk manner to events but frame conditions in often idiosyncratic ways.

If these situations are going to be treated as objective, a method must be used to tabulate and classify social indicators that avoids interpretation. Poor housing and overcrowding, which are often presumed to be objective features, are often linked to conditions such as anxiety. These data are often introduced into the clinical record as social determinants of behavior without any mention that they have cultural significance and local meaning.30 What bad housing means is not necessarily obvious or a universal designation. This determination, in narrative discourse, requires that the biography of a person or community be grasped.

At this clinical juncture is where devices such as the Diagnostic and Statistical Manual of Disorders, Fifth Edition or other “expert systems” are considered helpful in biomedicine.37,38 By using logic trees to gather and evaluate evidence, the image can be created that judgments are mechanical. One critic has referred to this process as indicative of “cookbook medicine.”39 The point is that recipes are not usually thought to involve interpretation. Formalized rules are simply followed until a final clinical decision is reached. The assumption is that logic is clear and devoid of any bias. The clinical judgments that are produced are thought to be impartial and unaffected by clinicians or anyone else. Clearly, such an approach that relies on objectivity is insufficient for understanding the complex relationship between patients’ backgrounds and their illness progression.

But what about diseases such as HIV/AIDS that seem to be linked firmly to physiology? Is interpretation still relevant? In the early years of AIDS activism in the 1980s, many people who had this disease began to question the basic truths of medicine, along with medical experts.40 These people believed that the experiences of those with AIDS were being overlooked, and thus certain key insights and connections were being missed. Because of the involvement of these laypeople, perceptions of AIDS changed in the medical community and new procedures and drug trials were conducted. The point is that knowledge outside the medical arena proved to be valuable in dealing with this illness. Local interpretations of this condition mattered and framed this disease in ways that were important to a particular community of individuals who were experiencing illness.

Consider also how narratives play into the issue of disabilities. In the field of disability studies, a movement appeared in the 1970s that rejected the biomedical model.41 This perspective, critics believed, was reductionistic because people with disabilities were treated as little more than physical objects. Therefore, the “social model” was offered as a replacement.41 Many changes were suggested, but most important for this discussion is that people’s disabilities are framed or shaped by their values, ambitions, commitments, and so forth. In short, they should not be judged by some objective, able-bodied assessment of their physical or mental abilities.

In each of these examples, objective physiologic or social indicators provide little insight into the lived character of a physical or mental illness. How these phenomena are personally and interpersonally navigated, and thus experienced, is overlooked. Whether an intervention is needed or appropriate is a matter of educated guesswork because the experiential worlds of people are ignored. What patients understand to be a problem, including their responses to situations, is obscured by professional nomenclature and theory. Yet these sources of bias are seldom recognized as harmful.

These criticisms of objectivity, however, are often taken seriously by clinicians who aim to connect with their patients and provide effective care. Indeed, many acknowledge that health care services should be patient-centered and thus culturally attuned.42,43 On the other hand, there may be a downside to this thinking. Specifically, does the move away from objectivity complicate efforts to develop guidelines that can be applied when dealing with diverse individuals or groups? By focusing interventions in a social and cultural way, and avoiding generalizations, ethical standards may be compromised. If narratives are unique and defy classificatory schemes, can ethical judgments be made about how treatments should proceed? The usual assumption seems to be that without an objective foundation, reliable judgments are difficult to sustain. This conclusion, however, reflects a tradition in which ethical standards are expected to be unaffected by interpretation and other sources of human caprice.

An Earthly Ethic

The traditional universal ground of ethics is obscured by the narrative turn. However, according to Marx,44 this trend in philosophy, and the associated pervasiveness of interpretation, does not necessarily spell the end of ethics. In fact, he contends that ethics without the usual universals and abstract exemplars is possible. He refers to this option as an “earthly” ethics. Marx uses this term specifically within the framework of existentialist philosophy. Consistent with this philosophy, he is making the
point that all norms and values are invented by individuals in relationship to their communities. These values are reinforced and gain legitimacy through everyday interaction. The result is that the only possible origin of ethics are the activities whereby people interpret their surroundings and struggle to make sense of their lives.

Fundamental to this new ethics is that everything is affected by the attempts of people to make their lives meaningful, particularly the narratives they tell about themselves and others. There is no God’s-eye view, or perch, that can supply a timeless referent for ethical judgments, because every standard is enmeshed in interpretation and the related contingencies.124-47 The alternative is that ethics must begin and end from where people are located, that is, their daily existence with others. As a result, ethics must be conceived horizontally rather than vertically, or at the nexus of what Buber46 calls “genuine meeting” between people.

What is this place like where meeting is possible? The most obvious trait is that people do not exist independently; narratives are thus never written alone.47 In the words of Lévinas,46 people always exist “face-to-face” and are embedded in this interaction. Daily existence, in this sense, is thoroughly intersubjective and united through discourse; thus, nothing objective is either available or required to unite people or judge ethical behavior.

**Intersubjectivity** is a term popularized by phenomenologists and some existentialists.49 Their aim of introducing this concept is to counteract the then prevailing scheme that treats people as individuals who are categorically separate from one another. Perhaps a “community of discourse” is the best way to characterize this intersubjectivity.50-53 But discourses would be more accurate. After all, several narratives are present regularly that overlap and sometimes come into conflict.

Despite this proximity and the ability to interact, people never merely confront one another. For interaction to take place, individuals and communities must learn to read one another successfully. They must engage one another through their respective narratives, so that they are “in tune.”54 Ethical principles, accordingly, must reflect this sort of interpretive, iterative connection.

An ethic mediated by interpretation is operative in this situation.52 Specifically, individuals and communities must be able to read others in their own terms. The new imperative is to listen, reflect, and enter the worlds of others. The argument is not to prescribe how listening should be codified, as a specific moral imperative or set of rules, but to let the stories of others be expressed and properly situated. Narrative ethics requires that people read and adjust to one another, including their respective situations, and establish mutually respectful bonds. Hence, ethics begins with local narratives that specify how interaction should proceed.53

Ethics is thus dialogical.54 Individuals or communities are treated properly when their respective stories are read as intended, rather than distorted by the extraneous narratives often introduced by clinicians and their diagnostic devices. For example, when a clinician uses a diagnostic narrative unrelated to how patients construct their lives—through the use of a fixed health checklist or assessment instrument—this principle is violated. A precise judgment may be rendered, one that stems from following specific rules and standards but is irrelevant and possibly damaging.

A diagnostic checklist, for example, tends to interrupt dialogue. The thrust of this method is to achieve uniformity and thus clarity. This instrument is designed according to the principle of standardization, with the aim of ensuring that every patient is presented with identical cues. Any differences among patients are presumed to be real, not a product of procedural errors. The problem is that interpretation is overlooked because the goal is to achieve clarity through methodologic rigor. How these cues are defined locally is not important.

For some time, scholars in philosophy have been trying to reconcile subjectivity and objectivity,55-56 including in discussions of ethics.57-60 Sometimes these proposals in health care begin to consider, for example, the importance of empathy, compassion, and emotional management/support or respect, and recognize the importance of attitudes and practices supported by the humanities. The problem is that, for the most part, these forays continue to operate in a dualistic framework and thus struggle to include the human element. Universal rules are regularly operative, with the proviso that they be tempered by situational conditions. In these cases, local knowledge may only supplement a clinical application.

Take the work of Beauchamp and Childress,57 for example. Traditionally, their position has been associated with principlism and the search for universal rules for making clinical judgments. But these authors responded to their critics and are now recognized to be more flexible and pragmatic than originally conceived. Making ethical decisions, they acknowledge, is hardly simple and involves context, conflicting positions, and compromises, that is, balancing a host of opposing positions. Nonetheless, the work of Beauchamp and Childress is hardly narrative-based, and they seem to be merely equivocating about the nature of the information needed to make sound decisions.

A narrative-based ethical practice, on the other hand, is world-centered and does not strive to achieve objectivity. In this sense, dialogue is not merely a conversation or reciprocity that tries to facilitate the transfer of information. On the contrary, as Gadamer describes, dialogue is achieved when the boundaries are crossed that separate worlds, which allows a “unified picture of illness to be achieved” by entering the worlds of a patient or community. Furthermore, these patients are neither manipulated nor misconstrued but grasped in their own terms, without being cajoled by preconceived diagnostic schemes or other clinical instruments.

In clinical practice, world entry begins by both patients and clinicians recognizing how they are interpreting and thus constructing a world. As part of this reflection, they begin to realize that their respective perspectives are limited and that others have legitimate viewpoints that should receive consideration. They can thus cross the boundaries of their respective worlds and enter the worlds of others. Through a dialogical process of give and take, an iterative activity, physicians can verify that world entry occurs and ensure that a correct reading takes place. In this framework, clinicians must go beyond seeking patient contact, detailed
descriptions of a patient’s situation, or robust data related to illness or patient profiles, but instead must recognize that illness is embedded in a patient’s interpretive world.

CONCLUSION

A guiding question of narrative-based ethics is “whose reality counts?” With social life consisting of a constellation of narratives, fundamental to earthly ethics is the protection of each story. Ethical judgments and the proper reading of these worlds are fundamentally intertwined. In short, when the impact of narratives is recognized, interventions should extend beyond simply seeking periodic input from patients; the standard consultation or conversation is no longer sufficient. Patients or communities, instead, should be central to determining the narrative that is relevant and how the pertinent storylines should be read.

The training of narrative-based lay health workers in a recent health project on the Island of Granada provides an example of this philosophy in action. This project was devoted to assessing women’s breast health. Although Grenada has only 100,000 residents, the island has a high rate of breast cancer. The point of this project was to train 10 women as lay health care workers who could help screen patients and connect individuals to a medical home.

The aim of the initial stage was to conduct a health survey in the neighborhood that was the focus of the project. After all, breast health does not occur in a vacuum. But the instrument used had to be validated by the community. After consultations with various members, through house-to-house contact, this survey instrument was altered in language and content. Two results of this community validation were important. The first is that better data were collected, and second, better rapport was established with the community.

After this phase, a dialogue was initiated with women in the community about breast health. The point was to discover how these women understood breast health, whether they were comfortable talking about breast abnormalities, and if they felt confident learning to conduct breast self-examinations. The goal was to enter the world of these women through dialogue. The lay health workers, accordingly, received instruction not simply in interviewing—an exchange of information—but how, through reflection and iteration, to make sure they were hearing what the women in the community were actually saying.

As illustrated in this example, practitioners and their patients or communities should approach each other as partners in the search for truth. Accordingly, clinicians and other practitioners should double-check or reflect seriously on what patients express, especially language that seems familiar, for these expressions are easily taken for granted and misunderstood. They should work together to ensure that nothing is ignored or misconstrued. Additionally, a wide range of input should be pursued, beyond the usual case history, to give an adequate portrayal of a patient’s world. After all, what may appear at first to be minor details of a person’s narrative may be truly important.

As part of narrative-based work, and key to world entry, clinicians should realize that all patient or community stories are rational, although the reason that is expressed may, at first, not make sense. A patient’s narrative may appear to be bizarre at first glance—such as excuses for not taking medication or not following through with a treatment regimen—but with a dialogical interrogation, the rationality that is operative can be revealed. Even if a physician believes that the rationality exhibited by a community violates good medical practice, for example, only through dialogue will attitude change come about in a reasonable manner. Through world entry, the rationale can be exposed and appreciated that is crucial to a relevant, and thus nonmanipulative, discussion, assessment, and course of treatment. By adhering to this strategy, practitioners and caregivers may avoid harm, while engaging individuals and communities in a respectful manner.

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References
The most important contract that can be made, is that which takes place between a sick man and his doctor. The subject of it is human life.

— Benjamin Rush, 1746-1813, physician, politician, social reformer, humanitarian, educator, signer of the Declaration of Independence, delegate to the Continental Congress
Golden Light

photograph

Michael House, LCSW

Mr House states, “This macro rose photograph was taken in my SW Portland, OR, rose garden.”

Mr House retired from the East Interstate Medical Office in Portland, OR, in 2014.
He has received awards from the American Rose Society for his macro photography.
Important Considerations for Design and Implementation of Decision Aids for Shared Medical Decision Making

Sean Koon, MD, MS

ABSTRACT

Introduction: Decision aids are software or paper-based tools that enable patients and health care practitioners to work together to make optimal treatment decisions. Although there are decades of favorable research for the use of decision aids, there is wide variation in their development and implementation.

Objective: To review the literature and provide a summary of best practices for the design, implementation, and assessment of decision aids.

Methods: A literature search and screening process was employed with a focus on systematic review articles. The resulting articles were synthesized and summarized into recommendations regarding the optimal design, implementation, and appraisal of shared decision-making tools.

Results: Designers of decision aids should initially focus on engagement by involving health care practitioners and patients to ensure the decision aids are pertinent to the situation and not perceived as time consuming. The International Patient Decision Aids Standards help ensure quality in design. Patients should be able to select information in a manner that suits them and view it in a way that allows them to evaluate trade-offs. In reporting of statistical risks, format bias should be avoided through careful and consistent choice of format and by adding visual representations. Decision aids should be tested in real settings with iterative improvements. For appraisal of the implemented decision aids, consider using the Control Preference and Decisional Conflict scales.

Discussion: Further research is recommended regarding optimal engagement of users with decision aids and exploration of the distinct opportunities that computerized decision aids and online patient communities may present.

Conclusion: Decision aids can be a valuable tool for shared medical decision making. Their quality and usefulness can be maximized by involving users in their creation and by attending to key considerations in their design, implementation, and appraisal.

INTRODUCTION

Decision aids are software or paper-based tools that enable patients and health care practitioners to work together to make optimal treatment decisions by educating patients about the risk and benefit of different options and aligning those options with their personal values. Although informational handouts or patient instructions are helpful, decision aids take a more targeted approach by "making explicit the decision that needs to be made, providing information about treatment options and outcomes, and helping the patient clarify personal values." Certainly, shared decision making can be done without decision aids, however these tools may help to standardize and facilitate that process. In a Cochrane Review of 105 studies involving 31,043 participants, the authors conclude:

Compared to usual care … people exposed to decision aids feel more knowledgeable, better informed, and clearer about their values, and they probably have a more active role in decision making and more accurate risk perceptions. There is growing evidence that decision aids may improve values-congruent choices.

Although there are basic standards for what constitutes high-quality decision aids, there is neither consensus around best practices nor any holistic and practical commentary regarding the development, implementation, and evaluation of decision aids. Therefore, the aims of this article were to complete a narrative review of the use of decision aids in shared decision making and to summarize the key considerations for developing, implementing, and assessing decision aids as tools to support effective shared decision making. Such a summary could serve as a reference for any health care professional or team who wishes to design, implement, and assess decision aids.

The preponderance of research has lent itself to many systematic reviews and meta-analyses that serve as the basis for this narrative synthesis. With the aim of supporting the creation and effective use of decision aids, the following questions were considered:

1. Which overall approach should be used when designing a decision aid?
2. Which specific decision-support features are most effective?
3. Which factors should be considered in implementation?
4. How should the effectiveness of a decision aid be assessed?

METHODS

A literature search, screening, and appraisal process was implemented using the National Library of Medicine's PubMed database with Medical Subject Headings (MeSH) terms. A literature search was performed in PubMed and constrained to the MeSH term Decision Support Techniques. (This was the only term that included patient involvement in decision making.)

Searches were performed within “Decision Support Techniques” using the terms: Shared decision, decision aid, and decision aids. Duplicates were removed, resulting in 1031 total articles. Because the goal of this study was to obtain generally applicable insights with a broad, established evidence base, the search was further constrained to review articles only. This returned 188 articles across all terms. Citations were reviewed, and articles not
pertaining to design, implementation, and assessment of decision aids were removed, with 12 articles remaining. This search approach did not retrieve any systematic review that addressed the question of assessment of decision aids. Because of this, the prior search was repeated without constraint to review articles and with the addition of appraisal and evaluation search terms. Thus, the search used the MeSH term Decision Support Techniques with the following terms: Shared decision, decision aid, decision aids, appraisal, and evaluation. With this second search, 354 citations were found, resulting in 1 pertinent review article not found previously (which had perhaps been erroneously classified as a research support article instead of a review).

RESULTS

The literature searches revealed a total of 13 pertinent review articles (Figure 1). These articles were organized and synthesized into the following narrative review describing basic insights and considerations for all stages of the decision aid lifecycle (Table 1).

Design Process

Given that decision aids require engagement from both patients and health care practitioners, creating a design process that explores the users’ needs (user-centered design) and workflows could potentially increase usage. Matlock and Spatz9 form a theoretical framework for the design of decision aids that embraces a user-centered design perspective. They suggest 1) understanding the decision, including risks and benefits and an idea of “what’s important” for practitioners; 2) creating a first draft; 3) iteratively modifying or adjusting the tool with potential end users; and 4) testing the tool in a real setting. A similar approach is described by Coulter et al. A study in progress by Witteman et al will evaluate what aspects of user-centered design are currently used in developing decision aids and to establish a “measure of the user-centeredness of development processes and identify practices that are likely to be optimal.” To support the overall quality of decision aid design, the International Patient Decision Aids Standards (IPDAS) were developed from an expert consensus approach and provide a detailed checklist addressing aspects of the content, development, and effectiveness of decision aids. The items on this checklist are key considerations and should be addressed in the design of new decision aids.

Design Features

Many of the findings in this review pertain to the use of specific features in decision aids. They are organized here in the emergent categories of educational material, representing risk, values clarification, and use of narrative.

Educational Material

The foundation of decision aids is the education of patients about treatment options. Having accurate, up-to-date information is essential to the basic quality of a decision aid,10 which now may be facilitated by both electronic libraries and computer-based decision aids.

A study of computer-based decision aids by Syrowatka et al11 suggests that designers avoid tailoring information to specific patients, but rather give users control over how much and what type of information they view and “allow patients to select the order, level of detail and type of information presented.” Providing patients with a “notebook” for them to record their learnings or questions was helpful as well. When representing information, Abhyankar et al12 found that a side-by-side display tends to give patients a greater sense of having a balanced approach to decision making, possibly by enabling patients to see decision trade-offs.

Representing Risk

An essential aspect of education involves communicating risk. A group of 14 researchers developed an expert consensus document addressing the need to effectively represent treatment risks.13 They suggest using a consistent format throughout documents (ie, using percentages or using simple frequency formats such as 3/100). Also, “1 in x” formats (ie, where the denominator is the variable) should generally be avoided. They suggest that the risk of a single event can be adequately described with either percentages or simple frequency formats (eg, 3/100) but that comparing the risk of 2 or more independent events (ie, “chance of improvement with drug X compared with placebo”) is better represented with percentages. The magnitude of numbers should be considered as a source of format bias (ie, comparing 0.001 and 0.0003). The use of visual formats may reduce format bias, but it is also important to generally “take into account the numeracy and graph literacy of the audience.”11 It is also important to make time frames explicit, such as “10% risk per year” vs “10% lifetime risk.” Caution with tailoring risk assessments to individual patients may also be prudent. A study by Scherer et al14 found that 20% of the patients did not believe their personalized risk numbers for a variety of reasons. The researchers concluded that “the benefits of tailored risk statistics may be attenuated by...
a tendency for people to be skeptical that these risk estimates apply to them personally.”

**Values Clarification**

The goal of decision aids is to help patients to make treatment choices that fit their own values. The most common approach is the implicit approach, which involves listing the features and outcomes of each treatment option for the patient to reflect on, including possible physical, emotional, and social consequences. Explicit approaches require the patient to explicitly declare their values by having them write them out or by having them numerically rate the importance of each potential outcome, for example, “impact on bowel function.” Fagerlin et al explored the impact of explicit values clarification methods and found mixed results in general and no consensus on the best approach. Syrowatka et al also found mixed results. At a minimum, the simple implicit approach of listing features and outcomes should be used, and representing these treatment differences in terms of trade-offs may be the preferred approach to doing that.

**Use of Narrative**

Many decision aids use a video or written vignette that describes another patient’s thoughts about treatment options. In their review, Bekker et al suggest that the effectiveness of the use of patient narratives is unclear. The facts and issues that the narrator may focus on may not represent those that are important to the patient. The patient may also have a reaction to the narrator, which can bias their decision. It is also difficult to compare narratives for different treatment options, and the persuasiveness of a narrative can undermine the statistical data about risks and benefits. The benefit of using stories or video may vary depending on health literacy.

**Implementation**

Elwyn et al, in their review, reveal major barriers to implementation because of “indifference on the part of health care professionals” and fear that the decision aids would disrupt workflows or not have appropriate content. Similarly, in a systematic review, Légaré et al found that the most common barriers to use of decision aids had to do with clinician engagement. Primary concerns were that the decision aids did not fit the characteristics of the patients and that the decision aid would increase visit length. Interestingly, in their review, decision aids had a variable effect on consultation length, from shorter to longer durations, so perhaps confronting the perception of time consumption would be important to physician engagement. Also noted was that decision aids were more likely to be used if the clinicians were motivated and if they perceived that shared decision making would have a positive impact on the clinical process or patient outcomes. In terms of encouraging the use of decision aids, Légaré et al found that interventions targeting both patients and clinicians were most effective.
Appraisal

The IPDAS checklist describes key considerations in the design of decision aids, but there is no specific instrument that is recognized as superior for measuring the quality of decision aids. Kryworuchko et al studied 8 different instruments comprising more than 35 outcome measures. With strong consideration of the IPDAS design model in their appraisal process, the authors found that 2 instruments met at least 6 of 8 of their appraisal criteria. These were the Control Preference Scale, which measures the ability of a patient to participate in a decision to the degree s/he desires and the Decisional Conflict Scale, which assesses the patient’s degree of feeling supported, informed, certain about his/her decision, clear about values, and the effectiveness of the decision process in creating a satisfying decision.

DISCUSSION

The aim of this article was to explore the current research on decision aids and to offer a concise summary that would serve as a reference for any health care practitioner or team who wished to design and implement these useful tools. As such, this review identified several key considerations for the design, implementation, and evaluation of decision aids.

