4 Are There Differences in Access to Care, Treatment, and Outcomes for Children with Appendicitis Treated at County versus Private Hospitals?

7 Supported Exercise Improves Controlled Eating and Weight through Its Effects on Psychosocial Factors: Extending a Systematic Research Program Toward Treatment Development

19 “Our Culture Is Medicine”: Perspectives of Native Healers on Posttrauma Recovery Among American Indian and Alaska Native Patients

28 Pharmacist Glycemic Control Team Improves Quality of Glycemic Control in Surgical Patients with Perioperative Dysglycemia

35 How Do Adolescents Access Health Information? And Do They Ask Their Physicians?

39 The Power of the National Surgical Quality Improvement Program—Achieving A Zero Pneumonia Rate in General Surgery Patients

55 Transparency Matters: Kaiser Permanente’s National Guideline Program Methodological Processes

Review Article

Case Studies

64 Altered Mental Status in an Elderly Woman with Concurrent Takotsubo Syndrome and Polymyalgia Rheumatica: A Case of Treatable Geriatric Delirium

67 Patient Safety in Surgical Residency: Root Cause Analysis and the Surgical Mortality and Morbidity Conference—Case Series from Clinical Practice

Editorial

Narrative Medicine

24 The Physician as Storyteller & Poet: Quick Writes from East Bay Writers’ Workshops

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Mr Larsen is a Clinical Microbiologist in the bacteriology section of the Northern California Permanente Medical Group. He loves harmony, music, and medicine. He learned to play guitar and is one of the band members in his jazz band. Mr Larsen is a Clinical Microbiologist in the bacteriology section of the Northern California Permanente Medical Group. He loves harmony, music, and medicine. He learned to play guitar and is one of the band members in his jazz band.
47 Single-Incision Laparoscopic Surgery—
Hype or Reality? A Historical Control Study.
Maryam N Saidy, MD; Michele Tessier, PA; Deron Tessier, MD

The authors briefly review the history of single-incision laparoscopic surgery (SILS), its current applications, and potential pitfalls, and report a historical control study of 50 laparoscopic and 50 SILS cholecystectomies, all performed by one of the authors. Mean operative time for the noncholangiogram group (38) was 48 minutes, with mean estimated blood loss of 28 mL, and a 20% “conversion” rate (10). Although the only documented benefit is cosmetic, SILS is equivalent to conventional laparoscopy in all other respects.

SPECIAL REPORTS
Narrative Medicine
51 A Case of Baffling Fatigue
with a Spectral Twist.
Kate Scannell, MD, FACP

Mr Gee had increasingly experienced “episodes” of abrupt elevations of systolic blood pressure beyond 200 mmHg that occurred at night, when he also had headaches, tinnitus, nausea, and fear of a stroke. Laboratory and radiographic tests were negative. Encouraging a patient to frame his illness within his own experience of its beginning, its current middle, and its imagined ending will often expose clarifying diagnostic clues. This case study illustrates clinical empathy in action.

Commentary
52 Gathering the Patient’s Story
and Clinical Empathy.
Jodi Halpern, MD, PhD

Until the 1990s, physicians have been skeptical about empathy, assuming that it would interfere with clinical objectivity and effectiveness. This has shifted as research has shown that empathy plays a fundamental role in both diagnostic accuracy and treatment effectiveness. Often confused with compassion, sympathy, and other benevolent emotions, clinical empathy involves emotional resonance, but is distinguished by curiosity. Helping patients tell their stories is one way to “practice” empathy.

REVIEW ARTICLES
55 Transparency Matters: Kaiser
Permanentane’s National Guideline
Program Methodological Processes.
Carrie Davino-Ramaya, MD; L Kendall Krause, MD; MPH; Craig W Robbins, MD; MPH; Jeffrey S Harris, MD, MPH; Marguerite Koster, MA, MFT; Wiley Chan, MD; Gladys I Tom, MS

The practice-guideline process of collecting, critically appraising, and synthesizing available evidence, then developing expert panel recommendations based on appraised evidence, makes it possible to do the best for patients at the point of care. A multidisciplinary group of stakeholders conduct high-quality systematic reviews either of acceptable external guidelines, then an internal search for relevant reviews, meta-analyses, and original studies, which are then appraised using GRADE. Recommendations are disseminated through the e-Clinical Library.

CASE STUDIES
64 Altered Mental Status in an Elderly
Woman with Concurrent Takotsubo
Syndrome and Polymyalgia Rheumatica:
A Case of Treatable Geriatric Delirium.
Hien Nguyen, MD; Connie Le, MD; Hanh Nguyen, MD; Nam-Tran Nguyen

The authors describe a unique case of a patient, aged 80 years, who presented with delirium and takotsubo syndrome, known as “broken heart syndrome” because it often follows emotional stress. Though difficult to distinguish from myocardial infarction, it is associated with favorable prognosis for complete recovery. This is the first case reported in an elderly patient, who also had coexistent polymyalgia rheumatica.

67 Patient Safety in Surgical Residency:
Root Cause Analysis and the Surgical
Morbidity and Mortality Conference—
Case Series from Clinical Practice.
Samir Johna, MD; Taylor Tang, MD; Maryam Saidy, MD

The surgical morbidity and mortality conference currently focuses mainly on human errors rather than system failures. Root cause analysis can be an effective way of analyzing system failures and of finding possible solutions for them. Having both perspectives—human errors and systems failures—enhances surgical education, improving quality assurance, and improving patient safety.

CLINICAL MEDICINE
70 Image Diagnosis: Perilunate and Lunar Dislocations.
Jennifer A Newberry, MD, JD; Gus M Garmel, MD, FACEP, FAAEM

In perilunate dislocation, the distal and proximal carpal rows overlap and the radial styloid may be completely fractured, with dorsal dislocation of the capitate. It is most commonly seen in young men (teens to 20s), from a high-energy hyperextension mechanism, often caused by falling on an outstretched hand. In lunate dislocation, it displaces volar (the “spilled teacup sign”), and the capitate is dorsal to the lunate.

COMMENTARY
72 Peer Review: Innovating Change.
Antonio Salud II, MD; David Shapiro, MD; Tom Rampulla, MSMI; Karen Reddin, RN, MSN

Medicine has traditionally focused on specialty and subspecialty expertise, which subsequently leads to fragmentation, inefficiencies, and lack of accountability. The Institute methodology fosters accountability rather than blame, focuses on system failures rather than individual ones, and results in a peer-review process built on strong interdisciplinary relationships.

EDITORIAL
Narrative Medicine
74 The Physician as Storyteller
& Poet: Quick Writes from East Bay Writers’ Workshops.
Tom Janisse, MD; Betty Lin, MD

In this article, the authors review the importance of reflective writing and present 15 stories and 2 poems written in 10 minutes by physicians and practitioners at 2 writing workshops designed to use creativity as a means of dealing with the stress of a medical career, enhancing coping skills, strengthening the ability to attend empathetically to a patient’s experience of illness, and improving well-being.

SOUL OF THE HEALER
Original Visual Art
34 “Butterfly”
Thomas Faluch, MD
46 “Leopard”
Calvin Weisberger, MD
63 “Green Bridge—Florence, OR”
John Davenport, MD, JD
leaflet: a thin triangular flap of a heart valve—a small book usually having a paper cover
the medical lit-art e-journal from The Permanente Press


We developed leaflet to open greater opportunity to share the creative visual and written works of physicians, practitioners and nurses. The table of contents of the latest issue is below.

Submissions are open to anyone; preference will be given to works that address the themes of health, illness, healing, and the life and soul of the healer.

Poems, short fiction, personal essays, and visual arts: photography, painting, sculpture, etc. will be considered.

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Questions may be directed to: Ms Max McMillen, ELS, Editor leaflet, e-mail: max.l.mcmillen@kp.org.

The Permanente Journal Winter 2012|Volume 16 No. 1
Are There Differences in Access to Care, Treatment, and Outcomes for Children with Appendicitis Treated at County versus Private Hospitals?