Although these considerations may be helpful for the design of high-quality decision aids, such improvements are of little benefit if the decision aids are not used by health care practitioners and patients. Health care professionals have expressed concerns that decision aids will disrupt workflows, create unnecessarily long visits, and not contain appropriate content. With this in mind, perhaps engagement is the most useful lens through which to view the findings of this review. Engagement could begin at the design level by involving physicians in a user-centered, iterative design approach. Input from physicians may ensure appropriate and up-to-date content and ensure that the quality of the tool is suitable by the IPDAS checklist.

Early physician involvement may also alleviate issues around “inappropriate content” or “disrupted workflows.”

Removing decision aid features that are time consuming but that offer unclear benefits may be useful to increase engagement. For example, complex “explicit” values clarification approaches could be time consuming and may not add greatly to decision efficacy or satisfaction. Similarly, narrative features might require the patient to view multiple videos or read narratives that could be disruptive to workflow and timeliness and may not provide a clear benefit to decision making.

Ideally, a decision aid should increase the effectiveness of the patient visits while decreasing the clinicians’ effort. For example, patients could use the decision aid at home, working at their own pace, which would allow them to “select the order, level of detail and type of information presented.” Educational material should include simple and appropriate descriptions of risk that allow patients to compare options in terms of trade-offs. Patients could conceivably come to a visit with a foundational understanding of the risks, discuss notes they have taken, and ask informed questions that are pertinent to their own situation.

By engaging physicians in implementation, concerns about time loss, content, or workflow disruption could be addressed and alleviated. Discussion about expected benefits in clinical processes or patient outcomes as well as the expectation that the cost of time may be negligible or even favorable might all serve to improve the engagement and use of the tool in clinical settings.

Iterative improvement may be needed to develop a decision aid that is increasingly useful and engaging for patients and health care professionals. The Control Preference and the Decisional Conflict scales may be useful to assess and improve the usefulness of the tool from the patient perspective.

This study has some limitations. In a topic area that contains nearly 70,000 citations, it was difficult to ensure that important articles were not omitted in the search strategy. In part, the focus here on review articles, of which there are many, was an attempt to surface the key findings in the literature. A more thoroughgoing approach would be a systematic review of the whole corpus of literature. Given that the aim of this article was to summarize research across the entire lifecycle of decision aids (design, implementation, assessment), a systematic review would be quite ambitious and beyond the scope of this review.

A search strategy targeting review articles tends to emphasize aspects of decision aids that have been well studied, such as “values clarification” or “use of narrative.” Although such a summary may be most useful for creators of decision aids, it does little to describe the gaps in literature where future research may have merit.

Of note, shared decision making certainly occurs between patients and practitioners without the use of decision aids, but this article does not investigate what occurs in those interactions, nor do the findings here necessarily apply to shared decision making that occurs without the use of a decision aid.

Although the effectiveness of explicit values clarification approaches has been described here as inconclusive, it should be noted that there are a wide variety of these approaches, some of which may be effective but require more research. Similarly, the use of narrative may also deserve further exploration. For example, the emergence of online patient communities such as PatientsLikeMe, Inspire, and HealthBoards allows patients to explore a great variety of patient narratives to find scenarios that more closely fit their own.

Perhaps a more intriguing potential for both values clarification and narrative lies in the aggregated insights from these online patient communities. With the key components of both highly detailed discussions and very large quantities of them, there is the potential for the use of sentiment analysis techniques to gain population-level insights into what is important for patients facing different treatment decisions. Such findings could not only inform the creation of decision aids but also make it possible for patient communities’ Web sites to leverage their own data and offer powerful decision-support tools directly to patients that facilitate decision making across the broad diversity of patient values and health conditions. Although such efforts may be pertinent to this review, they are outside its scope.

CONCLUSION

The literature reports several considerations in the development, implementation, and assessment of shared decision-making tools. Designers of decision aids should focus on engagement...
from the start by involving health care practitioners and patients to ensure that the decision aids are pertinent to the situation and not perceived as time consuming. The IPDAS checklist helps to ensure quality in design. Patients should be able to select information in a manner that suits them and view it in a way that allows them to evaluate trade-offs. In the reporting of statistical risks, format bias can take many forms and should be avoided through careful and consistent choice of format and by adding visual representations. Decision aids should be tested in real settings with iterative improvements. For appraisal of the implemented decision aids, consider using the Control Preference Scale and the Decision Conflict Scale. Further research is recommended regarding optimal engagement of users with decision aids as well as exploration of the distinct opportunities that computerized decision aids and online patient communities may present. 

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References
24. I had . . . come to an entirely erroneous conclusion which shows, my dear Watson, how dangerous it always is to reason from insufficient data.

— Sir Arthur Conan Doyle, KStJ DL, 1859-1930, British physician and author
Refining the Definition of Polypharmacy and Its Link to Disability in Older Adults: Conceptualizing Necessary Polypharmacy, Unnecessary Polypharmacy, and Polypharmacy of Unclear Benefit

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ABSTRACT

The term polypharmacy in older adults is generally used in a pejorative context in the medical literature. Because of its link to geriatric syndromes and disability, the avoidance of polypharmacy is usually recommended in older adults as a strategy to optimize functional status. However, there are many polypharmacy regimens based on high-quality trials that clearly reduce the risk of disability in older adults. Other guidelines for older adults recommend the use of additional medications that may or may not be evidence-based and that may or may not reduce disability. Therefore, we propose that, in the geriatric literature, polypharmacy now be categorized as “necessary polypharmacy,” “unnecessary polypharmacy,” or “polypharmacy of unclear benefit.” In this article, we discuss the 3 categories of polypharmacy and give examples on each polypharmacy regimen and its potential relationship to disability in older adults.

INTRODUCTION

Older adults, or patients older than 65 years, have diminished reserve capacity, or the physiologic plasticity to adapt, compared with their younger counterparts. Throughout the heterogeneous continuum of geriatric aging (from the robust marathoner to the prefrail patient using a cane to the frail bedbound nursing home resident), older adults have less lean body mass with increased body fat; are more likely to have renal, hepatic, and cardiac insufficiency; take more prescriptions medications on average; and tend to have more medical problems than their younger counterparts. Older adults often experience symptomatic drug toxicity that would not have been felt by their younger counterparts. The more medications an older adult receives, the more susceptible s/he is to these drug—drug, drug—disease, and drug—patient interactions. In older adults, these adverse drug reactions often can be subtle, such as somnolence or restricted activity. Other times they occur, for example, a fall with hip fracture or symptomatic hypoglycemia. Whether insidious or sudden, drug toxicity leads to substantial morbidity to older adults.

Polypharmacy in patients older than 65 years (ie, “older adults”) is generally defined as taking 5 or more prescription medications. About 4 in 10 older adults are on polypharmacy regimens. In the geriatric literature, polypharmacy is considered a risk factor for functional decline, leading to dependence on others. Interventions to reduce polypharmacy are considered critical strategies to prevent disability in older adults. Classical geriatric teaching emphasizes minimizing the use of prescription medications, especially in older adults at risk of frailty. The addition of 1 prescription medication—whether the older patient was previously receiving no medications or 4 medications—can lead to substantial adverse drug events that might lead to disability.

Simplistically, major root causes of functional decline in the last year of life in older adults can be divided into at least 4 categories: Disability owing to advanced cancers, primary neurologic disorders, organ failure, and frailty. We will focus on the last 3 mechanisms of disability and their positive or negative relationship with polypharmacy.

We believe that the current definition of polypharmacy, with its negative connotations, is outdated. The definition of polypharmacy should be more nuanced. Recent trials have demonstrated that appropriate polypharmacy regimens can prevent disability in older adults. Hence, we believe that polypharmacy should be classified as “necessary polypharmacy” (NP), “unnecessary polypharmacy” (UP), or “polypharmacy of uncertain benefit.” NP regimens should be considered additional medications that can optimize functional status and prevent disability in older adults. For older patients receiving NP regimens, the benefits outweigh the risks. Initiation and continued adherence are critical in this category. The prescribing of and continued adherence to these regimens indicate high-quality care.

In contrast, UP should be considered additional medications that put older adults at higher risk for the development of disability. For older patients receiving these regimens, the risks outweigh the benefits. Noninitiation of these medication regimens is preferred. Deprescribing is critical in this category.
Both noninitiation and deprescribing indicate high-quality and thoughtful care.

Polypharmacy of uncertain benefit should be considered additional medications in which the research is unclear on whether the harms balance the benefits. Weighing the potential risks with the possible benefits must be thoughtfully considered, and shared decision making with the patient is critical before finalizing the medication regimen.

NP regimens are generally used in the prevention or treatment of organ failure caused by cardiovascular disease. However, NP regimens have been recommended for the prevention of disability caused by primary neurologic diseases and geriatric syndromes as well.

The prevalence of dementia is nearly 9% of individuals older than age 65 years. In 2017, the Lancet Commission on dementia care recommended the active treatment of hypertension in adults age 35 years and older as a key intervention to prevent dementia. Also in 2017, the National Academy of Medicine recommended that the appropriate treatment of hypertension could prevent, delay, or slow clinical Alzheimer-type dementia. Appropriately aggressive polypharmacy with antihypertensive medications in older adults with hypertension is a key component to prevent disability caused by dementia.

Subgroup analysis using Systolic Blood Pressure Intervention Trial (SPRINT) data demonstrated that appropriately aggressive control of blood pressure will reduce disability caused by cardiovascular disease. Using the automated office blood pressure (AOBP) technique, 2636 patients older than age 75 years (with major exclusion criteria; see Sidebar: Exclusion Criteria for Patients from SPRINT) were randomized to an AOBP systolic pressure target below 140 mmHg (equivalent to a systolic blood pressure of about 150 mmHg using the traditional office-based technique of sphygmomanometry) in the standard treatment group or an AOBP systolic blood pressure of less than 120 mmHg (equivalent to a systolic blood pressure of about 130 mmHg using the traditional blood pressure measurement technique) in the intensive treatment group. On average, older patients needed 2.1 antihypertensive medications to achieve a target blood pressure of 140 mmHg in the standard treatment group and 2.9 medications to achieve the AOBP systolic blood pressure target of 120 mmHg for the intensive treatment group. The number needed to treat in 3.14 years in the intensive treatment group was 27 to prevent any cardiovascular event (myocardial infarction, cerebrovascular accident, acute coronary syndrome, cardiovascular death) compared with the standard therapy.

Concerns regarding adverse effects of these antihypertensive polypharmacy regimens have been tempered with the results of the SPRINT subgroup analysis, of which more than 30% of study participants were considered frail. The subgroup analysis showed that there was no absolute increased risk of injurious falls and no statistical difference in orthostatic hypotension in the intensive treatment group compared with the standard treatment group. In addition, there was no difference in gait speed, a proxy of frailty in the geriatric population.

Therefore, given the safety of hypertensive polypharmacy regimens and their proven benefits, we recommend a minimum blood pressure goal of less than 140/90 mmHg using the traditional blood pressure measurement in adults older than age 65 years. For older patients with established cardiovascular disease, chronic kidney disease with an estimated glomerular filtration rate between 20 mL/min/1.73 m² and 59 mL/min/1.73 m², or with a 10-year Framingham Risk Score of greater than 15% (or a 10-year American College of Cardiology/American Heart Association Pooled Cohort Equation Risk Score > 15% or a Kaiser Permanente A Risk Score > 10%), we recommend consideration of a blood pressure goal of less than 130/90 mmHg using traditional blood pressure measurements in noninstitutionalized, ambulatory patients.

NP regimens also have a role in prevention of disability caused by geriatric syndromes. An example might include the use of bisphosphonates, calcium, and vitamin D for the treatment of established osteoporosis. Appropriate use of alendronate has been shown to have a risk reduction of future fractures, including hip fractures, by nearly 50%.

Conversely, UP regimens increase the risk of disability because of their strong association with the development of geriatric syndromes. Adverse drug reactions from UP regimens lead to unplanned hospitalizations, a risk factor for functional decline in older adults. UP regimens have been linked with the development of primary neurologic disorders. Finally, UP contributes to increased risk of disability by leading to poor medication reconciliation from clinicians and consequently less adherence to NP regimens.

We posit 11 common scenarios of UP regimens in older adults (Table 1). They can be considered medication errors that put the patient at higher risk of disability. Unnecessary polypharmacy regimens are a sign of poor prescribing quality.

Finally, polypharmacy of uncertain benefit occurs when risks vs benefits either negate each other or are unclear in relative magnitude. Shared decision making with the patient is paramount in these situations. An example of polypharmacy of uncertain benefit might include the off-label use of gabapentin for the treatment of painful neuropathy. Even if gabapentin improves the quality of life in an older adult by efficaciously reducing painful neuropathy, nearly 1 in 5 will experience dizziness, 1 in 7 will experience somnolence, and 1 in 7 will experience gait disturbances at doses at or above 1200 mg daily in adults of all ages. Somnolence and dizziness are the top contributors of restricted activity in older adults.

Exclusion Criteria for Patients from the Systolic Blood Pressure Intervention Trial (SPRINT)

- type 2 diabetes
- history of stroke
- symptomatic heart failure within the past 6 months or reduced (ejection fraction < 35%) left ventricular ejection fraction
- clinical diagnosis or treatment of dementia
- expected survival of less than 3 years
- unintentional weight loss during the preceding 6 months (> 10% of body weight)
- systolic blood pressure of less than 110 mmHg after 1 minute of standing
- resided in a nursing home.
### Table 1. Examples and consequences of unnecessary pharmacy

<table>
<thead>
<tr>
<th>UP category</th>
<th>UP example</th>
<th>Consequences of UP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuation of effective medications when indications have resolved and/or nonpharmacologic approaches would have sufficed</td>
<td>Not initiating medications, by implementing effective nonpharmacologic interventions for medical problems, is preferred in older adults. Examples might include proper diet in patients who have GERD, weight loss, ice, and physical therapy for the treatment of knee arthritis. However, UP regimens occur when effective medications are continued for an indication that either has resolved or been alleviated so that a nonpharmacologic approach would suffice. Common scenarios might include the continued use of ranitidine for mild GERD owing to poor diet or in a 75-year-old with a history of a hip fracture and the continued use of an SSRI for the treatment of an uncomplicated depression without an attempt to taper the dose for an updated PHQ-9 score (ideally &lt; 10, which generally indicates the patient is no longer in active depression) after 6 mo of pharmacologic treatment.</td>
<td>1. Benzodiazepines are associated with disability caused by increased risk of falls with fractures.24 2. Opioids are associated with disability caused by an increased risk of sedation and falls.30</td>
</tr>
<tr>
<td>Continuation of medications when treatment course has been completed</td>
<td>Effective medications are often continued even when the treatment course has been completed. In these clinical scenarios, prolonged medication use contributing to UP can be finite or indefinite. Finite scenarios include use of a 10-d, rather than a 5-d, course of levofloxacin for the treatment of an uncomplicated community-acquired pneumonia,26 or a prolonged 10-d course of corticosteroid treatment, rather than 5 d, for an uncomplicated COPD exacerbation. Common indefinite scenarios include the continued use of baby aspirin combined with clopidogrel in older adult patients with a stent placed and with coronary artery disease who have a DAPT score &lt; 2,24 or the indefinite use of omeprazole in an NSAID/aspirin-naïve patient that was initiated during a hospitalization for treatment of a bleeding peptic ulcer.</td>
<td>1. Benzodiazepines are associated with disability caused by increased risk of delirium owing to hospitalization caused by a heightened risk of Clostridium difficile colitis. 2. Corticosteroids are associated with disability caused by an increased risk of delirium or increasing future risk of an osteoporotic fracture.</td>
</tr>
<tr>
<td>Continuation of medications after a period that is no longer considered safe</td>
<td>Medications are continued for periods that are not considered safe. For example, metoclopramide is often prescribed for treatment of gastroparesis in older adults. Long-term use of metoclopramide leads to heightened risk of tardive kinesia. Long-term alendronate use has been associated with atypical femoral fractures (AFF), fractures that occur with no trauma. Continuous use of alendronate for more than 10 years increases the risk of AFF without additional fracture reduction.</td>
<td>1. Metoclopramide is associated with an increased risk of disability caused by restricted activity. 2. Long-term bisphosphonate use is associated with AFF. In turn, AFF leads to restricted activity and increased risk of delirium owing to hospitalization for AFF repair.</td>
</tr>
<tr>
<td>Continuation of medications that were never efficacious in alleviating the symptoms</td>
<td>Medications may help the symptoms of some older adults, but not others. Ineffective medications are often initiated and continued in older patients, contributing to UP. Common scenarios include the continuation of risperidone for the intended treatment of behavioral disturbances in patients with dementia or the continuation of gabapentin for the intended treatment of neuropathy. In both clinical scenarios, the likelihood of the medication being effective for its intended indication is low. For example, risperidone was not shown to demonstrate statistical improvements in the Clinical Global Impression of Change Scale in patients with dementia with behavioral disturbances compared with placebo. A Cochrane Review states that more than half of the patients receiving high-dose gabapentin will not have worthwhile pain relief in patients (of all ages) with postherpetic neuralgia.</td>
<td>1. Antipsychotic use is associated with disability owing to an increased risk of stroke, hospitalization caused by pneumonia, and restricted activity owing to fractures.25-35 2. Gabapentinoids are associated with disability owing to the increased risk of falls with fractures.24</td>
</tr>
<tr>
<td>Continuation of previously effective medications that are no longer effective because of tolerance</td>
<td>Older adults often continue the use of previously effective medications that lose their efficacy because of tolerance. Examples include the long-term use of lorazepam for anxiety treatment or the continued use of hydrocodone/acetaminophen for treatment of osteoarthritits. Neither class has been shown to be effective for its indications after long-term daily use.</td>
<td>1. Benzodiazepines are associated with disability caused by an increased risk of delirium and falls.4 2. Opioids are associated with disability owing to an increased risk of sedation and falls.30</td>
</tr>
<tr>
<td>Duplication of medications within the same class</td>
<td>Older adults may use different medications in the same class. This may be unintentional because they have multiple prescribers who use different health care records or who do not inquire about over-the-counter medication use, or it may be the result of low health care literacy in an older patient. Using medications in the same class may lead to increased adverse-effect potential without change in efficacy. Examples include the use of lorazepam and clonazepam for anxiety-related issues, or the use of over-the-counter ibuprofen (unknown to the prescribing physician) along with prescription meloxicam.</td>
<td>1. Benzodiazepines are associated with an increased risk of delirium and falls.4 2. NSAIDs increase risk of disability because of restricted activity and hospitalizations for treatment of acute renal insufficiency and peptic ulcers.22</td>
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(continued on next page)
Use of medications with opposing mechanisms of action

Older adults may take different medications that have opposing mechanisms of action. This leads to an increase in the adverse effect profile with the blunting or cancellation of the intended benefit. Use of the highly anticholinergic medication oxbutynin and the anticholinesterase donepezil is not an uncommon regimen in nursing home patients with incontinence and dementia. Other scenarios might include the use of modafinil and zolpidem for older patients with somnolence and insomnia. (Conversely, the coprescribing of medications of opposing mechanisms can be considered high-quality prescribing in the scenarios that include glucagon in older patients receiving high-dose insulin, or naloxone for patients receiving high-dose opioids. Glucagon would be administered by the family for patients with diabetes with symptomatic hypoglycemia, and naloxone would be administered by the family for patients with evidence of opioid overdose.)

1. Anticholinergics and sedative-hypnotics are associated with disability owing to an increased risk of falls and delirium.

Continued use of medications in patients with limited life expectancy

The time of accrual for net clinical benefit from medications must be greater than the anticipated life expectancy of an older adult. For example, UP regimens occur when additional diabetic medications are added to attain an HbA\(_1C\) of < 7.0% in frail older adults. The UKPDS showed that time for macrovascular benefits with tight glycemic control in younger adults was 10 to 19 years. Tight glycemic control may lead to hypoglycemia with substantial morbidity. HMG-CoA reductase inhibitors (statins) are used for preventive (primary and secondary) indications and should be considered part of a NP regimen in most older patients with established atherosclerotic disease. However, statin regimens are often continued in patients with limited life expectancy. The deprescribing of statins has been shown to be safe and can improve quality of life in patients with an anticipated life expectancy of < 1 year (absent a recent cardiovascular event).

1. Insulin and/or oral sulfonylureas can lead to hospitalization for hypoglycemia treatment. Hospitalizations are associated with disability owing to restricted activity.
2. Statins are associated with disability owing to restricted activity resulting from myalgias.

Pharmacologic overtreatment of a disease

Overdosing of diseases with medications is common in older adults. Common scenarios are the continued use of hypoglycemic medications in older adults with an HbA\(_1C\) < 7.0% or the continued use of antihypertensive medications with an SBP < 110 mmHg (using the traditional BP technique) without a history of cardiomyopathy. Dose deintensification when appropriate is equally important to reduce the risk of adverse effects. Examples include avoiding the use of high-dose digoxin (defined as > 0.125 mg daily) to reduce risk of hospitalization caused by digoxin toxicity and avoiding the long-term use of inappropriate use of aspirin, 325 mg daily, for primary or secondary prevention of CVD.

1. Pharmacologic overtreatment of diabetes can result in an increased risk of disability owing to hospitalizations and an increased risk of cognitive impairment.
2. Pharmacologic overtreatment of antihypertensive medications may be associated with disability owing to an increased risk of falls and syncope.
3. High-dose digoxin may be associated with disability owing to restricted activity and/or hospitalization caused by an adverse drug reaction.
4. Aspirin, 325 mg daily, likely puts older patients at higher risk of peptic ulcers without additional benefit compared with doses of aspirin 75 mg to 162 mg daily.

Use of potentially harmful medications

Potentially harmful medications are medications that should almost always be avoided in adults older than age 65 years and cataloged by the Beers Criteria. The 2 most common classes of potentially harmful medications prescribed are highly anticholinergic medications and sedative-hypnotics. Examples of commonly used highly anticholinergic medications include the use of paroxetine for the treatment of depression or the use of nortriptyline for the treatment of peripheral neuropathy. Examples of commonly used sedative-hypnotics are daily use of zolpidem for the treatment of insomnia or lorazepam for the treatment of anxiety.

1. Anticholinergics have been associated with a higher risk of injury and dementia.
2. Sedative-hypnotics are considered a potentially harmful medication because of their association with a heightened risk of pneumonia, falls with fractures, delirium, and dementia.

Duplication of medications that have the same adverse-effect profile

Use of different medications with the same adverse-effect profile is a UP regimen that puts an older adult at high risk of disability. The concurrent use of multiple highly anticholinergic medications (eg, paroxetine for depression, nortriptyline for peripheral neuropathy, and oxbutynin for urinary incontinence) increases the cumulative anticholinergic burden, putting an older adult patient at increased risk of deleterious adverse effects. Another common UP regimen that occurs in older adults is concurrent, multiple psychoactive medications.

1. Anticholinergics have been associated with a higher risk of injury and dementia.
2. Sedative-hypnotics, opioids, antidepressants, and SSRI’s increase the risk of disability by increasing the risk of delirium and falls.

Notes:

1. In a patient without an ischemic or bleeding event after the initiation of dual antiplatelet therapy (ie, aspirin combined with a thienopyridine such as clopidogrel) for the indication of coronary artery stent placement, the "DAPT score" gives guidance on whether continuation or cessation of dual antiplatelet therapy past 12 mo places the patient at higher risk for bleeding (with the continuation of dual antiplatelet therapy) or an ischemic event (with the cessation of thienopyridine). Risk factors for an increased risk for bleeding with continuation of dual antiplatelet therapy after 12 mo include age older than 65 yr (<1 point for age 65 to 74 yr and >2 points for age 75 yr and older). Risk factors for an increased risk for ischemic events with cessation of dual therapy after 12 mo of use include smoking, diabetes mellitus, prior myocardial infarction or percutaneous coronary intervention, myocardial infarction at presentation, ejection fraction < 30%, vein graft percutaneous coronary intervention, pacemaker stent, or stent diameter < 3 mm (+1 point for each of these risk factors). Using this DAPT score, patients with less than 2 points would favor cessation of the thienopyridine at 12 mo. Patients with a DAPT score of 2 points or greater would favor continuation of dual antiplatelet therapy past 12 mo.

BP = blood pressure; COPD = chronic obstructive pulmonary disease; CVD = cardiovascular disease; DAPT = dual-antiplatelet therapy; GERD = gastroesophageal reflux disease; H2 = histamine 2; HbA\(_1C\) = hemoglobin A1C; HMG-CoA = 3-hydroxy-3-methylglutaryl-coenzyme A; NP = necessary polypharmacy; NSAID = nonsteroidal anti-inflammatory drug; PHQ = Patient Health Questionnaire; PPI = proton pump inhibitor; SBP = systolic blood pressure; SSRI = selective serotonin reuptake inhibitor; UKPDS = UK Prospective Diabetes Study; UP = unnecessary polypharmacy.
Refining the Definition of Polypharmacy and Its Link to Disability in Older Adults: Conceptualizing Necessary Polypharmacy, Unnecessary Polypharmacy, and Polypharmacy of Unclear Benefit

Language shapes how we think and act. Among geriatricians, the term *polypharmacy* has a negative connotation and suggests needlessly putting older adults at higher risk of harm. We must update this antiquated definition of polypharmacy by refining the term as *NP, UP,* or *polypharmacy of uncertain benefit.* Not all polypharmacy should be avoided, and in many circumstances, polypharmacy should be recommended. In older adults, superior prescribing performance reflects the appropriate noninitiation and deprescribing of UP, the appropriate initiation and continuation of NP, and thoughtful consideration of polypharmacy of uncertain benefit.

**Disclosure Statement**

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**How to Cite this Article**


**Consensus Statement on Polypharmacy**

Properly addressing polypharmacy has been an area of focus for many years by Michael Kanter, MD, previously Chief Quality Officer for The Permanente Federation and currently Professor and Chair of Clinical Sciences at the Kaiser Permanente (KP) School of Medicine. However, the implications of polypharmacy and its role in the preservation of functional status in older adults can be vastly different to different physicians.

This article is a culmination of years of communications to better understand and reconcile the meaning of polypharmacy that have included Eric Lee, MD (Chief of General Internal Medicine, KP West Los Angeles Medical Center and Co-Chair of the High Risk Drugs in the Elderly Committee, KP Southern California [KPSC]); Jeffrey Brettler, MD (Hypertension Physician Lead, KPSC); Steven Steinberg, MD (Regional Chief of Family Medicine, KPSC); Peter Khang, MD (Regional Chief of Geriatrics, Palliative Medicine and Continuing Care, KPSC); Christopher Distasio, MD (Regional Chief of Neurology, KPSC); John Martin, MD (Co-Chair of Diabetes Care, KPSC); Mark Dreskin, MD (Chair of Integrated Behavioral Health, KPSC); Nolan Thompson, MD (Regional Chief of Psychiatry, KPSC); Timothy Cotter, MD (Regional Chief of Cardiology, KPSC); Kim Thai, MD (Regional Chief of Physical Medicine, KPSC); Lyn Yasumura, MD (Regional Chief of OB/GYN, KPSC); and Nancy Gibbs, MD (formerly Regional Chief of Geriatrics and Continuing Care and Co-Chair, High Risk Drugs in the Elderly Committee, KPSC).

This is a consensus statement that we hope all physicians consider when addressing the initiation, refilling, or deprescribing of medications in patients age 65 years and older.

**References**


Gait impairment is a risk factor for future disability.17 Gait impairment is a risk factor for falls.4

Another example includes the use of proton pump inhibitors (PPIs) in older adults receiving aspirin and clopidogrel (and with no history of peptic ulcer and/or not receiving concurrent corticosteroids, anticoagulants, or nonsteroidal anti-inflammatory drugs). The American College of Cardiology and the American Heart Association state that it is “reasonable” to use PPIs for these patients of “advanced age” who are receiving aspirin and clopidogrel therapy.24 Whether the reduction in peptic ulcer risk with the use of PPIs in this setting balances the increased risk of infections26 and osteoporotic fractures27 is not established.

We recognize that guidelines have been created for medication appropriateness by expert groups from all medical specialties that influence how physicians prescribe to older adults (see Sidebar: Consensus Statement on Polypharmacy). Controversy has shrouded guidelines because of the diversity of function in adults older than age 65 years and because of publication biases. Although we recognize that the theme of 1 size fits all will never apply to all patients older than age 65 years, exceptions should be minimized. Initiating UP or not initiating NP as well as refilling UP and not deprescribing UP can have monumental consequences for risk of future disability. Shared decision making should always occur in discussions with older patients with a focus on the risk/benefit ratio of NP, UP, and polypharmacy of uncertain benefit.

Consensus Statement on Polypharmacy

Properly addressing polypharmacy has been an area of focus for many years by Michael Kanter, MD, previously Chief Quality Officer for The Permanente Federation and currently Professor and Chair of Clinical Sciences at the Kaiser Permanente (KP) School of Medicine. However, the implications of polypharmacy and its role in the preservation of functional status in older adults can be vastly different to different physicians.

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CLINICAL PRACTICE

Don’t Fall for That: A Residency Curricular Innovation about Fall Prevention

David R Lee, MD, MBA; Joan C Lo, MD; H Nicole Tran, MD, PhD
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ABSTRACT

Introduction: Amid a growing geriatric population and rise in frailty-related morbidity, fall prevention represents an opportunity to improve patient outcomes and reduce health care costs. Traditional lectures on geriatric content have had limited impact on physician behaviors; however, use of multimodal teaching can be more effective in building knowledge and skills.

Objective: To develop a novel, engaging fall prevention program to empower internal medicine residents to identify and manage patients at risk of falls and fall-related injuries.

Methods: Two 20-minute multimodal workshops were created: 1) a classroom session with a video depicting a fall scenario, a team exercise ("Where’s the Fall Risk?") and review of the American Geriatrics Society Beers Criteria; and 2) a small-group session reviewing a screening algorithm, case study, physical examination maneuvers, and patient resources.

Innovation: The first workshop included a 5-minute Kaiser Permanente video depicting an older couple whose travel plans are upended by a fall and how they modify their home and lifestyle, a competitive game in which trainees identify fall hazards, an overview of Beers Criteria, and Medical Knowledge Self-Assessment Program questions to apply knowledge to practice. The second workshop, held in small groups before clinic, included a discussion of the Centers for Disease Control and Prevention’s fall prevention screening algorithm, review of a case, and education on how to properly perform the Timed Up and Go test.

Conclusion: Fall prevention remains an important yet undertaught topic for trainees and practicing physicians. These brief multicomponent workshops can be easily implemented and adapted for all clinical learners.

INTRODUCTION

By 2060, the number of adults aged 65 years and older is estimated to double to more than 98 million and account for one-fourth of the US population. With this increase comes the need for more geriatrics-trained health care practitioners to identify and prevent adverse health outcomes in our older adult population. Although geriatrics competencies are increasingly becoming a part of medical training, educational barriers persist, including lack of time, shortage of geriatrics-trained educators, stigma against older adults, and low learner interest. The engagement of faculty and residency program leadership, the commitment to geriatrics education, and the incorporation of on-site clinical teaching are key factors in the adoption of effective geriatrics programs.

Of the geriatric competencies, fall prevention education remains a major concern that is undertaught in medical education. Every year, 1 in 4 older adults reports a fall or fall-related injury, resulting in serious morbidity, loss of independence, or death. The American Geriatrics Society and the British Geriatrics Society estimate that 24% of adults reports a fall or fall-related injury, resulting in serious morbidity, loss of independence, or death. Since 2011, the US Affordable Care Act has provided Medicare beneficiaries with a free annual examination, which requires a review of individual functional level and safety (fall risk assessment), along with provision of personal prevention plan services. However, during busy clinical practice with competing priorities, fall risk assessment is often overlooked.

Previous studies have shown that conventional methods for teaching geriatric content have been less effective and that multifaceted approaches improve student perceptions and confidence in geriatric practice. More geriatric education has also been shown to increase interest in geriatrics. The course described in this article was developed by a resident physician (DL) in collaboration with key program faculty (NT, JL) to close the educational gap by incorporating multiple learning modalities, improve workflow, and provide resources for physicians in training.

METHODS

This project began as a resident-led quality improvement program that identified a gap in fall prevention education through a root cause analysis of low fall risk screening rates in the outpatient clinic. The curriculum addressing this gap was developed for internal medicine residents at Kaiser Permanente (KP) Oakland Medical Center in CA, 1 of 21 medical centers in KP Northern California. Nationally, KP is a large integrated health care delivery system with 8 Regions across the country, serving an estimated 12 million members.

The goal of this educational program was to improve residents’ understanding of fall prevention, encourage faculty involvement and mentorship, provide on-site clinical teaching, and introduce national and regional fall prevention resources.

This course was structured as two 20-minute workshops, with the first session held in the classroom setting using interactive exercises and the second session held in the resident clinic. We used publicly available resources from the KP Health Engagement and Wellness Services Web site (https://healthengagement.kaiserpermanente.org/) and the Centers for Disease Control and Prevention (CDC) Stopping Elderly Accidents, Deaths & Injuries (STEADI) program (www.cdc.gov/steadi/). The workshops are detailed in the next section.
INNOVATION
Workshop 1: Interactive Workshop in Classroom
The first workshop provided an introduction to fall prevention for resident physicians using multiple methods of learning. This workshop started with a 5-minute video clip of an older couple whose travel plans were upended by a fall. Participants watched as the couple modified their home, wardrobe, and lifestyle to prevent future falls (http://healthengagement.kaiserpermanente.org/wellness-topics/healthy-aging/preventing-falls). Residents then formed teams to compete in a competitive and interactive game titled, “Where’s the Fall Risk?” (https://pogoe.org/productid/21999). Teams were given a total of 5 minutes to identify as many common fall hazards in the home setting (eg, shoes, stairs, cords) and countermeasures (eg, handrails for the stairs) as possible. After a group discussion and show-and-tell of the identified hazards, prizes were awarded to the team with the highest number of fall risks identified.

Workshop participants then learned about the 2015 American Geriatric Society Beers Criteria, which educate health care practitioners on medications that are potentially inappropriate for older adults and whose prescribing should be assessed. Pocket cards with a list of these medications were provided to residents during this training session. The final portion of this workshop was a review of polypharmacy and fall prevention using multiple-choice questions from the American College of Physicians Medical Knowledge Self-Assessment Program (MK SAP) 17, an internal medicine certification preparation resource. Please see the Sidebar: Resources Used in Fall Prevention Workshop 1—Interactive Workshop in Classroom for a complete list of Web site links used in this workshop.

Workshop 2: Small-Group Workshop in the Clinic
The second workshop was designed to reinforce and extend the classroom learning by teaching a practical approach to fall prevention, with the goal of anchoring knowledge and applying clinical skills. The workshop was implemented during the weekly preclinic conference in the resident physician clinic and was facilitated by primary care attending physicians to provide real-world experience and mentorship for residents. The small groups were composed of 2 clinic attending physicians and up to 5 residents.

The group started by reviewing the robust patient education (www.cdc.gov/steadi/patient.html) and provider materials (www.cdc.gov/steadi/materials.html) available through the CDC STEADI Web site. Residents reviewed fall risk screening modalities for older adults, which include the “Stay Independent” brochure and the “Algorithm for Fall Risk Screening, Assessment, and Intervention,” and then applied this to a CDC case study. A laminated version of the STEADI pocket guide for providers, with information regarding screening methods and interventions, was given to residents to help facilitate workflows. Key questions for fall risk screening based on the CDC algorithm included the following: 1) “Have you fallen in the past year? If yes, how many times? Were you injured?”; 2) “Do you feel unsteady when standing or walking?”; and 3) “Do you worry about falling?” Answering “yes” to any of these questions prompted further evaluation and interventions.

Residents subsequently watched and performed the Timed Up and Go test (https://youtu.be/BA7Y_oLElGY), a physical examination maneuver to assess gait, strength, and balance problems. To better understand local resources for patients, participants reviewed the available information on the KP Health Engagement and Wellness Services Web site with a focus on the “Preventing Falls” section (http://healthengagement.kaiserpermanente.org/wellness-topics/healthy-aging/preventing-falls). The Web site has patient handouts, including a checklist for fall prevention in the home, osteoarthritis exercises, general information about bone health, and a link to local classes and health coaching. The small-group setting allowed for discussion of individual questions and sharing of best practices. The practical skills learned during this session were then used by trainees during their clinic appointments to screen older adults for falls.

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Medical Knowledge Self-Assessment Program (MK SAP) 17, General Internal Medicine Board review, Geriatric Medicine, Questions 47 and 180 (no longer available for purchase from American College of Physicians Web site)

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CLINICAL PRACTICE

Don't Fall for That: A Residency Curricular Innovation about Fall Prevention

The educational program described in this article introduced fall prevention to resident physicians using multiple learning modalities to foster confidence and efficiency in patient screening and management. To reinforce this knowledge, the small-group session offered an opportunity for residents to apply screening techniques and interventions to real cases, thereby increasing their confidence in assessing and managing fall risks.

The key takeaway from this article is the importance of integrating fall prevention into residency training programs to ensure that future primary care physicians are equipped with the knowledge and skills necessary to prevent falls and improve patient outcomes. The use of interactive workshops, case studies, and practical exercises demonstrated in this article can serve as a model for other residency programs aiming to enhance their fall prevention curriculum.
evaluation. The intent was to improve awareness of important screening tools while providing care for older adults with complex comorbidities that often drive the busy clinic visit.

The response to the program was overwhelmingly positive through standard anonymous course feedback and the novel curriculum was embraced by both residents and faculty. This type of program introduces residents to fall screening skills they can use in clinical practice, while providing attending physicians the opportunity to review quick physical examination maneuvers, screening tools, and local resources. The highlights of this interactive program included the gamification of “Where’s the Fall Risk?” as well as a review of publicly available resources for practitioners and patients, including the convenient CDC STEADI provider pocket guide for quick review and mastering quick screening maneuvers such as the Timed Up and Go.

These teaching sessions are now incorporated as a core component of the KP Oakland Medical Center’s internal medicine residency curriculum for subsequent years. This curriculum can be easily implemented at other training programs as part of academic didactic sessions (eg, addressing osteoporotic fracture prevention or geriatric health). For the busy primary care practitioner, these workshops can be adapted into a single 20-minute session with the focus on the screening algorithm, physical examination maneuvers, and health care practitioner and patient resources. The development of the workshops into a single session can ultimately serve as a refresher for the already practicing primary care practitioner.

To the successful development of this program was the focus on trainee-faculty partnership, in which the course was designed from a peer trainee’s perspective about the manuscript. Multiple teaching methods were used to augment learning, including the creation of a fall prevention game. Previous studies have shown that the use of games can improve learner retention of information. “Where’s the Fall Risk?” was developed specifically for this course to help trainees not only to learn about and to teach patients the potential hazards in patients’ homes but also to think critically about how to mitigate the dangers of the fall risk. Medical residency training programs may want to consider similar approaches to trainee education in which trainee-faculty partnerships can create novel curricular workshops that will equip future interns and family practice physicians to address important geriatric and medical health concerns that are patient centered.

There were some limitations to the implementation of the course. Not all trainees were available to attend 1 or both of the workshops because of their clinical duties and personal schedules. Additionally, this program was developed as part of our core education program and thus was not implemented or examined in the context of educational research. Future research might include objective measures such as reduction in patient falls and fracture events, an increase in physician access to online resources, trends in physical therapy referrals over time, and the development of a tracking tool for performing fall screenings that can be managed regionally.

A major strength of the program was the ability to engage all trainees in a relaxed and interactive setting where they could master key resources, learning points, clinical tools, and practical

### CONCLUSION

Educating and creating interest in geriatric medicine for future generations of physicians is vital to help care for the rising older adult population. The use of multiple teaching methods is an important educational approach that maximizes content retention and enhances interest and confidence. This fall prevention education toolkit can be easily incorporated into residency training and further adapted as an efficient best practice in primary care with the goal to screen for and prevent falls.

### Disclosure Statement

The author(s) have no conflicts of interest to disclose.

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### Resources Used in Fall Prevention Workshop 2—Small-Group Workshop in Clinic

**Discussion**—Centers for Disease Control and Prevention (CDC) Stopping Elderly Accidents, Deaths & Injuries:


Algorithm for Fall Risk Screening, Assessment, and Intervention, including screening questions:


Case study: Mrs Booker (“a low-risk patient who has come in for a wellness visit”):

[www.cdc.gov/steadi/pdf/STEADI-CaseStudy1-MsBooker-508.pdf](http://www.cdc.gov/steadi/pdf/STEADI-CaseStudy1-MsBooker-508.pdf)

Physical examination—Timed Up and Go test: [https://youtu.be/BA7Y_oLElGY](https://youtu.be/BA7Y_oLElGY)

Kaiser Permanente Health Engagement and Wellness Services. “Preventing Falls” resources:

[http://healthengagement.kaiserpermanente.org/wellness-topics/healthy-aging/preventing-falls](http://healthengagement.kaiserpermanente.org/wellness-topics/healthy-aging/preventing-falls)

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Author Contributions
David R Lee, MD, MBA; Joan C Lo, MD; and H Nicole Tran, MD, PhD, contributed to the design and implementation of this educational program and the drafting of the manuscript. All authors approved the final version for publication.

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Old Age
There is … one disease … for which you [doctors] have found as yet no specific, and that is old age, of which this tedious unconnected epistle is an infallible symptom.

What, therefore, cannot be cured, must be endured.

—Tobias Smollett, 1721-1771, Scottish poet and author
Situated between Laguna Beach, CA, and Corona del Mar, CA, just off the Pacific Coast Highway, Crystal Cove State Park is home to more than 3 miles of beaches and tide pools, 2400 acres of backcountry wilderness, and a 12.3-acre historic district with dozens of cottages, all built between the 1930s and the 1950s. This photograph was taken from a cave at the north end of the park.

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CLINICAL PRACTICE

Digging for the Deeper Diagnoses in Dermatology

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INTRODUCTION

On March 3, 2018, The New York Times published an in-depth profile of Nakesha Williams, a 47-year-old homeless woman who died on the streets of New York City. Born in poverty to an unwed teenage mother, Williams was an honors graduate of the prestigious Williams College in Williamstown, MA. Although her parents eventually wed, they divorced a few years later, according to the article. Her mother’s next partner was reportedly an abusive drug addict who repeatedly molested Williams when she was just a child. Her mother died at age 37 years when Williams was in college. Within a few years of graduation Williams became paranoid and eventually homeless. Living on the streets, she gave birth to 2 children, who were taken away by child protective services. When Williams died, the 1.5-m (5-ft) tall, former college dancer weighed 114.8 kg (255 lb).

More humanism and less science, that’s what medicine needs, but humanism is hard work, and so much of science is just Tinkertoy.

— Robertson Davies

More humanism and less science, that’s what medicine needs, but humanism is hard work, and so much of science is just Tinkertoy.

The Skin Clinic, Williamstown, MA

IMPORTANT OF PATIENTS’ TRAUMATIC LIFE EVENTS

After a close reading of Balint’s iconic book, The Doctor, His Patient and the Illness, it became clear to me that many of my patients had traumatic life events that were important to know about and that had direct bearing on their medical and psychiatric illnesses. Balint called this “the deeper diagnosis.” The childhood history is rarely inquired after when patients present for skin problems because the standard dermatology appointment does not allow one time to discover these important antecedents.

The history of a patient’s adverse childhood experiences (ACEs) is important to know about when one is presented with difficult diagnostic or therapeutic challenges. ACEs have not been covered in the dermatologic literature, yet we ignore them at our patients’ peril. An accessible article by Felitti and Anda on ACEs should be required reading for all physicians. They have demonstrated how ACEs play a major and lifelong role in the difficulty, effectiveness, and cost of adult medical

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practice, and are the major origin of numerous important public health, medical, and social problems.6

In addition, we need to factor in the social determinants of health (SDH) that our patients have when we establish a therapeutic relationship. Marmot’s7,8 book, The Health Gap, is also essential reading for all physicians. The need to consider ACEs, traumatic experiences, and SDH has not been covered by any major dermatology journal, to my knowledge. In my specialty, we pay exclusive attention to the downstream pathologies and ignore important social and historical causes of the pathologies that we encounter. By the time we see the patient, it may, sadly, be too late to moderate the effects of ACEs, traumatic experiences, or SDH, but it does not seem right to ignore them, and it is important to acknowledge their clinical significance. Felitti and Anda1 tell us, “The clinical practice of asking, listening, and accepting is doing.”