Steven L Lee, MD, FACS, FAAP; Arezou Yaghoubian, MD; Rebecca Stark, MD; Roman M Sydorak, MD; Amy Kaji, MD

Abstract

Introduction: We conducted a study to determine whether hospital type (county vs private) affects health care access (appendiceal perforation [AP] rates), treatment (laparoscopic appendectomy [LA] rates), and outcomes in children with appendicitis.

Methods: A review of cases involving children who had appendicitis between 1998 and 2007 was performed. Data from county and private hospitals were compared. Outcomes were AP rates, LA rates, need for postoperative abscess drainage, length of hospitalization (LOH), and cost.

Results: Multivariate analysis confirmed that among 7902 patients, (county = 682; private = 7220), county-hospital patients had lower incomes, higher AP rates, higher LA rates, lower postoperative abscess drainage rates, and longer LOH than did private-hospital patients. The longer LOH at the county institution led to higher costs. Within the county hospital, outcomes were similar across all ethnic groups and income levels.

Conclusions: Children with appendicitis treated at a county hospital were of lower socioeconomic background and had higher AP rates, longer LOH, and higher costs than their counterparts at private hospitals, but were more likely to undergo LA and require less abscess drainage. Within the county hospital, ethnic and socioeconomic disparities were not apparent; thus, these differences between institutions might have been caused by underlying disparities in ethnicity, income, and health care access.

Introduction

Eliminating disparities in health care has become an increasingly important issue for health services research. With respect to surgical care, significant ethnic and socioeconomic differences have led to unequal access to care.1–5 Appendicitis is one of the most common surgical emergencies and is also a time-sensitive condition. Delays in treatment increase the risk of appendiceal perforation (AP), and thus AP rates have been used as a proxy to measure access to surgical care.6–8 Differences in ethnicity and socioeconomic status have led to marked differences in AP rates.1,3 However, when patients have equal access to care, these differences are eliminated.5,9

Currently, significant ethnic and socioeconomic differences also exist with respect to treatment, as minorities and uninsured or publicly insured patients undergo fewer minimally invasive procedures.10 Studies of adults and children have shown similar disparities with respect to laparoscopic appendectomy (LA) in the treatment of appendicitis.10–13 What remains relatively unknown is whether hospital factors play a role in these disparities. Thus, we conducted a study to determine whether hospital type (county vs private) affects health care access (AP rates), treatment (LA rates), and outcomes in children with appendicitis. We hypothesized that children with appendicitis treated at a county hospital would have worse access to care, treatment, and outcomes.

Methods

Our study was approved by the institutional review board at Kaiser Permanente (KP) Los Angeles Medical Center and Harbor-UCLA Medical Center. A retrospective review of the KP Southern California Discharge Abstract Database was performed to identify pediatric patients (age <18 years) with a diagnosis of appendicitis (International Classification of Diseases, Ninth Revision [ICD-9] codes 540.0, 540.1, 540.9) between January 1, 1998, and December 31, 2007. A similar review was performed at Harbor-UCLA.

KP Southern California consists of 11 medical centers and provides comprehensive medical care to more than 3.5 million members. All members are insured and have equal access to any of the KP clinics, Emergency Departments (EDs), and medical centers. Harbor-UCLA is a safety-net hospital that provides care to anyone who presents to the ED independent of insurance, financial, or immigration status. For this study, Harbor-UCLA represents the county hospital and KP represents the private hospitals.

Study outcomes were AP rates, LA rates, need for postoperative abscess drainage, length of hospitalization (LOH), and cost. Independent variables included age, sex, ethnicity, per capita income, and hospital type. With respect to ethnicity, patients were categorized as white, black, Hispanic, Asian, Native American, other, multiple, or unknown. White patients served as the reference group in the multivariate analysis. Patients in the other, multiple, unknown, or Native American categories were excluded from this study. Median per capita income was based on the patient’s zip code of residence and extracted from the US Census database. Patients with zip codes outside of California or residing in areas with zip codes for which there was no census data were excluded. Data from the county hospital were compared with those for the private hospitals. Finally, multivariate analyses were performed to determine predictors of AP rate, LA rate, need for postoperative abscess drainage, and LOH. The predictor variables that were assessed included age,
sex, ethnicity, income level, perforation status, type of operation (laparoscopic vs open), and hospital type (county vs private).