Studying the works of Balint, Marmot, Felitti and Anda, and other authors led me to witness many patients whose ACEs, traumatic experiences, and SDH were important precursors to the cutaneous disorders they presented with. In my experience, a large number of these individuals were receiving Medicaid or were poor and uninsured. They would not have gained access to other dermatology practices in my community, so to my colleagues they would have been invisible. In large cities, these patients are cared for by trainee physicians, who likely focus their dermatoscopes on the disease and not on the patient with the disease. The persons with the disease are largely unknown at these teaching centers, and they rarely receive continuity of care.

Marginalized patients have shorter lifespans and poorer outcomes than do more affluent patients, especially when they are black or Hispanic, according to a large body of research. Like Nakesha Williams, they often have health care gaps and “death gaps.”9

My desultory readings on these topics, informed by PubMed searches, led me to the work of Kirkenge9 and Tomasdottir and colleagues10 on how abused children become unhealthy adults. Dr Kirkenge has been generous with her time to respond to my emails regarding some patients, and at her suggestion, I started to collect a few of my patients’ stories. Whereas Felitti’s San Diego Kaiser Permanente group used a 10-point questionnaire, Kirkenge with Tomasdottir and colleagues10 have simplified this to 1 question: “When you think about your childhood, would you describe it as: ‘Very good–good–average–difficult–very difficult’?” It is not always appropriate to pry into a patient’s private life, and some patients may be reluctant to disclose embarrassing or shameful experiences. Therefore, this single question may have the advantage of identifying more at-risk patients.

LISTENING AS A THERAPEUTIC ACT

Twenty patient vignettes to which I have privy appear in the Appendix (available at: www.thepermanentejournal.org/files/2020/19-090-appendix.pdf). I have found that it can take me many visits before a patient is comfortable disclosing painful or sensitive personal material. However, the longer I am in practice the more I am convinced that most patients welcome my concern. The vignettes in the Appendix were collected during a 2-month period in early 2019. This is a work in progress, and I am learning important patient-related material every day. Initially, I thought this knowledge might help me to treat these patients more effectively, but I have come to believe that many, like Humpty Dumpty, are too broken to be fixed. Perhaps, all one can do is allow one’s office to be a sanctuary where their problems can be acknowledged and where they are welcomed, caringly listened to, and not discriminated against. Listening can be a therapeutic act.

Excluding poor and marginalized patients from our offices is unfair to the most damaged and vulnerable members of our communities. By concentrating on the affluent and privately insured, we leave many others in the shadows. The result is that these people are invisible. Our abandonment of them has forced them to endure more physical and mental illnesses and to die earlier than do more advantaged individuals.

Sadly, in many US communities, the resources to help these people are sorely lacking. Most of these people often wind up seeing psychopharmacologists; being placed on drug cocktails of 2, 3, or more drugs; and visiting a psychologist every month or so if their insurance plan allows it. They do not receive the in-depth care they require. The root problem is often not known and is rarely addressed.

The study populations of Felitti and Anda and Tomasdottir et al.10 are more uniform socially and economically than the people I see in my community regarding access to care and basic resources. It is not unusual for some of my patients to have a net worth of less than $100. They cannot get the same level of care as the more affluent people seen at Kaiser Permanente Medical Centers or those who make up most of the patients surveyed in Nord-Trøndelag County, Norway.10 Yet the tools used in those settings are directly applicable to my clinic patients.

Although there is an enormous body of literature on the importance of ACEs from many academic disciplines (medical anthropology, medical sociology, psychology, public health, the economics of health care, social geography, and others), there has been an inexplicable silence on this topic in most journals that clinicians read. This report from a rural dermatology practice sheds light on the importance of such anamnesis to practicing physicians.

CONCLUSION

Nakesha Williams had the advantage of the best education one can obtain in the US, yet her ACEs eventually claimed her. She had friends, and social services were available, yet the trauma had been done. The abuse she sustained caused permanent scars, and she was a casualty, decades later, of childhood trauma. When I read her obituary in The New York Times, I didn’t understand this. During the past year, however, studying about ACEs and SDH has opened my eyes. Our medical model does not serve these people. There must be a better way. A start may be just sitting with these people and listening.

A poem by the 19th century American poet, Emily Dickinson,11 instructs us on a model for patient care and is applicable
to what our patients with ACEs need from us, their caregivers.

If I can stop one Heart from breaking
If I can ease one Life the Aching,
Or cool one Pain

Or help one fainting Robin
Unto his Nest again,
I shall not live in Vain.

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Five Senses
Observe, record, tabulate, communicate. Use your five senses.

— William Osler, MD, 1849-1919, physician, pathologist, teacher, diagnostician, bibliophile, historian, classicist, essayist, conservationalist, organizer, manager, and author
**ABSTRACT**

**Introduction:** Vasectomy is the most common and most effective method of achieving permanent male sterility. However, there is a low risk of vasectomy failure. To our knowledge, there is no symptom complex that has been identified and described that is predictive of early recanalization and vasectomy failure.

**Case Presentation:** A 44-year-old man underwent a routine bilateral vasectomy without complication. Two months after the procedure, the patient experienced an acute onset of scrotal pain and hematospermia. Several semen analyses were performed during the following months, the results of which demonstrated progressively rising numbers of motile sperm and were indicative of vasal recanalization. The patient underwent repeated vasectomy, during which he was found to have right vasal recanalization leading to vasectomy failure.

**Discussion:** Delayed postvasectomy scrotal pain associated with hematospermia may be a sign of vasal recanalization. We propose that this symptom complex should prompt an investigation for vasal recanalization, during which the patient should be instructed to refrain from intercourse without the use of an additional method of contraception.

**INTRODUCTION**

Vasectomy is the most common and effective method of achieving permanent male sterility. In 2002, an estimated 526,501 vasectomies were performed in the US. In 2004, nearly 43 million men worldwide underwent vasectomy. Vasectomies are routinely performed in the outpatient setting under local anesthesia. Vasectomies are typically performed by urologists but may also be performed by family medicine physicians or general surgeons. Although there are various vasectomy techniques, it remains a highly effective procedure regardless of the technique performed, with pregnancy rates of 0.10% to 0.15% within the first year after vasectomy. Vasectomy complications are relatively uncommon and include infection, epididymitis, hemorrhage, and sperm granuloma. Each of these complications occurs in less than 5% of cases.

A vasectomy does not result in immediate sterility because residual sperm are located throughout the vas deferens and seminal vesicles. Patients are instructed to use an additional method of contraception during intercourse until a postvasectomy semen analysis demonstrates the absence of motile sperm. Men are typically instructed to submit a semen analysis 3 months postoperatively. If sperm are present on the semen analysis, a series of repeated studies will be performed to trend the sperm count.

Physicians should inform patients interested in a vasectomy that although the procedure typically results in permanent sterilization, there is a risk of vasectomy failure. Vasectomy failure may result from failure to divide the vas deferens bilaterally (ie, division of an incorrect structure, incomplete transection of the vas), vasal recanalization, or anatomic variations that are unrecognized at the time of vasectomy (ie, vasal duplication). Failure can be defined by the presence of motile sperm on postvasectomy semen analysis or unexpected postvasectomy pregnancy. Early failure or recanalization of the vas deferens after vasectomy occurs in approximately 0.3% to 0.6% of cases. This failure occurs when a substantial number of spermatozoa or any motile spermatozoa are identified at least 4 months after vasectomy. To our knowledge, there is no symptom complex that has been identified or described that is predictive of early recanalization after vasectomy. We report a case of vasectomy failure in which the patient exhibited possible early signs of vasal recanalization.

**CASE PRESENTATION**

**Presenting Concerns**

A 44-year-old man with no remarkable medical history elected to undergo a bilateral vasectomy by a high-volume urologic surgeon, who has performed approximately 5000 vasectomies. The routine clinic procedure was performed in the following manner: Bilateral transverse scrotal incisions, excision of a portion of each vas, mucosal cautery of all 4 vasal ends, and nylon suture ligature without fascial interposition. The 2 excised specimens were sent for pathologic analysis, and the results revealed completely transected segments of bilateral vas deferens. There were no significant histopathologic abnormalities, and the length of excised vas deferens from the left and right was 0.5 cm and 0.6 cm, respectively.
Two months after the procedure, the patient presented with a 6-day history of acute, right-sided scrotal pain and hematospermia. The patient reported that the pain was most prominent superior to the right testicle and in the right-sided inguinal region. He denied prior episodes of hematospermia, hematuria, and dysuria. On examination, the patient exhibited tenderness over the right vasectomy site, which on palpation reproduced the pain that he described. Semen analysis findings 13 days after the pain and hematospermia episode revealed 4 to 20 nonmotile sperm per high-power field (Table 1). Two months later, a repeated semen analysis result revealed more than 20 motile sperm per high-power field, indicating vasectomy failure (Table 1).

Results of 2 subsequent semen analyses are also documented in Table 1. Normalization of semen parameters (Table 1) was indicative of vasal recanalization.

Table 1. Semen analyses performed after initial vasectomy

<table>
<thead>
<tr>
<th>Time after initial vasectomy, mo</th>
<th>Sperm count (0-3 sperm/HPF)</th>
<th>Total sperm count, million</th>
<th>Spermatozoa motility</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>4-20</td>
<td>Not available</td>
<td>Nonmotile</td>
</tr>
<tr>
<td>4</td>
<td>&gt; 20</td>
<td>88</td>
<td>Normal motility</td>
</tr>
<tr>
<td>5</td>
<td>Not available</td>
<td>192</td>
<td>Normal motility</td>
</tr>
<tr>
<td>6</td>
<td>Not available</td>
<td>60</td>
<td>Normal motility</td>
</tr>
</tbody>
</table>

HPF = high-power field.

Table 2. Semen analyses performed after repeated vasectomy

<table>
<thead>
<tr>
<th>Time after repeated vasectomy, mo</th>
<th>Sperm count (0-3 sperm/HPF)</th>
<th>Spermatozoa motility</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0</td>
<td>Not applicable</td>
</tr>
<tr>
<td>4</td>
<td>0-3</td>
<td>Nonmotile</td>
</tr>
<tr>
<td>6</td>
<td>0-3</td>
<td>Nonmotile</td>
</tr>
<tr>
<td>7</td>
<td>0</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

HPF = high-power field.

Therapeutic Intervention and Treatment

The decision was made to pursue a repeated vasectomy because the semen analysis results indicated vasal recanalization and the patient still desired permanent sterilization. A repeated vasectomy was performed in the operating room 8 months after the initial vasectomy (6 months after the pain and hematospermia episode). During the operation, the prior vasal excision sites were identified and carefully excised, along with a portion of proximal and distal vas deferens. Intraoperative inspection of the excised right-sided specimen revealed a patent lumen, through which a 3-0 lacrimal duct probe (Figure 1) was able to be passed. The excised left-sided specimen was probed but was patent for only 2 mm on either side, indicating there was no patent lumen.

Pathologic findings of the repeated vasectomy site specimens revealed bilateral complete cross-section of vas deferens with a sperm granuloma and lymphohistiocytic reaction.

Follow-up and Outcomes

After the repeated bilateral vasectomy, there were no complications. The patient completed several semen analyses, the results of which confirmed that no motile sperm were present (Table 2). Seven months after the repeated vasectomy, the patient was deemed sterile. A timeline of the case appears in Table 3.

DISCUSSION

Our patient experienced vasectomy failure because of early recanalization of the right vas deferens. His vasectomy failure was not because of anatomic variation or a failure to completely transect each vas deferent at the time of the initial vasectomy. This patient’s early vasectomy failure was defined by progressively rising numbers of motile sperm present on semen analysis 4 months after vasectomy. Early recanalization is thought to result from epithelial microtubule proliferation through a granuloma at the vasectomy site, resulting in a fistula that facilitates sperm passage. In our case, we surmised that the patient had a sperm granuloma, which led to recanalization. Final pathologic findings of the right vas deferens excised during the repeated vasectomy confirmed the presence of a sperm granuloma.

To our knowledge, the symptom complex of delayed postvasectomy scrotal pain and hematospermia has not been described as a harbinger for recanalization of the vas deferens. Initial scrotal pain is a recognized adverse effect of the procedure, but it is generally self-limited and not thought to be a potential risk factor for recanalization or vasectomy failure. Initial hematospermia, although less common than scrotal pain, is considered self-limited and clinically insignificant during the first 2 months after a vasectomy. In our case, it seems that the patient’s episode of acute scrotal pain and hematospermia was indicative of recanalization. Furthermore, it is likely that the fistula tract matured during the months after this episode, as evidenced by the increasing motile sperm counts on semen analyses. However, because this is the first reported case of vasal recanalization after scrotal pain and hematospermia, it is also possible that these events were coincidental. Future reports of similar cases could strengthen this proposed association.
CLINICAL MEDICINE

CONCLUSION

Delayed postvasectomy hematospermia with scrotal pain may be a sign of vasal recanalization. We propose that this symptom complex should prompt an investigation for vasal recanalization, during which the patient should be instructed to refrain from intercourse without the use of an additional method of contraception.

Disclosure Statement

The author(s) have no conflicts of interest to disclose.

Acknowledgments

Kathleen Louden, ELS, of Louden Health Communications performed a primary copy edit.

How to Cite this Article


References


Cardinal Rule

There is only one cardinal rule: One must always listen to the patient.

— Oliver Sacks, CBE, FRCP, 1933-2015, British neurologist, naturalist, historian of science, and author
ABSTRACT

Introduction: Broca aphasia presents with impaired expression of spoken and/or written language and is often caused by infarction in the Broca area in the frontal lobe. We present a case of Broca aphasia that was initially interpreted as confusion.

Case Presentation: A 76-year-old woman was brought to the Emergency Department because of confusion and slurred speech that began in the morning. The patient had an extensive history of alcohol abuse, hyperlipidemia, and hypertension and had recently quit drinking 5 days earlier. The patient appeared confused, answering questions with “I don’t know,” but had no signs of agitation. Magnetic resonance imaging of the brain confirmed a recent infarct involving the left frontal and occipital lobes, coinciding with the Broca area. The patient was able to communicate via writing and eventually made an uneventful recovery of speech.

Discussion: This case demonstrates a patient without the display of stereotypical signs of stroke, yet that was the underlying condition leading to her aphasia. It is important for clinicians to be aware that a stroke can present with isolated findings such as language deficit or confusion.

INTRODUCTION

Broca aphasia presents as nonfluent, interrupted, impaired expression of spoken and/or written language. Severity of the condition may range from mild and transient aphasia, with complete ability to write, to severe cases of complete loss of ability to speak. Certain habitual expressions may be easier to elicit. Comprehension of language is usually still intact; thus, patients will have insight of the condition, leading to frustration. Broca aphasia occurs because of infarction in the posterior inferior frontal gyrus of the dominant hemisphere (often the left side) in Brodmann areas 44 and 45, also known as the Broca area. Some causes of Broca aphasia include traumatic brain injury, tumors, brain infections, and degenerative illnesses. However, the most common cause of infarct is a thrombus or emboli in the middle cerebral artery or the internal carotid artery. We present a case of Broca aphasia that was initially interpreted as confusion.

CASE PRESENTATION

Presenting Concerns

A 76-year-old, right-handed woman was brought to the Emergency Department (ED) because of confusion and slurred speech. The patient had an extensive history of alcohol abuse, hyperlipidemia, hypertension, and asthma. According to her family, the patient drank 1.9 L (0.5 gal) of whiskey every 3 days for the last 50 years. The patient stopped drinking 5 days earlier since falling and hitting her head. The family denied noticing any tremors, seizures, or hallucinations from the patient since the abrupt cessation of drinking. The patient had not been eating since she stopped drinking. Her baseline performance, according to her family, was coherent, self-ambulatory, able to care for herself, and no speech problems.

On examination, the patient appeared confused, was unable to provide her own name or birthday, had some mild slurring in her speech, and was noted to have difficulty finding words. She would frequently say “I don’t know” and look frustrated when asked questions. No signs of agitation, facial droop, or distress were observed. The patient was able to follow basic commands and was able to move both her upper and lower extremities. Muscle strength was equal bilaterally (5/5) in the upper and lower extremities. She did not report any vision changes.

Therapeutic Intervention and Treatment

Initial management included intravenous fluids with thiamine, folic acid, and magnesium because there was concern for possible alcohol-induced encephalopathy (Wernicke encephalopathy, alcohol withdrawal) caused by her extensive history of alcohol abuse. Findings of the initial laboratory workup in the ED are shown in Table 1. The patient had not been eating since she stopped drinking. Her baseline performance, according to her family, was coherent, self-ambulatory, able to care for herself, and no speech problems. Results of a computed tomography scan of the head showed “no acute intracranial hemorrhage, mild to moderate cerebral atrophy, mild small-vessel ischemic changes of bilateral periventricular deep white matter and subcortical white matter, [and] slight interval increase in the sizes of the ventricles, which may be secondary to interval progression of the volume loss.”

Although the patient’s social history was suggestive of an alcohol-related cause, she continued to appear calm with no signs of agitation, contrary to what was expected for alcohol withdrawal. Further workup was deemed needed. On neurologic examination, the patient had significant atrophy of Broca area. Magnetic resonance imaging of the brain showed “no acute intracranial hemorrhage, mild to moderate cerebral atrophy, mild small-vessel ischemic changes of bilateral periventricular deep white matter and subcortical white matter, [and] slight interval increase in the sizes of the ventricles, which may be secondary to interval progression of the volume loss.”

Additional laboratory workup in the ED are shown in Table 1. The patient had not been eating since she stopped drinking. Her baseline performance, according to her family, was coherent, self-ambulatory, able to care for herself, and no speech problems.

Figure 1. Axial magnetic resonance imaging of the brain showing recent infarct.
A 76-year-old woman with a history of alcohol abuse, hyperlipidemia, and hypertension was admitted on 2/25/18 for encephalopathy. She was noted to have a stroke in the Broca area on MRI of the brain. She was started on aspirin and statin medication. No tPA was given.

The patient made an uneventful recovery, with improved, clear speech and little word-finding difficulty by the time she followed-up with her primary care physician 1 week after discharge from the ED. She was back to baseline 2 weeks after discharge. Her strength and coordination improved, near baseline prior to stroke occurrence, with improved, clear speech and coordination.

Follow-up and Outcome

The patient was counseled on healthy diet and medication compliance. Physical therapy was provided in the hospital. She was back to baseline 2 weeks after discharge. Her strength and coordination also improved by 2 weeks after discharge; she no longer used the front-wheeled walker in the home, rather only as needed while outside. Her primary care physician did note some weakness of the extremities but found no speech change at 2 weeks after discharge.

Table 2. Timeline of the case

<table>
<thead>
<tr>
<th>Date</th>
<th>Summaries from initial and follow-up visits</th>
<th>Diagnostic testing</th>
<th>Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>2/25/18</td>
<td>Patient presented with slurred speech and confusion</td>
<td>Head CT on 2/25/18 provided negative results for bleed</td>
<td>Aspirin and statin medication were added. No tPA was given because it was outside of the window. Physical therapy was provided in the hospital. Patient was counseled on alcohol cessation.</td>
</tr>
<tr>
<td>3/9/18</td>
<td>PCP posthospital follow-up showed the patient had improved speech and little word-finding difficulty, continued to have some weakness that required a walker, and had stopped drinking alcohol</td>
<td>Ultrasoundography of carotid was ordered, but patient failed to keep appointment</td>
<td>Patient continued aspirin and statin medication; declined further physical therapy or speech therapy, and was counseled on alcohol cessation.</td>
</tr>
<tr>
<td>4/13/18</td>
<td>PCP follow-up showed patient was compliant with medication and had stopped drinking alcohol; her strength and coordination improved, near baseline prior to stroke</td>
<td>No additional tests were given</td>
<td>Patient continued aspirin and statin medication; was counseled on healthy diet and medication compliance.</td>
</tr>
</tbody>
</table>

CT = computed tomography; MRI = magnetic resonance imaging; PCP = primary care physician; tPA = tissue plasminogen activator.
Confusion vs Broca Aphasia: A Case Report

The incidence of aphasia comes out to be about 21% of the 795,000 stroke cases each year in the US. Treatment of aphasia includes speech therapy, with peak recovery within the first 4 to 6 weeks for Broca aphasia, making it the best prognosis for language recovery compared with other aphasias.

On the basis of the functional MRI and structural MRI studies, Broca aphasia can have varying degrees. At one end of the spectrum, the damage is in the Broca area extending along the sylvian fissure and surrounding frontal fields with the underlying white matter and basal ganglia. This damage will present with drastic loss of speech fluency (loss of melodic modulation as seen in normal speech, articulation, naming, and morphology) and slow speech, with more pauses than actual words. Words such as nouns will be intelligible and appropriately selected. However, verbs and grammatical words may be less accurate. Additionally, there is an inability to repeat sentences verbatim, with the patients confused about why they are unable to repeat a sentence. There is a loss of ability to organize words into grammatically correct sentence structure.

When the infarct is restricted to the Broca area alone, this produces fewer permanent deficits, presenting with mild and transient aphasia. There is disturbance to speech, but not to language. Because the understanding that the presence of varying degrees of Broca aphasia is based on extent of the infarct, the concept of language and the multiple aspects that make up language (eg, grammar, syntax, comprehension, articulation) have become an area of interest. As such, the varying degrees of Broca aphasia can present in various ways.

The patient described in this case report is likely to have had an infarct restricted to the Broca area because of her transient aphasia that improved during the course of 3 days while in the hospital as well as her brain MRI showing the infarct not affecting surrounding frontal fields.

CONCLUSION

Confusion is a common initial presentation, often requiring broad workup, in elderly patients. This patient had a social history suggestive of an alcohol-related cause, but her clinical presentation suggested otherwise. A high clinical suspicion is needed for other causes of confusion when patients do not improve after initiation of appropriate treatment. This case demonstrated a patient without the display of stereotypical signs of stroke, yet that was the underlying condition leading to her aphasia, which was initially interpreted as confusion. It is important for clinicians to be aware that a stroke can present with isolated findings, such as language deficit or confusion. In such a scenario, a high suspicion for stroke is warranted, so that a proper neurologic examination and workup are completed, thereby allowing for appropriate treatment.

Disclosure Statement

The author(s) have no conflicts of interest to disclose.

Acknowledgments

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References


Confusion and Indistinctness

[I] waked and sat up … when I felt a confusion and indistinctness in my head … I was alarmed and prayed God, that however he might afflict my body he would spare my understanding. … Soon after I perceived that I had suffered a paralytic stroke, and that my Speech was taken from me.

— Samuel Johnson, 1709-1784, English poet, playwright, essayist, moralist, literary critic, biographer, editor, and lexicographer
Health and Wellness Coaching and Psychiatric Care Collaboration in a Multimodal Intervention for Attention-Deficit/Hyperactivity Disorder: A Case Report

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ABSTRACT

Introduction: Stimulant medications are the most common treatment for attention-deficit/hyperactivity disorder (ADHD). However, a multimodal approach that includes behavioral interventions may yield better outcomes. Coaching is gaining recognition as a client-centered behavioral intervention for the management of ADHD.

Objective: To examine the collaboration between ADHD-focused health and wellness coaching and psychiatric care to support a client’s improved self-management of ADHD.

Methods: Using the internationally developed CARE (CAse REport) guidelines designed to improve transparency and accuracy in health research reporting, this case report is based on a systematic review of data collected from the point of care.

Results: An 8-week collaboration between a psychiatrist and a health and wellness coach both expanded what the psychiatrist had been able to achieve alone in working with a client with ADHD and resulted in client improvement in self-efficacy and various functional impairments, including organizational skills and academic achievement. The client achieved her goal of resuming graduate studies and both integrated and maintained her behavioral changes for more than 6 months, successfully graduating from her program.

Discussion: This is the first case report, to our knowledge, describing the process of coaching for ADHD and exploring its integration with psychiatric care. It illustrates beneficial outcomes and the promising role of health and wellness coaching in assisting individuals with ADHD in achieving successful behavior change. The client in this case report made progress that was sustained beyond the 6-month mark, an important milestone in the trajectory of behavior change.

Conclusion: This case report suggests that health and wellness coaching can be effective in supporting beneficial outcomes and can be useful in the multimodal management of ADHD.

INTRODUCTION

Attention-deficit/hyperactivity disorder (ADHD), previously considered a childhood disorder, is now recognized as continuing into adulthood, affecting approximately 4.4% of adults in the US. ADHD is characterized by core symptoms related to inattention, hyperactivity, and/or impulsivity and is increasingly understood as a disorder of the executive functions (EFs), a set of mental skills comprising the “management system” of the brain, including organization, time-management, planning, initiation, and others. Adult ADHD is commonly comorbid with mood, anxiety, and substance abuse disorders and is associated with disabilities in basic and instrumental functioning. It affects interpersonal relationships, health and safety, educational and occupational attainment, and has a substantial economic impact.

The most common treatment for ADHD is stimulant medication, but behavioral interventions appear key for achieving benefits in functional areas such as organizational skills and academic/employment success. Thus, a multimodal or integrated approach may be ideal to address ADHD impairments and promote optimal outcomes. One useful behavioral component of multimodal intervention for ADHD is coaching. Among the advantages of coaching as a behavioral intervention is its emphasis on client accountability.

A recent literature review identified 19 studies that consistently found beneficial outcomes of coaching for ADHD; however, the studies do not specifically explore the issue of coach collaboration with a psychiatrist or other health care professional in a multimodal or integrated approach. This report examines the use of ADHD-focused health and wellness coaching (HWC) as a collaborative, client-centered intervention offered in conjunction with psychiatric care to assist a young woman in managing the effect of ADHD and related EF challenges on personal health and wellness goals related to academic success. To our knowledge, this is the first case report that explicitly addresses collaboration between a health and wellness coach and a psychiatrist in the management of ADHD. In addition to illustrating the value of coach-psychiatrist collaboration in care of this client, the case report explains the coaching process and indicates positive outcomes that occurred as a result of the coaching intervention focused on improving management of ADHD and EF symptoms and enhancing self-efficacy.

METHODS

This case report provides a systematic review of data collected from the point of care by an ADHD-focused health and wellness coach (EA). The review is based on methods described by the internationally developed CARE (CAse REport) guidelines, designed to improve transparency and accuracy in health research reporting. The report summarizes data collected at the point of care, and triangulated when possible, via the client’s
CASE PRESENTATION

Presenting Concerns

A 30-year-old white woman had been dismissed temporarily from a graduate-level physician's assistant program because of a lack of success academically and in clinical rotations. She was given 8 weeks to establish improved ADHD management for the school to consider allowing her to resume the program. Her psychiatrist recommended coaching, and the client was referred to an experienced coach by the disability services office at the university she attended. Her desire was to establish improved management of ADHD and EF symptoms so she could resume her educational program.

Client History

The client was diagnosed initially with inattentive-type ADHD in 2014 but received no treatment until completing additional testing in 2015. When she presented for coaching, in 2017, she had a psychiatrist who was treating her with dextroamphetamine-amphetamine, which she took regularly. Although her psychiatrist provided some counseling, the client had never worked with a psychotherapist. She periodically used running and yoga to manage her ADHD symptoms, with limited success. Despite previous work as an emergency medical technician, the client reported that she found her current academic program very stressful. Although she had been working with her psychiatrist for some time, the psychiatrist expressed interest in collaborating with a health and wellness coach to help the client better manage her ADHD symptoms with the goal of resuming school.

INTERVENTION

Health and Wellness Coaching Model

The client had 8 weeks before her academic program would reconsider her participation, so she contracted for an 8-week period of HWC—a science-based, client-centered, self-discovery process based on behavior change theory, often provided by trained professionals with diverse health and allied health backgrounds. 

The premise of HWC is that behavior change can be promoted and sustained by linking changes to personal values and a sense of meaning and purpose. In HWC, a contractual partnership is established between client and coach, focused on the client’s self-determined goals. The assumption in HWC is that the client is the expert and the coach’s expertise is in the process of helping the client move toward desired health and wellness goals in order to create, over time, lasting behavior change.

The coach in this case report was trained in HWC, life coaching, and coaching specifically for ADHD and had been working for 8 years with individuals having ADHD. She held a credential as a Professional Certified Coach from the International Coach Federation and was subsequently credentialed, in the first credentialing round, as a National Board Certified Health & Wellness Coach through the National Board (formerly International Consortium) for Health & Wellness Coaching. Her approach to coaching individuals with ADHD derives from 2 key theoretical frameworks: 1) understanding ADHD as largely a disorder of EFs, and 2) appreciating self-determination theory as key in developing individual motivation and supporting action toward behavior change. She holds her clients in unconditional positive regard while letting the client’s own agenda focus the coaching goals, and without having particular or set expectations of what success should look like for the client or what needs to result from the coaching process.

Table 1. Tools and approaches used for client self-assessment

<table>
<thead>
<tr>
<th>Tool</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADHD systems checklist</td>
<td>Client self-assesses the presence of systems and routines for managing daily life</td>
</tr>
<tr>
<td>“Gremlin” self-assessment</td>
<td>Client identifies the most prominent negative self-appraisals or self-talk (inner critic, “gremlin”) that might get in the way of success</td>
</tr>
<tr>
<td>Novotni Social Skills Checklist</td>
<td>Client self-assesses areas of social skills strengths and deficits</td>
</tr>
<tr>
<td>Personal coaching goals</td>
<td>Client identifies potential areas of focus for coaching before meeting with coach</td>
</tr>
<tr>
<td>Wheel of Life</td>
<td>Client self-assesses current and desired states of well-being in various life domains (eg, health, relationships, career)</td>
</tr>
</tbody>
</table>

* These are coaching tools and approaches, not validated assessment or research instruments.

References

2. ADHD + attention-deficit/hyperactivity disorder.
A part of effective goal setting in which a client imagines attainment of a desired outcome—supported by open-ended powerful questions and active and reflective listening by the coach (see Table 2 for description of these and other coaching skills used in work with the client)—was used to identify the client’s overarching goals for the 8-week engagement, strengths that might support change, potential obstacles to change, and best ways of working together.

The client and coach also evaluated the client’s readiness to change through conversation based on the Transtheoretical Model, an evidence-supported theory that posits that behavior change progresses through five stages of change: precontemplation, contemplation, preparation, action, and maintenance.

Table 2. Select coaching skills and strategies

<table>
<thead>
<tr>
<th>Skill or strategy</th>
<th>Definition</th>
<th>Purpose(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accountability/ outcomes tracking</td>
<td>A process in which a client self-monitors using some type of data to assist in observing the degree of progress toward a goal, then reflects on the progress, and shares about the goal as well as progress with the coach or another individual</td>
<td>Provide structure, measurement, and support for behavior changes</td>
</tr>
<tr>
<td>Affirmations/ acknowledgments</td>
<td>Statements offered by the health and wellness coach build self-efficacy by acknowledging a client’s particular strengths, abilities, good intentions, values, and efforts</td>
<td>Develop coach-client trust, Promote client self-awareness of positive characteristics and values, Support development of client self-efficacy</td>
</tr>
<tr>
<td>Coaching presence</td>
<td>A core competency in coaching that consists of the ability to be completely mindful and attentive with the client, using a style that is accepting, affirming, empathic, open, and flexible</td>
<td>Provide a client-centered approach, Develop coach-client trust, Promote self-regulation and deeper reflection</td>
</tr>
<tr>
<td>Identifying strengths</td>
<td>Part of the affirmation process in which the health and wellness coach prompts for, identifies, and focuses on client strengths, encouraging their use in the behavior change process</td>
<td>Develop coach-client trust, Promote client self-awareness of personal strengths, Support development of client self-efficacy</td>
</tr>
<tr>
<td>Implementation intentions</td>
<td>A process in which a client identifies a situation that might be a barrier to goal attainment and plans a successful response in an if-then manner, specifying details about when, where, and how an intended action will be taken</td>
<td>Promote effective goal setting and goal attainment</td>
</tr>
<tr>
<td>Mental contrasting</td>
<td>A part of effective goal setting in which a client imagines attainment of a desired future and then reflects on what in the present stands in the way of that future goal attainment</td>
<td>Promote effective problem-solving, goal setting, and goal attainment</td>
</tr>
<tr>
<td>Motivational interviewing (MI)</td>
<td>A method of communication using 4 core elements (open-ended questions, affirmations, reflections, and summaries) designed to help clients resolve ambivalence and increase their intrinsic motivation to change</td>
<td>Resolve client ambivalence and increase intrinsic motivation to change</td>
</tr>
<tr>
<td>Open-ended powerful questions</td>
<td>A type of question inviting narrative answers in which clients deeply explore and elaborate on their own strengths, values, desires, challenges, and reasons for behavior change</td>
<td>Deepen client self-reflection and self-awareness, including awareness of reasons for behavior change, challenges faced, and progress achieved</td>
</tr>
<tr>
<td>Reflective/active listening (aka reflections)</td>
<td>A form of listening in which the health and wellness coach reflects back the client’s words, tone of voice, and/or feelings, enabling the client to hear aloud these words, feelings, and self-identified reasons to change; some types (eg, amplified, double-sided) specifically promote change talk</td>
<td>Demonstrate coaching presence, Increase client self-awareness, including knowledge of own reasons for behavior change, Promote change talk</td>
</tr>
<tr>
<td>SMART goals</td>
<td>A goal-setting approach comprised of Specific, Measurable, Actionable, Realistic, and Time-bound goals; used in many behavioral change programs</td>
<td>Assist in clear and effective goal setting, monitoring, and attainment</td>
</tr>
<tr>
<td>Summaries</td>
<td>A type of reflection in which the health and wellness coach collects and summarizes what the client has said, often with an emphasis on highlighting ambivalence and developing discrepancy</td>
<td>Increase client self-awareness, Resolve client ambivalence and increase intrinsic motivation to change</td>
</tr>
<tr>
<td>Teaching mindfulness practices</td>
<td>Instruction in practices that build nonjudgmental awareness of what is happening in the present moment and have been shown in numerous studies to benefit individuals with ADHD in multiple realms</td>
<td>Increase client attention, self-awareness, and self-regulation, Reduce stress and promote health</td>
</tr>
</tbody>
</table>

References
through a series of stages: Precontemplation, contemplation, preparation, action, and maintenance. An individual’s stage of change for each desired new behavior can suggest how quickly change might take place and can inform the types of coaching interventions helpful in promoting stage-related change. The client was in the preparation and/or action phases of readiness to change—defined by an intention to plan for (preparation) or take steps toward (action) behavior change in the immediate future—in regard to each of her identified coaching goals.

The client’s initial overarching goal in HWC was learning to manage her ADHD and EF challenges skillfully enough to resume her graduate program. Goal-related action steps focused on establishing daily routines to support adequate sleep and on-time arrival at her morning clinical rotations; improving her social awkwardness in clinic settings, including improving presenting of patients; improving the organization of her study materials; and improving her study methods. HWC action steps are typically put into a SMART (specific, measurable, actionable, realistic, and time-bound) goal format to promote success. Both overarching goals and weekly goals are often formulated this way (see Sidebar: Sample Weekly SMART Goals for 2 examples of the client’s weekly SMART goals). Follow-up of each action step occurs in the subsequent HWC session or by text or email between sessions if the client encounters barriers or wants more frequent accountability check-ins with the coach.

### Sessions 2-7: Weekly Health and Wellness Coaching Sessions (1 Hour Each)

In HWC, the client determines the focus for each session, and the coach provides both structure and support. In this case, the structure of sessions included identifying the session focus; reviewing the previous week’s action steps (goals), including reflection on learning, identifying any challenges, and celebrating successes; exploring the identified session topic by identifying assumptions, opportunities, strategies, barriers and resources, and engaging in problem-solving as needed; and planning new actions for the following week. In the weekly HWC sessions, the coach used a variety of established coaching skills (Table 2) to promote behavior change that could assist the client in achieving her desired goals.

As is common in HWC, instruction in mindfulness practices was offered as a tool to promote improved self-regulation and stress management. In this case, the coach also encouraged the client to discuss her reports of possible anxiety symptoms with her psychiatrist. For support and accountability, the client and the coach communicated via email and text message between sessions about any challenges faced in implementing the chosen action steps.

### Session 8: Final Health and Wellness Coaching Session (1 hour)

The final HWC session provided an opportunity for the client and the coach to identify, reflect on, and celebrate the client’s accomplishments (outcomes) achieved during the 8 weeks of coaching (see Table 3 and Sidebar: Client Perspective). The client and coach also discussed what might help in both maintaining and building on progress made to date.

### Interprofessional Collaboration

With the client’s permission, her coach and psychiatrist spoke several times during the 8 weeks of coaching, providing each with a broader understanding of her needs, choices, challenges, and goals, thus optimizing support for the client.

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**Table 3. Coaching outcomes**

<table>
<thead>
<tr>
<th>Life domain</th>
<th>Outcome description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily functioning</td>
<td>Initiated and maintained a morning routine (assisting client to reduce previous perpetual lateness)</td>
</tr>
<tr>
<td>Interpersonal skills</td>
<td>Used mindfulness practices before interacting with clinical staff (improving both self-regulation and communication)</td>
</tr>
<tr>
<td>Organizational skills</td>
<td>Developed an organized weekly routine to accomplish household tasks (eg, shopping and laundry, previously done in a haphazard way)</td>
</tr>
<tr>
<td>Personal growth and self-efficacy</td>
<td>Developed increased self-regard and confidence (eg, client moved from describing what she had done wrong each week to what she had learned and accomplished)</td>
</tr>
<tr>
<td>Professional/academic achievement</td>
<td>Resumed academic program*</td>
</tr>
<tr>
<td>Self-care</td>
<td>Attained increased amount of sleep each night</td>
</tr>
</tbody>
</table>

*In maintenance phase, client completed her graduate academic program.

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**Sample Weekly SMART Goals**

- A SMART goal supporting daily routines: “This week, before our next appointment, I will write out specific steps identifying what I need to do for a morning routine and an evening routine.”
- A SMART goal supporting improved presenting of patients: “This week I will make arrangements with a fellow student for weekly practice sessions, during the next 6 weeks, of presenting patients to each other.”

SMART = specific, measurable, actionable, realistic, and time-bound
For example, the psychiatrist was able to provide the coach with a clinical perspective on the client’s ADHD, the reasons for the chosen medication(s) and doses, and how they affected her functioning. The psychiatrist, who had worked with the client for a number of months before the onset of coaching, also emphasized concerns she thought were essential to address behaviorally (eg, sleep) to support overall ADHD management. The coach shared with the psychiatrist details of the client’s coaching plan and progress, giving the psychiatrist a closer view of the client’s challenges and successes. The coach also shared observations, based on weekly coaching sessions and more frequent communication with the client, about possible anxiety symptoms. This enabled the psychiatrist to modify the client’s medication regimen to more effectively treat her. The psychiatrist also asked the coach to provide a letter detailing the client’s functional improvements (coaching outcomes), which she shared with the client and then forwarded to the university committee considering whether the client could resume her program.

OUTCOMES

Initial Outcomes

Eight weeks of HWC resulted in multiple meaningful outcomes and improvements for the client in ADHD self-management, EF skills, and self-efficacy (Table 3). Perhaps the most significant outcome of the collaboration was that these improvements, outlined in a letter the psychiatrist forwarded to her university program, allowed the client to resume her academic program.

Follow-up Outcomes

The client was given an opportunity to continue with HWC after resuming school to support maintenance of behavioral changes and address any challenges her new schedule might engender. Because she had achieved her primary goal, as well as for financial reasons, she chose not to continue. However, the coach sent several supportive emails during the first few weeks after the client resumed school, and they spoke by phone after the second week.

In addition, after resuming school and completing a clinical rotation, the client contacted the coach to debrief. The client was pleased to report that she had been on time to her clinical rotation every day, except one (a major improvement in the EF skills of organization and time management demonstrated in the maintenance phase of behavior change); had learned a lot (indicative of improved self-regulation and study skills); was able to accept feedback nondefensively (indicative of improved self-efficacy); and had completed the rotation successfully (involving the use of a number of EF skills gained through the coaching). She had obtained adequate sleep each night (because of improved organization and time management skills); passed her academic tests (likely in part because of better sleep and improved management of her notes and her time); and had begun to feel confident and positive about participation in her academic program (a demonstration of continuous improvement in self-efficacy during the maintenance phase, an ideal outcome of coaching).

After an additional clinical rotation, the client met with the coach for a second follow-up. Although she was not going to sleep as early as she would have wished, she was still getting adequate sleep, had been on time to her clinical rotation each morning, and had again experienced a successful rotation. Although the client had not yet completed school at this point, she invited the coach to her long white coat ceremony, saying “I couldn’t have done it without you!” This statement summarized the value of coaching for this client. Figure 1 shows a timeline of the case.

DISCUSSION

Three key issues are illustrated in this case report: 1) the value of coach-psychiatrist collaboration in successful management of ADHD with a client, 2) the processes involved in coaching, and 3) successful outcomes achieved through a coaching intervention focused on addressing challenges in managing ADHD and EF concerns.

Coach-Psychiatrist Collaboration

Some individuals may choose coaching rather than medical and/or mental health care to address management of their ADHD.18 Although one previously published case study19 describes coaching for an individual with ADHD taking medication and undergoing therapy, this is the first case report, to our knowledge, to explicitly explore the integration of HWC with psychiatric care.

Collaboration between the psychiatrist and coach in support of the client improved the overall care she received and, thus, better supported her ability to attain her desired goals. The outcomes achieved by integrating HWC with psychiatric care included improvements in the following domains: Personal growth and self-efficacy, the ability to “find [her] own resources” (see Sidebar: Client Perspective), daily functioning, organizational skills, interpersonal skills, and self-care (see Table 3 and Sidebar: Client Perspective). In addition, the involvement of HWC in the client’s care facilitated refinement in the psychopharmacologic care provided by the psychiatrist.

Client Perspective

“[The coach] employed the Socratic method during our weekly 1-hour sessions. As much as I [would have] preferred the easier method of [her] simply telling me what I need to do, she encouraged me to explore theories and find my own resources. In this manner, without me realizing it, she was providing me with the most essential independent problem-solving skills, which will help me for the rest of my life. Through our work together, I learned the value of templates to promote my timeliness and organization in my clinical and professional life. She also showed me tricks to promote my productivity in our society, including but not limited to fidgets to displace my energy so as to appear engaged in conversations, STOP acronym [Stop, Take a breath, Observe, Proceed] to prevent me from impulsiveness, and “hard stop” to ensure I stick to positive and healthy schedules and routines. She introduced me to mindful[ness] meditation to increase my awareness as well as filter intrusive and extraneous stimuli. She helped me organize meal planning and fitness so that I may develop a healthy life balance. I would not be able to achieve the progress, maturity, and advancement I have, and continue to do, if it weren’t for [the coaching].”
In terms of generalizability of the findings in the case report, successful application of the emerging practice of HWC in a multimodal approach for managing ADHD necessitates that psychiatrists are aware of its potential benefits and open to collaboration with appropriately trained and experienced coaches. Clients must be open to engaging in the coaching process as well.

Coaching Processes

General HWC processes have been previously described, and processes specific to coaching individuals, including students, with ADHD have also been outlined elsewhere. This case report illustrates a blend of these frameworks to show the process, including the varied skills and competencies (Table 2), that were used in coaching a young adult with ADHD whose EF challenges were negatively impairing quality of life, academic success, and sense of self. No specific, validated measures were used to examine progress before and after coaching because this is a case report using data collected retrospectively from the point of care, rather than being a prospective, quantitative exploration.

Successful Coaching Outcomes

This case report demonstrates the role of HWC in helping empower an individual with ADHD to make desired behavior changes that involved improved management of ADHD and EF challenges and to achieve her broader, primary goal of resuming her graduate education. Additional strengths of this report include the client’s ability to achieve improvements in multiple functional areas (see above and Table 3) and to sustain changes beyond the 6-month mark, an important milestone often considered the beginning of the maintenance phase of change.

The client achieved many functional and behavioral improvements once HWC was introduced into her treatment, changes that had not occurred through work with her psychiatrist alone and changes that she attributed to the coaching itself (see Sidebar: Client Perspective). However, the effects of HWC as distinct from ongoing psychiatric care were not specifically measured.