Data were exported to SAS (version 9.13; SAS Institute, Cary, NC) statistical software for subsequent analysis. Statistical significance was determined using Wilcoxon rank-sum test, χ² test, and multivariate linear and logistic regression. A p value of <0.05 was considered statistically significant.

Results
A total of 7902 patients (county = 682; private = 7220) were identified for our study. Demographic data and results of the univariate analysis are summarized in Table 1. Younger patients were treated at the county hospital, and more male than female patients were treated at the private hospitals. Differences in the ethnic background of the patients were seen between the public and private hospitals. Patients at the county hospital had lower mean per capita incomes ($11,600 vs $15,900; p < 0.0001), higher AP rates at presentation (42% vs 30%; p < 0.0001), higher LA rates (66% vs 43%; p < 0.0001), lower postoperative abscess drainage rates (2.2% vs 3.9%; p = 0.0008), and longer LOH (3.9 ± 3.3 days vs 2.9 ± 3.4 days, p < 0.0001) than did patients at the private hospitals. Multivariate analysis confirmed a higher AP rate (odds ratio [OR], 1.8; confidence interval [CI], 1.5–2.2), LA rate (OR, 2.6; CI, 2.2–3.1), and LOH (parameter estimate = 0.6; p < 0.0001) and lower abscess drainage (OR, 0.4; CI, 0.2–0.6) at the county hospital vs the private hospitals. The longer LOH at the county institution was associated with higher costs ($2145 per patient). Within the county hospital, AP rate, LA rate, abscess drainage, and LOH were similar across all ethnicities and income levels.

Discussion
Previous studies have shown that members of ethnic minorities and patients with public insurance have higher AP rates, reflecting decreased access to care, compared with whites and patients with private insurance.1–7 Furthermore, there have also been ethnic and socioeconomic disparities with respect to the treatment of appendicitis. Studies have shown that members of ethnic minorities and patients with public insurance have less access to advanced technology—namely, laparoscopy—compared with whites and patients with private insurance.8–13 In our previous studies, we have shown that disparities in AP rates and LOH were eliminated in a setting of equal health care access.8–9 These studies included patients who received health care within a single-provider system in which all patients had insurance and equal access to clinics, urgent-care centers, and EDs. However, the major criticism of our prior studies was that all of the participants had insurance and that patients in the lowest socioeconomic level (unemployed, uninsured, or publicly insured patients) were not specifically addressed. The purpose of the study we report here was to determine whether persons in the lowest socioeconomic level had differences in access to surgical care, treatment, and outcomes with respect to the treatment of appendicitis, compared with persons in higher socioeconomic levels.

To have access to persons in the lowest socioeconomic level, we studied those treated at a safety-net hospital (Harbor-UCLA).

Table 1. Demographic data and results of univariate analysis

<table>
<thead>
<tr>
<th>Parameter</th>
<th>County hospitals (n = 682)</th>
<th>Private hospitals (n = 7220)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>10.9 ± 4.0</td>
<td>11.5 ± 3.7</td>
<td>0.0002</td>
</tr>
<tr>
<td>Male sex</td>
<td>345 (50.6%)</td>
<td>4467 (61.9%)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>White</td>
<td>274 (40.2%)</td>
<td>1856 (25.7%)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Black</td>
<td>47 (6.9%)</td>
<td>363 (5.0%)</td>
<td>0.04</td>
</tr>
<tr>
<td>Asian</td>
<td>61 (8.9%)</td>
<td>262 (3.6%)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Hispanic</td>
<td>295 (43.2%)</td>
<td>4739 (65.6%)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Mean per capita income</td>
<td>$11,600</td>
<td>$15,900</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Appendiceal perforation</td>
<td>289 (42.4%)</td>
<td>2147 (29.7%)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Laparoscopic appendectomy</td>
<td>452 (66.3%)</td>
<td>3099 (42.9%)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Abscess drainage</td>
<td>15 (2.2%)</td>
<td>279 (3.9%)</td>
<td>0.0008</td>
</tr>
<tr>
<td>Length of hospitalization (days)</td>
<td>3.9 ± 3.3</td>
<td>2.9 ± 3.4</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>
We based income levels on the zip codes of patients’ residence. Although this is commonly done in health care research, there is always a bias risk of using aggregate data instead of individual-level measurements. However, previous studies have shown that aggregate statistics from the census-block group is a useful proxy for individual-level measures.19 Furthermore, we were not able to determine the general and health literacy levels of patients treated at the two types of hospitals. Such variables might have influenced the AP rates. The ethnic diversity in our study may not reflect that of the populations in most other areas of the US, and thus our results may not be applicable nationally. However, the ethnic demographics seen in our study do closely resemble those of Los Angeles County and California as a whole.17 The sample sizes were different between the two groups, but the sample size difference seen in our study does reflect the ratio of private hospitals to safety-net hospitals in California and did not affect the power of the study.

In summary, we found that children with appendicitis treated at a safety-net hospital were of lower socioeconomic background than those who were treated at private hospitals. We also found a higher AP rate at the safety-net hospital than at private hospitals, indicating delayed access to surgical care. Despite a higher AP rate, disparities in the treatment of and outcomes for children with appendicitis treated at private and safety-net hospitals were minimal. Patients at the safety-net hospital were more likely to undergo LA and require less postoperative abscess drainage than those treated at the safety-net hospital. However, there was a longer LOS at the safety-net hospital, which leads to higher costs. Within the safety-net hospital, there were no disparities related to ethnicity or socioeconomic status with respect to health care access, treatment, or outcomes for children with appendicitis. Thus, the differences between public and private institutions may be caused by underlying ethnic and socioeconomic disparities and by differences in access to health care rather than by the type of hospital where patients are treated. These findings emphasize the need for further health care reform to improve health care access for all.

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

Acknowledgment
Katharine O’Moore-Klopf, ELS, of KOK Edit provided editorial assistance.

References

Toothache
I haven’t the slightest idea where fashions in pathology are born … Possibly some of my older readers dimly recollect the days when modish scientists declared that the only dependable method of relieving a toothache was a clean, conclusive appendectomy.

— Ogden Nash, 1902-1971, American poet
Supported Exercise Improves Controlled Eating and Weight through Its Effects on Psychosocial Factors: Extending a Systematic Research Program Toward Treatment Development

James J Annesi, PhD

Abstract

Background: Behavioral weight-loss treatments have been overwhelmingly unsuccessful. Many inadequately address both behavioral theory and extant research—especially in regard to the lack of viability of simply educating individuals on improved eating and exercise behaviors.

Objective: The aim was to synthesize research on associations of changes in exercise behaviors, psychosocial factors, eating behaviors, and weight; and then conduct further direct testing to inform the development of an improved treatment approach.

Methods: A systematic program of health behavior-change research based on social cognitive theory, and extensions of that theory applied to exercise and weight loss, was first reviewed. Then, to extend this research toward treatment development and application, a field-based study of obese adults was conducted. Treatments incorporated a consistent component of cognitive-behaviorally supported exercise during 26 weeks that was paired with either standard nutrition education (n = 183) or cognitive-behavioral methods for controlled eating that emphasized self-regulatory methods such as goal setting and caloric tracking, cognitive restructuring, and eating cue awareness (n = 247).

Results: Both treatment conditions were associated with improved self-efficacy, self-regulation, mood, exercise, fruit and vegetable consumption, weight, and waist circumference; with improvements in self-regulation for eating, fruit and vegetable consumption, weight, and waist circumference significantly greater in the cognitive-behavioral nutrition condition. Changes in exercise- and eating-related self-efficacy and self-regulation were associated with changes in exercise and eating (R² = 0.40 and 0.17, respectively), with mood change increasing the explanatory power to R² = 0.43 and 0.20. Improved self-efficacy and self-regulation for exercise carried over to self-efficacy and self-regulation for controlled eating (β = 0.53 and 0.68, respectively).

Conclusions: Development and longitudinal testing of a new and different approach to behavioral treatment for sustained weight loss that emphasizes exercise program-induced psychosocial changes preceding the facilitation of improved eating and weight loss should be guided by our present research.