A potential limitation in broader application of this case study is the client’s initial high motivation to better manage her ADHD symptoms. Intrinsic motivation is key to behavior change but is not always initially present; therefore, a coach and client may need more time than illustrated in this case study to explore and develop motivation before proceeding to the action phase of change. A typical rule of thumb among coaches is that a minimum of 3 months is needed to achieve behavioral change, and sometimes more. In unusual circumstances, with fewer and/or simpler initial goals, HWC may be effective in fewer than 8 weekly sessions.

CONCLUSION

The integration of HWC with psychiatric care resulted in a successful intervention for improved management of this client’s ADHD and EF challenges and contributed to self-efficacy. In partnership with a health and wellness coach, the client achieved an array of positive behavior changes that resulted in her goal of being allowed to resume graduate school, which had been interrupted because of challenges...
associated with ADHD-related functional impairments. The key findings in this case suggest that HWC appears effective in supporting beneficial outcomes and can be a useful practice element in multimodal interventions for ADHD.

Disclosure Statement

The author(s) have no conflicts of interest to disclose.

How to Cite this Article


References


Med School Valentines

ink and paper

Lucy Chisler

Miss Chisler has been designing “med school valentines” since her first year of medical school. The valentines have served as a creative outlet and welcomed study break. Her classmates encouraged her to submit them for publication.

Miss Chisler is a fourth-year medical student at West Virginia School of Osteopathic Medicine in Lewisburg.
ABSTRACT
Organizations worldwide as well as scholars in business, psychology, medicine, and the social sciences are racing to identify the rules that drive organizational innovation vs status quo, the rules that drive employee engagement vs oppression, and the rules that drive effective leadership vs micromanagement. This phenomenon is burgeoning because relying on instinctive leadership alone leaves organizations susceptible to the possibility of ineffectual leadership in their hierarchies. To identify these rules, we first need to connect the patterns of how humans learn and solve problems and the patterns of leadership in hierarchies to find the pathways that drive organizational learning vs conformity. Only then can we identify the rules for those pathways, describing how and why learning and growth occurs in any organization or hierarchy. With this operationalized framework, we can now teach supervisors how to recognize the clues and evidence that result from our belief-behavior systems to subsequently convert conformity processes into learning processes, generating organizational innovation and growth as well as employee engagement, loyalty, and trust.

INTERSECTION OF HUMAN DISCOVERY AND HIERARCHIES
Scholars and intellectuals in the fields of business, psychology, medicine, and the social sciences agree that organizations must engage the employees who are closest to the work in organizational problem solving to drive organizational success and sustainability.1-3 Many of the terms used to describe these patterns of learning and engagement include servant leadership,4 growth mindset,5 kaizen and lean,6 scrum,7 pockets of good practice,8 feedforward,9 agile,10 humble leadership,11 psychological safety,12 and Theory Y.13 On the other hand, what has been lacking in the literature thus far is the identification of how the patterns of learning and the patterns of hierarchies intersect (Figure 1), as well as the identification of the rules for these patterns (Table 1).

The first fundamental rule is that human beings love to find patterns and identify the rules for those patterns; finding the rules and patterns to solve problems and puzzles brings internal, fundamental joy. Just observe yourself and fellow humans: My 7-year-old daughter lights up when she identifies the patterns that allow her to consistently trap an opponent in games of strategy, and I passionately and ardentely sorted these fascinating patterns until they fit together precisely. Therefore, we don't have to teach people how to discover or solve problems; we merely need to create and maintain the environments that support such discovery. Many physicians, for example, sought out the field of medicine because finding the patterns and rules related to health and disease elicits excitement and meaning, but all too often the hierarchies in which we work suppress the processes of discovery, leading to burnout and even despair.14 How and why does this happen?

To understand the burnout and despair that can happen in any organization or hierarchy, we next need to understand the fundamental rules of hierarchies. Hierarchies learn differently from individuals because unlike individuals, who possess all the resources and knowledge for their own learning, hierarchies endow the resources and tools for learning to the supervisors, whereas the knowledge and insights for learning are owned by the subordinates. Additionally, supervisors control the discovery process of subordinates depending on what unconscious belief the supervisors carry when presented with a new idea, new information, or new situation. As supervisors, if we have a democratic unconscious belief, then our feelings, thoughts, and behaviors drive collaborative problem solving with our subordinate. If, however, as supervisors, we have an autocratic unconscious belief, then our feelings, thoughts, and behaviors ensue to force our subordinate to conform to our understanding of the problem, and because we unconsciously believe that we have the right answer, we subsequently believe that no learning is needed.

And finally, we need to understand the fundamental rules that apply to us as supervisors. As supervisors, if we unconsciously believe that we may not have all the knowledge that is needed to solve a problem, a democratic unconscious belief, we will instinctually seek out knowledge from others, interpreting that information as necessary, helpful, and fascinating in enhancing our insights. If, however, as supervisors, we unconsciously believe that we have all the knowledge that is needed to solve a problem, an autocratic unconscious belief, then others’ ideas or experiences are interpreted as unnecessary, worthless, and disruptive. Our democratic and autocratic beliefs are totally unconscious and because of that, when we have toggled into an autocratic belief-behavior system, we are all too often completely and tragically unaware. Additionally, when we demonstrate the feelings, thoughts, and behaviors that we are functioning in our autocratic belief-behavior system, we then often misinterpret the clues and evidence of such as insurgency on the part of our subordinate rather than a direct consequence of the conformity process that our beliefs, feelings, thoughts, and behaviors are demanding. And, as supervisors, we can all toggle between democratic and autocratic unconscious beliefs at any moment.

Interestingly, Douglas McGregor’s XY Theory also recognizes that supervisors toggle between autocratic (X-Theory) and democratic (Y-Theory) behaviors.14 McGregor, however, was thinking that external characteristics such as the type of worker or the work environment is what
leads a supervisor to toggle into a certain behavior pattern and that it is a conscious decision rather than recognizing that it is the unconscious democratic or autocratic belief of the supervisor that causes the democratic vs autocratic feelings-thoughts-behaviors cascade.

And, yes, although these rules and pathways apply to an organization’s supervisor-subordinate relationships, they compellingly apply to all hierarchical relationships such as parent-child, teacher-student, mentor-mentee, physician-patient, and legislator-constituent. Additionally, restorative justice, overcoming unconscious bias, and the Montessori method are also ideologies that have astutely encouraged supervisors to maintain democratic, not autocratic, belief systems; outlined how to engage in collaborative, not coercive, interactions; and emphasized learning processes over conformity processes to produce just solutions and intellectual development. And, a hierarchy composed entirely of democratically minded supervisors defines social justice and true democracy.

**INTERACTION SPECTRA**

Supervisors interact with subordinates by allowing subordinates to have differing levels of participation in problem solving (engagement-transparency) or by imposing differing levels of control (deprivation-domination), and each spectrum is guided by the acuity of a situation. This concept can be illustrated by exploring simplified physician-patient hierarchical interactions at the extremes of each spectrum. Low-acuity situations, such as a patient with viral upper respiratory tract symptoms (common cold symptoms), can be addressed in 1 of 2 ways. An autocratically minded physician, using interactions toward the full deprivation-no domination side of the spectrum, does not invite the patient to participate in defining the problem or producing solutions and after examining the patient concludes, “You have a cold.” A democratically minded physician, on the other hand, using interactions toward the full engagement-no transparency side of the spectrum, collaborates with their patient to truly understand the underlying problem: Perhaps the patient needs a note for work absence, or the patient wonders if something can help the cough because it keeps him/her up at night, or their patient’s grandmother is getting chemotherapy and the patient wonders if s/he can visit. Then the democratically minded physician makes resources available to collaboratively and effectively solve the problem with the patient.

Conversely, a high-acuity situation, such as a heart attack, can also be addressed in 1 of 2 ways. An autocratically minded physician, using interactions toward the no deprivation-full domination side of the spectrum, looks at the data and proceeds with the algorithm to treat a heart attack. A democratically minded physician, on the other hand, using interactions toward the no engagement-full transparency side of the spectrum, shares his/her understanding of the problem with the patient as well as how s/he plans to address it (no engagement) and then asks his/her patient if the...
physician is missing anything (full transparency). This “ask” allows the democratically minded physician to check his/her work, check his/her understanding of the problem and solution, and make sure that s/he is not missing a vital patient factor that may affect the outcome of the treatment.

Interestingly, as I began to sort the patterns of supervisor–subordinate interactions, I also started to see how previous efforts to piece together these patterns in the Social Styles Model, for example, did not go far enough. The researchers who created the Social Styles framework also recognized the patterns of interactions between supervisors and subordinates, which they call ask, people, task, tell, but they saw these as fixed behaviors attributable to a personality type. What they did not recognize, however, is that the behaviors of people-ask actually represent the engagement-transparency spectrum of interactions that a democratically minded supervisor drives with his/her subordinate, whereas the behaviors of task-tell actually represent the deprivation-domination spectrum of interactions that an autocratically minded supervisor drives with his/her subordinate. When I shared this insight with one of my physician leaders, she agreed that the social styles concept of fixed behaviors does not ring true. She shared her insight that as an emerging leader she initially functioned on the task-tell spectrum, and as she became a more experienced and successful leader, she began to function on the people-ask spectrum. More specifically, she was able to figure out how to toggle from an autocratic belief-behavior system into a democratic belief-behavior system more often.

A supervisor once asked me, “What if I just know that I am right?” The answer is twofold. First, the supervisor must truly value the insights, knowledge, and experience of his/her subordinate. And second, the supervisor can then just ask his/her subordinate whether the supervisor is “right.” As a subordinate, if my supervisor truly values my insights, knowledge, and experience, then I can tell my supervisor if s/he is right or if s/he is missing something. However, as a subordinate, it is painfully obvious when my supervisor is in his/her autocratic mindset, not valuing my insights, knowledge, and experience; in this case, it is safer and smarter to avoid highlighting a knowledge gap because I then avoid the autocratic feelings-thoughts-behaviors cascade.

This autocratic feelings-thoughts-behaviors cascade can be further illustrated by the following theoretical example. Let us say that I want to share my ideas about the hierarchical drivers of burnout with my supervisor because I believe that this knowledge and insight will improve our organizational performance; however, if my supervisor has toggled into the autocratic belief-behavior system, s/he might respond, albeit kindly, with, “Please stop sharing your ideas about the causes of burnout because we already have a group working to understand the causes of burnout, and I feel like you are undermining my authority when you share your ideas.” This autocratic belief-behavior pattern in which the supervisor perceives his/her subordinate as insurgent when the subordinate is merely going out of the way to try to help the organization defines poetic injustice. The literary definition, provided by Thaddeus Metz, Professor of Philosophy at the University of Johannesburg, is that poetic injustice is “…characteristically a matter of a person having gone beyond the call of moral duty to help others and then received harm, perhaps of the same sort s/he was trying to alleviate, and (worst of all?) from those s/he was trying to help.”

The instant a supervisor unconsciously believes s/he has nothing to learn from his/her subordinate is the moment the supervisor has closed him/herself off to discovery.

### Creating Cultures of Innovation and Growth

Understanding the pathways and rules for organizational learning is imperative today because supervisors who are content to function in their autocratic belief-behavior system create substantial liability for their organizations in 2 formidable ways. First, autocratic supervisors, not valuing the knowledge and experience of their subordinates, behave like judges who listen to only 1 side of a case before issuing a ruling, making uninformed, unjust, and generally wrong decisions. Second, autocratic supervisors create suffocating cultures, suppressing and/or driving away talent from the organization because the path of least resistance for subordinates who are repeatedly oppressed is naturally to disengage or even completely extricate themselves from the hierarchy for self-preservation, leaving autocratic supervisors to toil with their own knowledge gaps and risky decisions, rather than undertake the monumental act of heroism or self-sacrifice that is required to elucidate to such a supervisor that they are functioning in their autocratic belief-behavior system and demonstrating knowledge gaps and imperfect solutions.

And unlike the Toyoda family, who instinctually selected and promoted democratically minded supervisors throughout their company from its inception to create a culture of innovation and growth, organizations today generally cannot afford to replace all their autocratic supervisors for those who are already intuitively democratically driven. Thus, established organizations must train their supervisors to become more democratically minded more often.

#### Table 1. The rules that direct the hierarchical pathways that allow or prevent our fundamental human passion for and joy of discovery

<table>
<thead>
<tr>
<th>Entity</th>
<th>Rule no.</th>
<th>Rule Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human nature</td>
<td>1</td>
<td>Recognizing the rules and patterns to solve problems and puzzles brings internal, fundamental joy</td>
</tr>
<tr>
<td>Hierarchies</td>
<td>2</td>
<td>Supervisors own the tools and resources for learning</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Subordinates own the knowledge for learning</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Supervisors determine and control the interactions with subordinates and the processes that are administered</td>
</tr>
<tr>
<td>Supervisors</td>
<td>5</td>
<td>Beliefs are unconscious</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Supervisors misinterpret the clues and evidence that they are functioning in their autocratic belief-behavior system as insurgency on the part of their subordinates</td>
</tr>
</tbody>
</table>
The most obvious place to start such supervisory training is to help supervisors learn to recognize the clues and evidence of their own feelings, thoughts, and behaviors that result from their unconscious beliefs. If, as supervisors, we are feeling excited and curious and we are thinking of protecting and serving our subordinates and solving a problem together, then we are in our democratic belief-behavior system. If, however, as supervisors, we are feeling vulnerable or threatened and if we are thinking of attacking or blaming our subordinates and trying to get our subordinates to do what we want them to do, then we are functioning in our autocratic belief-behavior system. Furthermore, if our subordinates are feeling valued and engaged and they are demonstrating loyalty and trust, then we are functioning in our democratic belief-behavior system. If, however, our subordinates are feeling oppressed or replaceable and they are demonstrating resistance or disengagement, then we are functioning in our autocratic belief-behavior system. When we recognize the clues and evidence that we are functioning in our autocratic belief-behavior system, we can appreciate that we do not have all the information or knowledge needed to solve the problem, and we should try to toggle into our democratic belief-behavior system by genuinely and respectfully seeking out more information, knowledge, and insights from our subordinates.

Less obvious but equally necessary and effective in changing a conformity process into a learning process is to give subordinates access to the resources of time and/or money to comprehend problems and discover solutions. Many technology companies as well as Toyota have recognized that subordinates must have access to the resources for learning if they are to discover, and such companies generated strategies, such as Google’s 20% time policy concept (Google encouraged employees to spend 20% of their time working on projects that the employees themselves believed would benefit Google), to give subordinates access to the resources for learning. In medicine, for example, a supervisor could easily apply this principle by allocating organizational time to subordinate physicians for collaboration, problem comprehension, and solution development to improve the health of their populations. As a preceptor, for example, I allow my medical students to own our time together, and thus they choose how to use that time to promote their individual practice improvement as well as our shared learning. Because these rules and pathways apply to all hierarchies, we can also apply them to our supervisory parenting role. As parents, for example, we could give our child time to troubleshoot a problem or provide the resources that the child requests to better understand and solve a problem.

And finally, the least obvious but also necessary and effective way to convert a conformity process into a learning process is to use the tools that are meant to guide learning in a just, rather than unjust, manner. This is, however, where many organizations and hierarchies scramble. In medicine, for example, supervisors routinely and erroneously use outcome metrics (eg, a measure of disease management or cancer screening in a population) as a proxy for indolence, an end point, often penalizing subordinate physicians for not achieving metric goals rather than as a tool to guide a learning process to better understand the barriers that patients experience when accessing the medical system or managing their disease. Recognizing that the learning process is where discovery happens, and a missed outcome or gap in performance just means that more learning is needed, a democratic supervisor rewards subordinates for participating in the learning process rather than penalizes them for missing an outcome or for experiencing a gap in performance. Conversely, when the tools that are meant to guide learning are used as an end point, meaning the autocratically minded supervisor has transferred the responsibility for addressing the tool to the subordinates, and the resources for learning are sequestered from the subordinates, another example of poetic injustice, the organization ultimately perpetuates its unresponsiveness to problems and thus cannot generate effective or innovative solutions. It is not the tools themselves but rather how a supervisor uses those tools that determines if the supervisor is running a conformity process or a learning process.

Another example of how to use learning tools to drive a learning process can be illustrated by the use of feedback evaluations. Supervisors in many organizations routinely and erroneously use feedback evaluations (a summary of an individual’s practice improvement efforts) as a proxy for the fragment of learning that the supervisor witnessed or remembers, again, an end point, rather than as a tool to guide a learning process to improve individual skill development and knowledge acquisition. To change such a status quo, as supervisors, we must take responsibility not only for recognizing and resolving our own knowledge gaps but also for recognizing and resolving any deficiencies in our process that result in performance gaps for our subordinates. I do this, for example, by holding myself accountable for the learning of my medical students; if they are not meeting their practice improvement goals while we work together, then I understand that I am not facilitating our learning process ideally, and I must figure out how to be a more effective facilitator of our learning. The tool is not used as an end point to judge the subordinate but rather as a guide for the supervisor to facilitate more learning when more learning is needed. Second, I reward my students for participating in the learning process by asking my medical students to document their performance on their evaluation. At the end of the rotation, their documentation is what is recorded as their “grade,” and they are justly rewarded for the time and effort they invested in learning. Because my medical students control the documentation about their practice improvement and our learning, I avoid unjustly completing an evaluation with knowledge gaps and subjective feelings. Again, it’s not the tools themselves but rather how a supervisor uses those tools that determine if the supervisor is running a conformity process or a learning process.

By using this operationalized framework, supervisors can convert conformity processes into learning processes, generating organizational innovation and growth as well as employee engagement, loyalty, and trust. We don’t have to teach people how to discover or solve problems; we merely need to create and maintain the
Learning in Humans versus Hierarchies

Environments that support such discovery, I hope that you enjoy trying out these concepts in the workplace and perhaps in your other hierarchies.

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Subordination of One Hierarchy

Even in the angels there is the subordination of one hierarchy to another, and in the heavens, and all the bodies that are moved, the lowest by the highest and the highest in their turn unto the Supreme Mover of all.

— Saint Ignatius of Loyola, 1491-1556, Spanish Basque Catholic priest and theologian who cofounded the religious order called the Society of Jesus (Jesuits)
A remarkable coping mechanism helped me survive parts of my childhood, and I find I need to give a heads-up about it to anyone who treats me in a medical setting. For you healers, it can be quite surprising, even alarming, to be working with your best compassionate professionalism on an apparently normal, well-educated, older woman and suddenly watch her affect, voice, and symptoms morph into a 6 year old who wants to play games with your equipment—or a terrified 11 year old who is sure you want to perform painful medical experiments on her. Sometimes, as happened in a recent Emergency Department (ED) visit, even when I manage to warn the staff about my dissociative disorder, the information lands in the chart without leading to understanding, opening the possibility of dangerous consequences. Not that we who live with the condition are inherently dangerous, but we can be unpredictable.

In my situation, a young ED physician with big round glasses and hair neatly pulled back began efficiently to examine me when I showed up with dangerously high blood pressure.

"I need to tell you that I have a dissociative disorder," I said, having trouble getting the words to fit together. "I already told the nurse. Are you familiar with what that is?"

"Well, why don't you tell me what it means to you?" I wondered why she'd ask me to explain it when I felt so weird I could hardly think? She must not know what it is. Or maybe she's testing me.

"It's a condition that sometimes develops in response to traumatic things that happen in childhood. They used to call it multiple personality disorder. My psyche created a bunch of different parts—some people call them alters [dissociative identities]—to deal with the trauma, and now that I am healing, they sometimes come forward, especially if there is a lot of stress, like right now. So, I just don't want you to be surprised if you suddenly are confronted with a 6 year old here during your examination." Her eyes had glazed over. It had taken a lot of effort to get that many words strung into understandable sentences, and I didn't have the energy to try any harder to penetrate her indifference.

I was so glad that the paramedics who brought me in had responded more knowledgeably. During a meeting with people I knew well, one of my internal alters had come forward to report with some concern that the body was not well and they should take me to my physician. Feeling ill, but still in control, she then laid the body we share down on the floor trying to find comfort. When my friends saw me on the floor, they decided to call paramedics instead. But, as the ambulance arrived, my system exploded with a whole new level of agitation. My friends told the paramedic team about my dissociative disorder and insisted that I not be restrained on the gurney, knowing that somewhere deep inside, for reasons they didn't fully understand, I was terrified of being strapped onto the bed.

The paramedics listened. They helped me to sit on their gurney and gently lifted it into the back of the truck so they could assess what was wrong. The numbers didn't mean much to my dissociated and panicked mind, but the concern on the face of the EMT [emergency medical technician] spoke volumes when his colleague reported, "222 over 124." And we were off to the hospital, with only a gentle seatbelt and the kindness of these well-trained men holding me. They spoke reassuringly to the frightened 11 year old who knew from experience something awful was about to happen and to the 70–something woman whose health was at risk, accepting without comment that both were housed in the same body.

In the ED, the physician continued to examine what she could see: Blood pressure coming down; so far, other systems appearing normal. She began her neurologic examination by having me touch my nose with my finger. Then she held her finger off to the left side and asked me to touch it. Now she held her finger way over to the right side and said to touch it there. This was fun! As soon as it appeared that the young woman with glasses wanted to play a game, 6-year-old Jane was happy to oblige; the old lady was taking it all much too seriously! Besides, Jane could feel more fear welling up inside, and it was her job to deflect fear when she could. Seamlessly, without warning, Jane came forward to take control of the body so that she could play, laugh, and giggle with her new friend. The adult Big Bonnie melted...
into the background, vaguely aware, from somewhere behind the eyes, of what was happening "out there" but unable to influence it.

"Hi!" Jane bubbled with a big smile at the lady who started the game. "This is fun. I can touch it over here and over there," she demonstrated with a giggle. With her signature bright-eyed joy, head cocked slightly to the right, Jane talked delightedly and continued the game. But instead of playing along, the lady quickly turned and left the room, taking the nurse with her. Maybe she wanted to play a different game. As Jane squirmed in the bed, she found some little round plastic sticky things and invented another fun game clicking them together and pulling them apart. There were machines making funny noises and lots of lights and cool things to look at. Luckily, she didn't try to play with any of them or the tube and needle in her arm. She wanted to play with the people who had left her alone. After a while, with the internal fear lessened and the external people thoroughly distracted from doing anything harmful, Jane went back inside and let the old lady be there.