Introduction

The most current data from the US government indicates that 34% of adults (77 million) are obese (body mass index [BMI] ≥ 30 kg/m²), causing increased propensities for Type 2 diabetes, hypertension, heart disease, and stroke as degree of overweight increases.3,4 The rate of obesity has steadily risen over the last several decades,3,4 with the more severe levels of obesity (BMI ≥ 40 and above) rising 3 times that of class I obesity (BMI 30 to 35 kg/m²).5 At any given time, approximately 70% of adults report trying to manage their weight.6 Weight loss of even less than 5% can result in clinically important improvements in health risks.7 Although a reduction in caloric intake and an increase in physical activity will reliably reduce excess weight, results of behavioral weight-loss treatments have, overwhelmingly, been poor.8 When significant weight is lost, with very few exceptions, it is regained in short order.8,9 A pattern of repeated weight loss and regain is associated with increased health risks,10 and makes weight loss even more difficult in the future.11,12 Findings suggest that even the most current behavioral methods focused on reduction in caloric intake are largely inadequate,13 and innovative techniques, possibly through the use of exercise as the central component,8 should be investigated.9 On the basis of this present state-of-affairs, this article has 3 aims:

1. To review limitations in the extent research on behavioral weight-loss treatment and describe a systematic program of research that was intended to address some of those limitations.
2. To design and carry out a field study based on a new model suggesting a relationship between supported exercise and weight loss through psychosocial channels.
3. To inform construction of a treatment, based on present findings, that may be appraised for effect over the long term.

Limitations of Previous Research

One problem with existing treatments is that they typically fail to address methods to sustain weight loss beyond the initial weeks or months. Although research indicates that exercise is the strongest predictor of long-term success with weight loss,14-16 adherence is usually not sufficiently considered, as attrition from programs is high.17,18 In many cases, the inclusion of physical activity is either deferred or minimized because it is feared that participants' self-regulation for maintaining an exercise program may dilute their self-regulatory resources for managing their eating.19 This is understandable because research has suggested self-regulation to be a limited resource that is subject to depletion.20 Minimal caloric expenditures possible from deconditioned and obese participants21,22 may also lessen the perceived importance of

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exercise because of its minimal direct impact on weight. Although a “clustering” of improvements in exercise and eating behaviors has been suggested, explanatory mechanisms that may lead to intervention development has been lacking, and cited as a limitation.22-25

Integration of accepted behavioral theory into weight-loss treatment has been sporadic.26 Treatments often are based on the assumption that providing education in desired behaviors and their beneficial outcomes will alone be sufficient to induce a reduction in caloric consumption and, possibly, an increase in physical activity. This is inconsistent with most theories of behavioral change as well as the realization that, although most adults absolutely know the value of exercise, healthy eating, and an appropriate weight,27,28 less than 4% of adults in North America complete recommended minimum amounts of physical activity,29,30 most consume well in excess of their caloric needs,31 and approximately two-thirds are now at an unhealthy weight.1

Interventions that claim a theoretical basis generally have been influenced by established behavioral models in only broad and general terms.32 Relations of specific psychological variables associated with changes in exercise, eating, and weight loss have not been sufficiently tested in a manner that could easily be translated into practical treatments. Possibly, this is because researchers typically test a proposed set of relationships emanating from a nuanced adaptation of theory that is of interest to them, report on its strengths, weaknesses, and needs for replication and extension, and move on.33 Further compromising matters is that specific treatment techniques used have not typically been annotated through a standard taxonomy that could facilitate comparative evaluation of efficacy—especially through their relationship with theory.33 Thus, conclusions do not often go beyond whether a set of findings might hold promise for predicting or explaining exercise and weight-loss phenomena in future research. There has been minimal concern for systematically evolving their line of inquiry in a manner where treatment, as well as theory, may simultaneously benefit. Albert Bandura referred to this as a paradigm’s, “… operative power to guide psychosocial change,”34,35 This is problematic because practitioners are bound by practical constraints when attempting to translate abstract findings into day-to-day use, whereas researchers may have little concern for advancing treatments in real-life settings. What remains is a preponderance of intuitively based treatments, and concerns from the academicians that such treatments are not sufficiently guided by theory and rigorous research.36

Systematically Progressing

Since 2000, I, along with a team from varied disciplines from the YMCA of Metropolitan Atlanta, have attempted to address some of the above-stated limitations. Within our research program, the relations of exercise with psychosocial changes and changes in eating behaviors and weight have been evaluated in a systematic manner while maintaining a focus on the practical application of findings. Out of heuristic necessity, issues such as adherence to exercise, exercise and mood change, and effects of exercise on weight loss through psychosocial channels were sequentially addressed. Incorporating recent suggestions,36,37 much of the research was, accordingly, completed in practical settings. Our research produced a structured exercise support protocol entitled The Coach Approach,38-42 incorporating an array of self-regulatory methods (eg, self-talk, relapse prevention) where manipulation of variables based on social cognitive theory (a theory viewing individuals as directing their own behaviors through self-reflection and self-organization33) and self-efficacy theory (a theory viewing behaviors as being directed by individuals’ feelings of ability34) (eg, physical self-concept, barriers self-efficacy35) were used to reliably and meaningfully increase adherence to exercise in obese and formerly sedentary adults by an average of 52% over 53 trials.35 Consistent with previous research,46 mood also improved and was, additionally, found to be associated with adherence.47,48 Because the research clearly and strongly relates exercise to success with sustained weight loss,49 we judged this adherence component to be an essential initial step in a progression toward development of effective weight-management treatment. Nutrition components, which were also included in much of the research, incorporated traditional educationally based approaches. This allowed us to probe for and identify salient relationships among psychosocial variables, associated with behaviorally supported exercise, which might ultimately lead to an effective and reliable intervention.

---

Figure 1. Proposed psychological pathways linking exercise and weight control within the Baker and Brownell model.1

Thus, through the use of an overarching framework of social cognitive and self-efficacy theory,43-44 our program of research progressively built upon findings, suggesting the following:

1. There is empirical strength in the basic social cognitive model proposed in 2000 by Baker and Brownell (Figure 1),32 particularly as in the contribution of exercise program-induced changes in mood, body image, self-efficacy, and coping leading to increased physical activity, improved eating, and weight loss.47,55-56

2. Self-efficacy and self-regulation for both exercise and controlled (well-managed) eating are distinct59 and essential constructs in the prediction of physical activity and eating changes, and weight loss.60,64

3. There are significant effects of exercise-induced mood change on weight loss and psychosocial predictors of weight loss50,64-69—especially in the effect that mood change has in enhancing and/or undermining self-efficacy and self-regulation (such as with emotional eating [emotion-triggered eating]).52-57

4. There is a carry-over effect from improvements in self-efficacy and self-regulation for exercise to self-efficacy and self-regulation for controlled eating,60,64-69 which is consistent with recent research on women from Portugal,71,72 Finland,73 and Baker and Brownell’s model.52

The strong positive relationship between changes in self-regulation for exercise and self-regulation for eating40,64-72 was especially noteworthy because laboratory research suggested, quite definitively, that self-regulation for exercise would deplete self-regulation for eating when these behaviors are attempted in close temporal proximity (viewing self-regulation as a limited resource that is readily depleted).10,74 Rather, consistent with the “training hypothesis” of self-regulation (viewing self-regulation as potentially improving with practice),75,76 it was recently indicated that when self-regulatory skills were taught in first exercise, then eating, contexts (rather than drawn from participants’ innate abilities as had been the case in most of the previous research), a strengthening of the skills for controlled eating occurred.10,64

As previously suggested, improvements in self-efficacy for exercise appeared to carry over to improvements in controlled eating because of a generalization of feelings of ability to manage an array of behaviors consistent with weight control.52 Findings also suggested that increased satisfaction with the physical self (which was associated with persistence with exercise more than actual physiological changes77-81) and self-regulatory skill usage52 are associated with maintained weight loss. These findings are consistent with studies suggesting the positive effects of self-regulation on improved eating (ie, fruit and vegetable consumption) and on weight loss sustained at two-year follow-ups,85,86 and hypothesized that feelings of accomplishment (ie, self-efficacy) fostered persistence.