**IMPACT OF CHILDHOOD TRAUMA ON THE BODY**

As Van der Kolk\(^1\) documents in *The Body Keeps the Score*, people with dissociative disorders—as well as others with trauma histories—often present with confusing symptoms and face the danger of misdiagnosis and/or inappropriate treatment. This is particularly true before proper diagnosis (which in the case of dissociative disorders can take 10 years or more) but also continues thereafter.

The landmark Kaiser Permanente-Centers for Disease Control and Prevention Adverse Childhood Experiences (ACEs) Study\(^2\) showed the impact of ACEs on adult health and spurred more research into childhood trauma, which is a precursor to most dissociative disorders. As Jane suffered in the ED, someone will come forward and take over unexpectedly. People with dissociative disorders live along a spectrum of how many alters they have and how often the alters switch and take control. And we who live this way are far more common than most people think, precisely because the whole point of being dissociative is to hide what we don't want others to know. Many of us live very productive lives and show few, if any, outward signs of a disorder. In fact, I call it my superpower, because it gave me 50 years of a great life—a 30-year, happy marriage, 2 loving children, a master's degree, and a career of service—before I learned the secrets of my childhood. And this same superpower has been an essential part of my healing.

**DIAGNOSIS**

During the 6 years before my diagnosis, as my body started falling apart with muscle weakness, brain fog, and seizure-like attacks, I was a confusing case for everyone. The first neurologist I saw conducted a variety of tests and announced that everything appeared normal to him; it was all probably just stress. Although he knew very little about me, my life, or what kinds of stressors might be present, he proffered a prescription for Prozac [fluoxetine] and bid me follow-up with him in 6 months.

I wonder what would have happened if I had been compliant and filled the prescription? How long might the Prozac have suppressed the symptoms without him finding, or even looking for, what caused them? How would that have affected my life and health? Would I ever have found my way to genuine healing, or would I have wandered along in a drug-induced haze and never learned my truth? I'm glad that ACEs science now gives medical people new screening tools that help identify childhood trauma and its sequelae.

Eventually, I found my way to the neurology clinic at a local world-class teaching hospital. My neurologist there took no such short cuts, but it took her 3 years to rule out all the other possibilities and set me on a path to get out of the wheelchair and reclaim my body, mind, and active life. After exhaustive testing, when she finally learned that I had tried to kill myself when I was 12 (something I had dismissed as unimportant), she told me that the secret to my mystery illness could probably be unlocked if I could find out what was bothering that 12 year old. As much as I fought the idea of a psychological diagnosis at the time, she was right. I began working with an intuitive and highly skilled psychotherapist, and as the secret horrors of my childhood began to emerge, my physical symptoms subsided.

My primary care physician, a down-to-earth internist who loved her medical school psychiatry rotation, witnessed all of this with interest and respect. Together with my therapist, we came to understand that physical symptoms, which represent actual events from my childhood, are a primary means of communication from my subconscious mind. Whenever a new symptom appears, she assesses whether it needs medical or psychological attention. Most of the time, she clears me medically and leaves me to figure it out with my therapist. What a blessing that she doesn't feel the need to medically treat every symptom that comes along, but
rather sees them in the larger context of my diagnosis and healing.

When memories of painful, scary medical experimentation in an examination room like hers became clear, we understood that my periodic nervousness couldn’t be dismissed as “white coat syndrome.” Sometimes, she had to deal with frightened young alters and joked once that she should bill me for 3 appointments that day because she visited with 3 different people. She speaks kindly and age-appropriately to each alter she encounters, understanding that each one is a different age and developmental stage, based on when bad things happened during childhood. She always positions herself to keep the exit unobstructed, even in her smallest room, so that neither I nor any alter ever feels trapped. With knowledge and compassion, she has created her office as a safe space for all parts of me to share our aches and pains. In addition, she is acutely aware that I had no control over what happened to me in childhood and always allows me to exercise agency and control over what happens to, and goes into, my body.

She monitored the blood pressure crisis that took me to the ED and later told me that the ED physician who fled the room when Jane switched, called her to ask what to do. Her advice was to treat with respect each alter who appeared, mindfully of their need for safety and personal space. Hear what each has to say, because it may include clues to the symptoms you are trying to treat. Unfortunately, the ED physician never returned to use that advice.

HEALING

The hospital kept me overnight for observation, and numerous tests found no medical issues to explain the dangerous spike in blood pressure. My first stop the next afternoon was to see my therapist. During 4 hours of gut-wrenching therapy during the next 2 days, I learned much more about the medical experiments I had endured between the ages of 8 and 12 years, and how my alters had worked together to hide the fear and pain so that the body would remain calm and cooperative.

Now, decades later, one of the alters involved had been ready to tell her part of the story but felt no one would listen. She had chosen to make the body feel sick during a gathering with safe friends, to get attention. But when the paramedics were called, she couldn’t control the reaction it triggered.

The jump in blood pressure was caused by a pocket of hidden terror—the terror of a 10 or 11 year old who didn’t know what was about to happen to her body, how painful it would be, how long it would last, or if she would die from it. Although other similar memories had been released years before, this one had somehow gotten stuck. When it came time to release this fear, she knew no other way than to do it full force through the body.

In my physician’s office, 3 days after the ED visit, my blood pressure was 122 over 72 (mmHg). She listened appreciatively as I (and others) explained what we had learned in therapy and declared, “Well, we’ll monitor you for a while, but I don’t need to treat you. You’ve got this.” We laughed together, relieved at the truth of her statement and awed, again, at the power of somatic memories.

My holistic chiropractor and I also have learned to use switching to promote healing. A couple of years ago I appeared in her office with nagging pain in my left hip and thigh. I was pretty sure it stemmed from a childhood injury that happened when one of my alters was in control of the body and fell down some stairs. The chiropractor and I decided the issue might best be resolved if the alter, Priestess, who was present in the body when the injury occurred, was present as she worked on it.

I settled on her table face-down, and she did some adjustments based on her initial observations of my body. Then she asked permission to talk with others. George, my main protective alter, came first to make sure it was safe. At first, he was curt with her, but she checked the body and told him he seemed to be in good alignment. He felt her gentle touch and went back inside, satisfied that it was okay, not like the situations we had experienced as a child.

With George’s all clear, Priestess, who can be quite imperious, came forward and the body tightened up, as it always does when she is present.

“Are you a doctor?” Priestess wanted to know of the woman now touching her body. The chiropractor introduced herself and her credentials as respectfully as she might to any adult, and, as she made adjustments, Priestess felt her body release years of tension.

“You have done a good job. It is good to be in alignment,” Priestess intoned by way of a thank you when the chiropractor was finished. And she relaxed back into the recesses of the mind.

As she left, Jane popped in to test whether she could sit cross-legged.

“Oh, thank you, thank you!” Jane gushed. “This is the first time in a really long time I could sit this way without it hurting! I’m so excited! It’s my very favorite way to sit. You must be the very best doctor in the whole wide world!”

Experience has taught us what neuroscience confirms: Trauma can be stored in muscles and organs for many years!—decades in my case. Similar to what happens in talk therapy, it turns out that somatic symptoms may best be released if the

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**Tips for Practitioners**

- **Listen carefully** when a patient reveals a trauma-related diagnosis, such as a dissociative disorder.
- **Be open** to the possibility of a dissociative identity, or alter, appearing. Clues include a shift in facial expression, voice, affect, and demeanor.
- **Engage respectfully,** recognizing that an “alter” may be of a different developmental age than the body.
- **Ask:** “What can you tell me about what’s going on here?”
- **Be curious** when confronted with unexplained symptoms; they may be manifestations of historical trauma.
- **Ask:** “What happened to you that might help us to understand?”
- **Respect** a trauma survivor’s need for personal space.
- **Keep exits unobstructed** so patients never feel trapped.
- **Refrain from**—or loosen—physical restraints, to the extent safety allows.
identity state, or alter, who was present at the time of the trauma is present to help identify and release them.

I feel greatly blessed to have been brought back from a period of mental and physical debilitation, to full-functioning good health and wellness by a group of professionals who helped me unlock and decipher the messages of long-hidden traumatic body memories held by dozens of alters (a number that continues to decrease as we heal). Dissociation and switching were our way of dealing with the original traumas, and switching, with differentiated treatment, is key to our healing. So, as mentioned in the Sidebar:

Tips for Practitioners, if someone tells you s/he has a dissociative disorder, be open to the unexpected.

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Amazingly Adaptive Survival Technique
I was shocked and terrified to hear Dr Summer say I had what was formerly known as multiple personality disorder. Is that like Sybil? Am I like the woman in The Three Faces of Eve? My head began to spin. What do I have inside of me? Is there a crazy person in there? What am I? I felt like a freak. I was afraid to have anyone know. I have a mental illness. People make fun of people like me. Upon hearing my diagnosis, I stopped thinking of myself as smart, creative, or clever. Even though Dr Summer had worked hard to help me understand that I had developed an amazingly adaptive survival technique, I no longer thought of it that way at all.

— The Sum of My Parts: A Survivor’s Story of Dissociative Identity Disorder, Olga Trujillo, JD, trainer, speaker, and advocate for victims of domestic violence, sexual assault, and child abuse
The Permanente Journal • https://doi.org/10.7812/TPP/19.111

The Sword of Damocles: Living with Neurofibromatosis Type 1
Juan Sebastián Botero-Meneses, MD
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ABSTRACT
Both as a physician and as a patient, having neurofibromatosis type 1 has been an important part of my life. In my practice as a physician and as a professor, I have tried to reflect on the reality of living with a genetic condition and how it affects the way I live and practice medicine.

INTRODUCTION
Some time ago, while examining a child with café-au-lait spots, a pediatric neurologist who had been one of my professors in medical school said to me: “Neurofibromatosis is like a Sword of Damocles … You never know when the bad things are going to happen.” I never forgot those words.

Damocles was a member of the court of Dionysius II, king of Syracuse in Sicily. As told by Cicero, Damocles was conversing once with the king about how fortunate the king was, as a man endowed with great power and authority. In response, the monarch graciously offered for Damocles to trade places with him. The courtier eagerly accepted. Damocles sat on the king’s throne, surrounded by servants and luxury, only to discover that a huge sword hung above his head, held only by a single hair of a horse’s tail. The sword might fall on him any second, and then again, it might not.

I am a physician, and I have neurofibromatosis (NF) type 1 (NF1), a complex autosomal dominant neurocutaneous condition that mainly causes tumors and pigmentary lesions. These tumors usually affect the skin and the nervous system. For as long as I can remember, my condition has felt, indeed, like a Sword of Damocles: A silent, constant, perhaps even dangerous companion. Many years before I got my medical degree, I remember my parents trying to explain to me why my skin resembled that of a giraffe’s, a trait I used to hate and be very self-conscious about, but now have come to terms with.

THE UNCERTAINTY OF A DIAGNOSIS
I am my mother’s youngest son; her pregnancy was normal, and I was born only a couple of weeks before term. Shortly after I was born, my parents noticed freckles under my right armpit and spots on my chest and arms. They had some freckles themselves and figured that it was probably a family trait, so they took me home. When the spots started to multiply and grow, my parents became concerned.

Because no one knew why I had these spots, I spent a great part of my childhood visiting hospitals and physicians’ offices. I was very scared at first, of needles mostly. I felt hospitals were cold. After some time, I grew to feel comfortable in hospitals. Everyone was always so nice, the nurses and the physicians made the children laugh, and they gave them sweets and smiles. Hospital time became less scary and more fun because I got to skip some boring classes in elementary school.

It was less fun when I had brain computed tomography scans and magnetic resonance images (MRIs), which were long and gave me a headache, or when my father had to take me to a cancer center, and I was examined, poked, and prodded, by about 15 physicians. Those physicians shared a distinct look of bewilderment that screamed “I have no idea what is wrong with this boy.”

Despite this daunting situation, my parents were great; they were very involved and protective. They even had “Fake Christmas Eve” the night before my first brain MRI. I stayed up late with my brother doing a treasure hunt for presents so that I would be exhausted and asleep by the time they took me to the hospital, thus ensuring I would be able to stay still during the test.

I vividly remember visiting the office of a pediatrician and looking at her libraries filled with leather-bound medical texts, neatly organized stethoscopes, blood pressure cuffs, and fountain pens. The room was filled with the sound of classical music. It was an incredible place, and I wished I could someday work in an office like that. Moreover, the physician was so knowledgeable and kind, that I was always in awe of her presence. I admired the fact that someone could be that smart, well-spoken, and kind.

Physicians found that my neurodevelopment was normal, other than the fact that I was a clumsy child, often dropping things or falling down. Gathering from what I have been told and what I can remember from early childhood, most of my struggles came from emotional development. Although apparently I had good academic performance, teachers often worried that I spent a lot of time by myself and that I often looked sad and somber.

I did not have a diagnosis for many years, and for some time, I was misdiagnosed and thought to have Noonan syndrome with multiple lentigines (then known as leopard syndrome). This lack of a diagnosis was anguishing for me and my family. Every fever or minor ailment was a major concern for my parents. When I turned 9 years old, we were referred to a pediatric neurologist and a geneticist. It was these specialists who first said the word neurofibromatosis to me. I could hardly pronounce it then, yet now, not a day goes by when I don’t say it to someone.

I remember when I first did an online search for the term neurofibromatosis. A myriad of Web sites and shocking images stared back at me. In disbelief and with my scant medical knowledge, I did not understand what was written. I was shocked, I was scared, and I was angry. I was not alone; my parents were even more如此。
knowledge then, I remember drawing one simple conclusion from that exercise: “I am definitely going to die before anyone else I know.”

MEDICAL SCHOOL
The feeling of safety that I experienced when I was in physicians’ offices stuck with me. I felt at home in hospitals. I set aside the idea of becoming a journalist, like my father, and I applied to medical school.

More than that, I almost felt I had to study medicine. I wanted to help people. As cliché as it sounds, it was true. I was not naive; I did not become a physician because I thought I would find a cure for NF1. It was not about that; it was about listening to these people, these families. People like me, like us, who were left in the dark with a diagnosis hanging above their heads and not having a clue of where to go from there, how to keep on living knowing there was something wrong with their child.

I eagerly waited for the day I would receive a class on NF. The first time it happened, I was in my second year. I remember it vividly—partly because I was happy to see my own geneticist teaching the class and partly because I was terrified. Every single picture, every statistic, everything suddenly became very real.

I realize, of course, that I could have it much worse and that I am clearly not the first physician to have a particular condition or disease. (As much as we try to drive our humanity out of ourselves to become of use to our patients, sobering realities such as physical illness become a harsh reminder.) Nonetheless, the prospect of not knowing when something will hit you is daunting. I have grown to like my spots and my freckles, but what happens when it becomes more than that?

WORKING AS A DOCTOR WITH NEUROFIBROMATOSIS TYPE 1
I have heard the story 100 times. “Our baby was born, someone [a physician, a nurse] saw the spots and told us our child would not live long, or they scared us beyond comprehension. We have forever resented that [physician/nurse] and the harm he did to our family.” The first time I heard it, it was my father telling the story; the latest, a 30-something-year-old mother in whose son I had just diagnosed NF1.

I remember one patient I came across while attending a surgical oncology rotation: A 15-year-old girl with severe chronic pain in her upper extremities. Physical examination findings and an MRI revealed a malignant peripheral nerve sheath tumor that developed from a preexistent plexiform neurofibroma in her right arm. The tumor was very large and invasive, and she needed to have her arm amputated because of it. I had to scrub in for the procedure. I was ready, and then I felt myself gasping for breath. I scrubbed out and broke down into tears. Hiding outside the operating room, I called my father, and I was scared and embarrassed. I felt inadequate and unfit to be that girl’s physician. I was. I seemed unable to concentrate on her and see her as my patient. Rather than going over the steps for the surgical procedure, I saw myself on that operating room table. Although I wanted to help that girl, I could not shake from my mind the thought “What if this happens to me?” How should a physician act in such a scenario? Should I have refrained from treating her and sought out a colleague? Or should I have referred the patient to a different hospital because her case affected me in a very personal way? How can physicians take care of patients while taking care of themselves?

Fortunately, not all of my stories with NF1 through medical practice are that sad. I will never forget the first time I saw a 10-year-old boy with café-au-lait spots and freckles. He was crying because he was scared and did not understand; nor did his parents. I sat down with him, rolled up my sleeve, and showed him my arm that is full of macules and freckles. “You see?” I said, “We’re just the same. Everything is going to be okay.”

After some time practicing, and as many physicians do, I started to adapt. Medicine has brought me an inexplicable amount of joy, as well as a large share of grief. Some days are bad, and some are good. Nevertheless, encountering patients with NF1 was something I was unexpectedly unprepared for. I decided to delve headfirst into my fears and work in NF1 research for the betterment of people’s lives, to aid in their understanding of this somewhat elusive condition.

My family, my partner, and my mentors (I am fortunate to have many of them) are incredibly supportive of me. However, at the end of the day, it is hard to get all my thoughts and feelings together and remind myself that I have to forget about being a patient, forget to be afraid, and provide comfort instead of expecting to be comforted.

The main NF1-related symptoms I have experienced in my adult life are paresthesias and pain in the areas where I have neurofibromas. I must have some of these neurofibromas removed because of the discomfort as well as the risk of their transformation to malignant peripheral nerve sheath tumors (MPNST).

As a university professor, I am involved in research regarding NF1, and I see patients with wildly different stories, on a daily basis in clinical genetics consultations. I have often told patients that whenever their physician tells them they have a certain amount of risk of cancer developing (1%, 50%, 90%), the number itself does not matter, whether high or low; when you hear that it is you, or your children, who may have a severe complication, every number becomes 100%. What happens when that becomes a reality?

Although having NF1 and having to think about it every day at work is very hard at times, I believe that getting involved in NF1 research has been a rewarding experience. It is not easy telling people that there is no cure for what their child has. It is hard to see patients become sick or die, not to mention that it is hard to wonder if that could be me someday. A number of factors went into making that career decision, including how it would affect me personally, my mental health, or my judgment. However, what I have found is that the pros very much outweigh the cons. Nothing feels quite as satisfying as knowing that I am part of a team of people from all over the world who have dedicated their careers to making life for families with NF1 better, to understanding an elusive condition such as this so we may anticipate severe complications such as malignancy or to do early intervention in children with learning disabilities.
My work with patients and medical associations has brought about another unforeseeably difficult thing to manage. Praise and admiration. People who meet me, especially mothers and fathers, are brought to tears, embrace me, and compliment my courage and my strength. I do not deserve all that praise.

I value their words and actions and believe that most of the credit goes to my parents, my brother, my partner, my friends, and my other family members; they’re the ones who have been brave. I understand that families see me as living proof that their children can have a normal life and that they appreciate that someone with NF1 is taking care of them, someone who knows what they are going through. Caring for patients with NF1 has become my greatest honor and responsibility. I do believe these people have helped me to become a better physician, helped me understand what they are going through, and convinced me of the importance of continuing to work in NF1, both in research and in the clinic.

Working with these families and meeting parents and children with NF has been an extraordinary experience. Sitting down and listening to people’s stories is both humbling and enlightening. Even when most genetic conditions do not have a specific treatment, people often find solace and peace with only a diagnosis. You can see it in their eyes; just knowing becomes key in coming to terms with a condition.

**PARENTHOOD?**

As a young person with NF1, concerns are mainly centered on you and what is going to happen to you as an individual. As you become older and get into a romantic relationship, concerns shift toward what is this new person in my life going to think? What will she say when she finds out about the risks? What is going to happen to our children? Are we even going to have children?

This is an actual discussion I have had with my partner, a neuropsychologist, on a number of occasions. It has never been easy. Her love and constant support of my condition have brought us this far, and I have no idea where I would be without her or where I would go. We both want to have children, a family of our own. At first, of course, children were as far from our minds as possible, and just knowing what could happen, makes you think, makes you worry. It is true, at least for us, that there is no such option as “leaving it up to chance.” I have often discussed with patients that there is a 50:50 chance of NF1 inheritance in every pregnancy. Many couples take those odds, but others do not; as a patient, physician, and prospective father, I know I never could. For those wanting their own children, this leaves the expensive option (both financially and emotionally) of pre-implantation diagnosis and in vitro fertilization—another long road ahead for prospective parents.

**CLOSING REMARKS**

I am grateful for all the people and circumstances in my life that have helped me to better understand my diagnosis. This gratitude comes from a rather complicated mixture of both knowledge and ignorance. There are some things I choose to believe. I hope, for the most part, people will find it easier to live with a chronic disease once they understand that balance is the most important thing. Knowledge can be liberating at times, and it can also be a burden.

My diagnosis of NF1 brings me closer to my patients in a way nothing else could. Having journeyed through the uncertain path of having a genetic condition provides some insight. I know the weight that my words have. Sometimes a single word a physician says, even a little thing, can haunt a patient and a family forever.

Empathy is an innate social skill, almost as much as it is a developed skill. Mostly, people relate and empathize with experiences they have lived themselves. I am very glad to be able to find a silver lining to having NF1. Humanity makes us better physicians, despite what some may believe.

There is also a deeper meaning to be understood from the story of Damocles. With NF1 it is very hard not to worry, not to be anxious and lose your mind over the day when the sword may finally drop, the day when things start going wrong.

It is, I believe, the responsibility of the physician to remind families to try to look past the complexity and severity of NF1, to live their lives to the fullest one day at a time without wondering when the disease is going to turn bad. That is the thing with chance: The day may never come.

Living with that “what if?” question and repeating it to myself daily is one of the hardest things I have ever had to do. Still, I have to try to stop wondering and focus on living a life of meaning, of purpose, perhaps even of being able to help someone. After all, the looming threat of death and disease hangs above all of us, patients and physicians. It is up to us to find the strength to stay together with those you love for good times and bad. Even in the face of adversity and fear of what may come, we must all strive to find happiness.

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The clinic day was busy. As often happens, I get to run when, by my precise calculations, there is just enough time before sunset. I check the outside temperature, change into gear, stretch (joints creaking)—the usual routine—some variation of what I have done since I was a kid in some sport or other, while perusing 10 minutes of the news, or weather channel. I grab my phone, keys, a collar, and a leash. I get Kayla, who barks and bounds around in excitement at the sound of me hastily lacing my trail shoes.

A short drive to the trailhead, a gate at the fire road into the national forest. I set the GPS watch, though sometimes I don’t want to know how slow I am … and I start to jog up the first and steepest half mile. It is a weekday, so I will have to be vigilant. Maybe no one has been up here today. I won’t need to call out to Kayla to “be nice” in case we meet the rare hiker, their dogs, or a horse. With just the right tone, I try to tell her they are friend not foe. I scan the Ponderosa pine and Douglas fir forest and scrub oak on either side of the dirt road. Kayla sweeps in front around and behind me, in an unpredictable serpentine pattern. When I see her dun shape out of the corner of my eye, in a place unexpected, I have to remind myself that the soft jingle of her collar means she is not a mountain lion. She grins that happy lab grin. I figure Kayla and I are about the same age, corrected for dog years. She too will be a little stiff in the morning, but bless her soul, she has no recollection.

We have been up here countless times during the past decade. As my feet follow the same dirt trail, I drift into that familiar REM-like state. I think about my kids, my spouse, patients I’ve recently seen. At the top of the first steep incline I remember the desk-sized rock that had fallen onto the shelf road from the cut above, after one winter thaw. It is still here, shoved off to the side of the rock-strewn road.

I catch my breath during a short downhill and remember the Search-and-Rescue guy I saw up here with a huge hiking staff with a metal spear on the end. What was he worried about? I think about the fresh deer leg, tufts of fur seemingly untouched. Probably last night’s kill. Who is guarding the leftovers for tonight’s dinner, somewhere nearby, out of my sight?

The dirt road climbs again around confusing switchbacks. Around one bend is a view of red rock spires, sandstone hoodoos, and rocky fins in the valley below, and, on this bluebird day, 40 miles beyond, the grey steel towers of the Denver skyline. I scan the northwest sky between the ridges for any sign of a thunderhead. Storms can sneak over the ridge fast and barrel down the Rampart. Like the thunderstorm that exploded the Waldo Canyon fire last June. Kayla continues to run into the forest on one side of me then the other. Once in a while I call to her so she will turn and peer behind me. I relax, the rhythm of breathing, feet stepping between the rocks, without even seeing or thinking about it. I move without conscious ness, daydreaming.

I ignore the inevitable little stones that get in my shoes. Little pieces of Pikes Peak granite. I think about the annoyances of the day. Pound them with my feet.

I catch my breath during a short downhill and remember the Search-and-Rescue guy I saw up here with a huge hiking staff with a metal spear on the end. What was he worried about? I think about the fresh deer leg, tufts of fur seemingly untouched. Probably last night’s kill. Who is guarding the leftovers for tonight’s dinner, somewhere nearby, out of my sight?

The dirt road climbs again around confusing switchbacks. Around one bend is a view of red rock spires, sandstone hoodoos, and rocky fins in the valley below, and, on this bluebird day, 40 miles beyond, the grey steel towers of the Denver skyline. I scan the northwest sky between the ridges for any sign of a thunderhead. Storms can sneak over the ridge fast and barrel down the Rampart. Like the thunderstorm that exploded the Waldo Canyon fire last June. Kayla continues to run into the forest on one side of me then the other. Once in a while I call to her so she will turn and peer behind me. I relax, the rhythm of breathing, feet stepping between the rocks, without even seeing or thinking about it. I move without consciousness, daydreaming.

I ignore the inevitable little stones that get in my shoes. Little pieces of Pikes Peak granite. I think about the annoyances of the day. Pound them with my feet.

We are in “the wilderness” (defined as more than 1 hour from definitive medical care). Kayla leaves me to my thoughts. I don’t have to talk to anyone. Solitude. Yet I feel I am being watched, paradoxically protected.

After climbing a little over a mile, Kayla and I drop another half mile to the stream. Bear Creek. Aptly named. Cascading down Bear Canyon, “a gorge of singular majesty,” as described by Isabella Bird in 1873. Kayla gets to the water first and as usual leaps in for a drink. Once, with her downhill bound, she flushed a flock of pheasants out of the brush on the bank. They knocked her
about the head with their wings. She looked so offending and dazed.

The stream records the recent weather. Today it is low. Two springtimes ago it was raging. Kayla leaped in. She disappeared. One, 2, 3, 100 heartbeats. I checked the downhill side. Eventually, it seemed like forever, she crept dizzyly up the bank, confused. She had been sucked into the drainage pipe under the road. She had been “maytagged.” I watched her carefully as we continued on, under the sharp profile of Indian Head Rock. She ran it off, seemed fine. The mounded rocks higher up in the steep canyon look like wise Ute women, with their heads covered by shawls.

Today is one of the first warm days of May, and Kayla and I run past the creek up the higher loop. We are on the dry south-facing slope. I am watching my foot placement carefully. I do not want to step on a rattlesnake warming itself on the sunny trail. Snake hopping. Visual perception to motor cortex takes the limbic shortcut, unconsciously shifting my center of gravity in midair to avoid stepping on a snake.

In one inhalation I smell something. Like musk mixed with pungent body odor. Just a fleeting whiff. Kayla darts off into the brush, then comes back. We round a bend and there he is, in all his mahogany and brown, two-toned majesty standing on his hind legs waving his paws. Me, screaming for Kayla to come back before one of us gets mauled. Kayla barking at a bear 6 times her size. Tension. Time stands still. I plead silently. Please don’t kill my dog (or me).

The bear drops to all fours, turns, and lumbers away. I carefully continue back to the stream crossing, then the 2 miles back to the truck, thinking about Ute spirits. Later, I consider it a privilege to have seen the bear.

With respect, and with my dog, I will keep coming back here.

How to Cite This Article
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ABSTRACT
The importance of reflection in the continued learning and professional development of health care professionals is imparted to medical students soon after they begin their training. However, in both undergraduate and postgraduate medical training, reflection is most commonly “assessed” in extended pieces of formal writing—something that can inhibit natural approaches to reflective practice. The development of compulsory, standardized reflection aims to enable everyone to reflect on their practice, learn from it, and improve, but it does a disservice to those who already have mechanisms in place to reflect naturally and appropriately. It could be argued that standardized or formulaic recipes for reflective processes stunt the development of “creative, adaptive, and autonomous persons,” actually resulting in the opposite of what reflection aims to achieve.

Formalized reflective processes are built on the assumption that extended written reflective processes are appropriate for all health care professionals and that the health care practitioners do not already reflect effectively in other ways. The development of compulsory, standardized reflection aims to enable everyone to reflect on their practice, learn from it, and improve, but it does a disservice to those who think through and process experiences differently and hence already have mechanisms in place to reflect naturally and appropriately. As soon as a formulaic version of reflection becomes the requirement, it becomes a chore and detracts from the genuineness of reflective practice. Genuine reflection is not something that can be “bottled”!

INTRODUCTION
The importance of reflection in the continued learning and professional development of health care professionals is imparted on medical students in the first week of medical school. Indeed, reflection is vital in all walks of life and is practiced by all, consciously or not. However, in both undergraduate and postgraduate medical training, reflection is most commonly “assessed” in extended pieces of formal writing—something that can inhibit natural approaches to reflective practice. This may in part be caused by a lack of enthusiasm for the practice, perhaps because it is a requirement, or because the mode of imposing it involves extended written essays and an unnatural, artificially structured mode of the natural process of reflection, which is forced on health care professionals, particularly in the UK. Facilitating reflection in ways that suit learners and practitioners may help to overcome this.

In opposition to formal, standardized approaches to reflection, it is argued that comics can provide one such method, by meshing congruously with multiple approaches to reflection and, as such, can promote legitimate natural reflective processes, which may appeal to health care professionals.

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Comics as Reflection: In Opposition to Formulaic Recipes for Reflective Processes

Comics can foster creative thinking by consideration of the “gutters,” the empty spaces between panels, which require the reader to make connections and construct meaning between separate panels to form a coherent narrative. These are spaces for liminality—disorientation and ambiguity—for both the reader and the creator, in-between the solid structure of the paneled storyboard. The conclusions drawn from these spaces are individual to the reader and are as personal to them as their own reflections. In this sense, the gutters are not only invisible messengers, delivering information via empty space, but also facilitators for reflectors to take on-board the information they have been given, process it, make reasoned assumptions, and gain closure from the story in the comic. McCloud\textsuperscript{4} described closure

Figure 1. Reflective “on-action” comic produced by the author to emphasize key learning points after a 5-week geriatrics rotation. BP = blood pressure; med = medical.
as “observing the parts, but perceiving the whole,” capturing the way in which comics can be a tool for reflectors to access deep learning.

This reflective tool for learning is shown in Figure 1, comic number 2. A panel in which an elderly patient is surprised by an offer to make her a cup of tea is followed shortly by a panel showing a resolution to this situation. However, between the panels is open space. This gutter offers the reader, and the creator, the opportunity to question the context of the scenario. Why is the patient shocked that a physician would offer to make a cup of tea? Would she be so shocked if a nurse or health care assistant offered the same thing? If not, how has that disparity happened, and how has the creator contributed to it? Are they implicit? How can other health care professionals change their practice in the future to ensure a patient is not so shocked when a medical trainee offers basic care? The richness of the gutter variety is demonstrated by exploring other potential interpretations of the very same gutter. Although the creator of the comic may believe that by making and sharing tea with the patient, he is breaking down boundaries between physician and patient, and allowing for a building of rapport, another reader may be inclined to wonder whether Doris, the patient, had given the physician permission to use her first name. Has the physician inquired how Doris would prefer to be called? Is this an appropriate way to start a conversation with a patient? These questions evoke an entirely different direction of thought and reflection, which may be more applicable to the reader than to the creator, but which is no less valid and which strengthens the reflective power of the single comic. Another example of the power of gutters is illustrated in comic 3 in Figure 1. There the blank space separates 2 contrasting situations and demonstrates the difference in outcomes between separate approaches.

**THROUGH THE LENS OF A COMIC**

Comics can also be used to catalyze retrospective “on-action” reflections, helping to link what happens in practice to the theory that underpins it. This is useful for genuine evaluation and analysis during reflection, allowing practitioners to bring tacit knowledge, concealed from conscious thought, to the forefront of the mind and then use it to underpin and improve future practice. Tacit knowledge is gained through phenomenologic experiences, via our interaction with others and our environment, but lies under the surface and may be inaccessible to practitioners if they are trapped by the routine of pro forma reflection. Comics can call attention to the everyday by making it stranger and casting it in a new light, a process that is shared among all forms of literature and is coined “estrangement” by Shklovsky. Kumagai and Wear argue that after estrangement in literature, the readers or audience members are led to a feeling of disquiet and discomfort, the unfamiliarity of which prompts them to reflect on and reevaluate their beliefs, perspectives, and assumed knowledge. Besides causing this discomfort, the new perspective on experiences achieved by looking through the lens of a comic can make difficult or stressful experiences appear less threatening, thus making it easier for practitioners to relive and revisit experiences, exposing tacit knowledge, and identifying areas for personal and professional growth. Along a similar vein, Kumagai et al discuss the concept of empathic memory—memories of interactions and moments of importance that lie under the surface but which are accessible with conscious thought and may influence future practice. Williams describes how comics can create a portal into the individual experiences of the author, forming an empathic bond between reader and author. It stands to reason that this portal can also be used to mentally re-enter a previous experience and access the required empathic understanding to reflect effectively.

McCloud suggests that comics are intended to convey information and produce aesthetic responses in viewers, but it could be argued that creating comics, as well as viewing them, can convey such information and invoke emotional responses. Kochalka, however, argues that comics are not about conveying information but about understanding it, which supports Schön’s theory of uncovering knowledge around us and using it to influence our future actions.

Truly insightful self-evaluations can be difficult for practitioners to perform. However, Williams argues that comics can assist in the discussion of “difficult, complex or ambiguous” subject matter, by synergistically combining words and images to tell stories that would be difficult to present via other media. Comics can enable practitioners to access difficult memories, by making the unsayable accessible through the use of humor or metaphors. Therefore, they can prove to be an effective vehicle for revisiting sensitive memories and reflecting on them.

**KEEPING COMICS SIMPLE**

Comics also possess the ability to foster empathetic abilities in health care practitioners, often by reminding them of the patient’s perspective. Comic creators use icons, or symbols, to represent people, places, and ideas to exploit emotional connections and foster empathic abilities. Icons are very simple, which allows many different people to connect with them. For example, a smiling face may be more emotionally distant to someone who does not immediately identify with the subject of the photograph. Furthermore, by keeping subjects in comics simple, it allows for meaning to be conveyed without the absolute requirement for high-standard or near-perfect artwork. If reflective messages can be communicated just as well through a stick person as through the artwork of professional illustrators, pressure is relieved from the creators, and they can concentrate on the learning points rather than their drawing skills or potential lack thereof. Although it is clear that the comics in Figure 1 are not to a professional standard, they are able to convey a message, both to the creator on rereading them and if read by others. The use of icons and symbols makes it clear to the audience what the comic is about. A walking stick is used to illustrate an elderly person, a stethoscope clearly represents a medical student or physician, and the lack of a stethoscope in the last panel represents a return to a more humanistic side of medical professionals. Even if artistic abilities are
Comics as Reflection: In Opposition to Formulaic Recipes for Reflective Processes

preventing clear graphic representation of the message at hand, the versatility of comics allows for conterminous text. In my comics, arrows are often used to annotate subjects or actions, and in my experience, this has not detracted from the quality of these reflections, irrespective of the standard of the artwork. One potential pitfall of this solution, however, is how the use of stereotypical symbols or icons runs the risk of typcasting and causing offense. This results in the need for creators to be sensitive and self-aware with their comics.

Another important distinction to draw is between comics that are intended purely for personal reflection, for which the standard of the artwork is of even less importance, and those comics intended for shared reflection or publication. In the latter type, it is, of course, vital that the standard of the artwork is higher, to at least a level where meaning can be conveyed effectively to others as well as the creator. For those who lack high-quality artistic skills but who still wish to share their reflective comics or are required to as part of assessed reflection, there is also the option of adding accompanying written text alongside the comics. This can help not only to illustrate what the comic is showing but also to interpret the reflective work occurring in the comic, which may not be immediately apparent to the reader. This may somewhat stifle the variety of interpretation, as discussed earlier, but could be a mechanism for reflective comics to be incorporated into assessed reflective requirements, especially for those who are concerned about their lack of artistry.

**REFLECTION VIA INDIVIDUAL PREFERENCE**

In comics I have found a way to perform effective, genuine, and powerful reflection. When using John Dewey’s cycle of reflection as a framework, comics can be used for intellectualization and identification of everyday problems (eg in Figure 1: *What led the patient to being shocked at a physician offering her a cup of tea, and how might the author have contributed to this problem?*), for design and selection of hypotheses (*How could the author have better approached and calmed a scared, confused, and stick-wielding patient on the ward?*), and for mental elaboration of those hypotheses. Revisiting experiences in a simpler, less frightening format than real life can help provide a framework to which Tracy and Robins’ mechanism of self-appraisal can be applied to distinguish between basic emotions (ie, happiness, fear, anxiety) and cognitively complex self-conscious emotions (ie, shame, guilt, pride). For example: *What led the author to feeling pride after helping a patient check the health of her cat? If the author feels guilty when talking to a confused patient, what is it that he has not done to free himself of those emotions, and how can he ensure he does those things in the future?* Comics can even be used as a form of simulation via of the cycle of Kolb and Fry, or of Gibbs, in which they can take the place of actual experience or an action plan. Of course, in their creation alone, reflective comics are a prime example of Schön’s “on-action” reflection.

**CONCLUSION**

I hesitate to advise all practitioners to reflect via the medium of comics for fear of further inciting that which I am criticizing: Specific, formalized ways to reflect. Instead, I conclude by suggesting that students and practitioners might be enabled and encouraged by tutors and seniors to reflect via methods that suit their own preferences, whether continuous prose, comic, or other novel approach. Submission and assessment of these reflections should embrace such variations accordingly.

**Disclosure Statement**

The author(s) have no conflicts of interest to disclose.

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**How to Cite this Article**


**References**

Winter 2020

CME Evaluation Program

Section A.

### Article 1 (page 4) Outcomes of Robotic Hysterectomy for Treatment of Benign Conditions: Influence of Patient Complexity

Which of the following statements about the association of patient factors with hysterectomy operating time is false?

- a. age 60 to 69 years was not associated with increased operating time compared to age 20 to 39 years
- b. compared with women considered to be of normal weight, those with obesity class 1 were about 10 minutes slower; those with class 2 were about 20 minutes slower; and those with class 3 were about 50 minutes slower
- c. uterine weight of 200 to 400 g was associated with an extra 25 minutes, 400 to 700 g with an extra 50 minutes, and >700 g with an extra 100 minutes
- d. adhesions were associated with an extra 30 minutes

Which of the following statements about the association of surgeon factors with hysterectomy operating time is false?

- a. among nonrobotic surgeons, high-volume surgeons (200+ cases) were 20 to 30 minutes faster than low-volume surgeons (< 50 cases), depending on patient complexity
- b. among robotic surgeons, high-volume surgeons (75+ cases) were 25 to 50 minutes faster than low-volume surgeons (< 25 cases), depending on patient complexity
- c. among noncomplex patients, high-volume robotic surgeons (75+ cases) and high-volume nonrobotic surgeons (200+ cases) were about the same
- d. among complex patients, high-volume robotic and nonrobotic surgeons were about the same

### Article 2 (page 6) Defining the Definition of Polypharmacy and Its Link to Disability in Older Adults: Conceptualizing Necessary Polypharmacy, Unnecessary Polypharmacy, and Polypharmacy of Unclear Benefit

Which of the following medication regimens would not be considered "unnecessary polypharmacy" because of being in the category of "duplication of medications that have the same adverse effect profile" in an older adult?

- a. tamsulosin and paroxetine
- b. krozepram, fluoxetine, and risperidone
- c. zolpidem, gabapentin, and duloxetine
- d. dicyclomine and nortriptyline
- e. oxycodone and sertraline

An 80-year-old woman has a repeat blood pressure of 154/82 mmHg on amlodipine 5 mg daily, a home blood pressure of 140 mmHg to 150 mmHg systolic, and has normal cognition but considers herself somewhat frail. Which of the following is an unlikely benefit of intensive blood pressure treatment?

- a. decrease in cardiovascular disease events
- b. decrease in mortality
- c. improvement in renal function
- d. decrease in mild cognitive impairment
- e. improve bladder function

### Article 3 (page 72) Don’t Fall for That: A Residency Curricular Innovation about Fall Prevention

Key questions for fall risk screening based on the Centers for Disease Control and Prevention algorithm included the following except:

- a. have you fallen in the past year? If yes, how many times?
- b. do you have steps in your home? If yes, how many?
- c. do you feel unsteady when standing or walking?
- d. do you worry about falling?
- e. do you feel unsteady when standing or walking?

Which of the following educational methods was not used in the 2 workshops?

- a. a novel falls prevention game
- b. multiple-choice questions
- c. direct interaction with a nursing home patient
- d. a video clip to learn a physical examination maneuver
- e. a pocket guide and case study

### Article 4 (online) Practitioner Education and Feedback to Decrease Ciprofloxacin Prescriptions in Patients with Acute Uncomplicated Cystitis

Online at: https://tpj.page.link/tUK

All the following are common barriers practitioners cited when not adhering to evidence-based outpatient acute uncomplicated cystitis antibiotic prescribing except:

- a. threat of perceived clinical autonomy
- b. information overload and time consuming
- c. pressure from drug representatives to use newer antibiotics
- d. skepticism of evidence-based prescribing guidelines and recommendations
- e. a pocket guide and case study

Which of the following is not a first-line antibiotic used to treat acute uncomplicated cystitis in nonpregnant patients aged 16 to 65 years?

- a. nitrofurantoin
- b. sulfamethoxazole-trimethoprim
- c. fosfomycin
- d. ciprofloxacin
- e. cephalexin

### Section B.

**Referring to the CME articles, how likely is it that you will implement this learning to improve your practice within the next 3 months?**

<table>
<thead>
<tr>
<th>Objective</th>
<th>Article 1</th>
<th>Article 2</th>
<th>Article 3</th>
<th>Article 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrate learned knowledge and increase competence/confidence to support improvement and change in specific practices, behaviors, and performance.</td>
<td>2</td>
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<td>Lead in further developing “Patient-Centered Care” activities by acquiring new skills and methods to overcome barriers, improve physician/patient relationships, better identify diagnosis and treatment of clinical conditions, as well as, efficiently stratify health needs of varying patient populations.</td>
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<td>Implement changes and apply updates in services and practice/policy guidelines, incorporate systems and quality improvements, and effectively utilize evidence-based medicine to produce better patient outcomes.</td>
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**Key**

5 = highly likely 4 = likely 3 = unsure 2 = unlikely 1 = already did this 0 = I already did this

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Section C.

**What other changes, if any, do you plan to make in your practice as a result of reading these articles?**

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Section D. (Please print)

- Name: [ ] Physician [ ] Non-Physician
- Title:
- Email:
- Address:
- Signature:
- Date:

The Permanente Journal • Winter 2020
112 CME EVALUATION FORM

1. Which of the following best defines the role of occupational health services in patient care?
   A. Providing primary care services to workers
   B. Managing workplace injuries and illnesses
   C. Reducing healthcare costs
   D. Improving workplace productivity

2. Which of the following is a principle of occupational health services?
   A. Prevention is better than cure
   B. TLV is an upper limit for exposure
   C. Worker education is not effective
   D. All of the above

3. What is the primary goal of occupational health services?
   A. Maintaining a healthy workforce
   B. Reducing healthcare costs
   C. Improving workplace productivity
   D. All of the above

4. Which of the following is a component of occupational health services?
   A. Insurance
   B. Surveillance
   C. Training
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5. Which of the following is a characteristic of occupational health services?
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    C. Reactive approach
    D. All of the above

48. Which of the following is a principle of occupational health services?
    A. Prevention is better than cure
    B. TLV is an upper limit for exposure
    C. Worker education is not effective
    D. All of the above

49. Which of the following is a component of occupational health services?
    A. Insurance
    B. Surveillance
    C. Training
    D. All of the above

50. Which of the following is a characteristic of occupational health services?
    A. Universal availability
    B. Proactive approach
    C. Reactive approach
    D. All of the above

For more information or for placing an announcement here, please contact amy.r.watson@kp.org.
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