Additionally, findings indicated that a significant improvement in mood requires a minimum of only about 2 sessions of moderate exercise per week,85,86 with no dose-response effect (ie, more exercise was not associated with greater change in mood),87,88 rather than the “public health dose” of at least 5 sessions per week (ie, 17.5 kcal/kg/week, or approximately 150 minutes per week) previously suggested.89 Moreover, it was determined that exercise durations and intensities could be purposefully adjusted to induce acute improvements in post-exercise feeling states (eg, increased revitalization; decreased physical exhaustion) that are consistent with both long-term mood improvements46,90,91 and, of key importance, adherence to exercise through their reinforcement effects.92,93 Although the indirect relationship between exercise program participation and weight loss was strong,94,95,96 less than 15% of the weight loss, across studies, was attributable to caloric expenditures associated with exercise. This further supported the contention that the association of exercise program participation with weight loss in obese and deconditioned individuals is associated more with changes in psychosocial variables than direct caloric expenditure. Through this research program, important proposed relationships were suggested and are presented graphically in Figure 2.

Assessing Propositions Within a New Model

Intervention researchers have long been underinformed about the specific function that exercise plays in weight loss and, more specifically, how exercise-related changes in mood, self-efficacy, and self-regulation may affect controlled eating. After review and consolidation of our stream of findings, specific relationships emerged as important for treatment-based...
testing. Thus, for the present study, we incorporated conditions of: 1) The Coach Approach exercise adherence protocol coupled with nutrition education, and 2) The Coach Approach protocol coupled with a cognitive-behavioral approach to reducing caloric intake that complemented the behavioral methods already being employed within the exercise context. This facilitated a contrast of treatment effects and allowed testing of proposed relationships among variables. Severely obese adults were selected for testing to allow investigation with a difficult population, but one in great need.

**Hypothesized Findings**

Consistent with both theory and the synthesis of previous findings, pairing The Coach Approach with the proposed cognitive-behavioral approach to reducing caloric intake was expected to demonstrate significantly greater improvements in self-regulation and self-efficacy for controlled eating, food consumption, and weight, than The Coach Approach paired with traditional nutrition education.

In terms of relationships of variables identified for testing, improvements in domain-specific feelings of ability to overcome perceived barriers (ie, self-efficacy) and use of behavioral skills to overcome barriers (ie, self-regulatory skill usage) were expected to significantly predict improvements in both exercise and eating behaviors. Changes in mood were expected to strengthen these relationships (eg, mood changes would increase the explanatory power of self-efficacy and self-regulation). Improvements in both self-efficacy and self-regulatory skill use for exercise were expected to predict improved self-efficacy and self-regulation for controlled eating. It also was expected that improvements in mood would be associated with a minimum of 2 exercise sessions per week, and a greater frequency would not be associated with greater improvement. Additionally, it was anticipated that change in mood would be more strongly associated with change in self-efficacy to control emotional eating than with other dimensions of self-efficacy for controlled eating, and that a very small portion of the observed weight loss (<15%) would be directly attributable to caloric expenditure associated with exercise.

**Study Methods**

**Participants**

Men and women responded to advertisements in local newspapers soliciting volunteers for research incorporating physical activity and nutrition instruction for weight loss. Inclusion criteria were: 1) minimum age of 21 years, 2) BMI ≥ 35 kg/m², 3) no regular exercise within the previous year (less than 20 minutes per week on average), and 4) a goal of weight loss. Exclusion criteria were current or soon-planned pregnancy and/or taking medications prescribed for weight loss or a psychological or psychiatric condition. A wellness specialist assessed BMI in a private office before participants were accepted into the study. A written statement of adequate physical health to participate was required from a physician. Appropriate institutional review board approval and written consent from all participants was obtained.

There was no significant difference in proportion of women (overall 82.6%), age (overall mean = 42.5 years, standard deviation [SD] = 10.0), BMI (overall mean = 41.7 kg/m², SD = 6.5), and racial make-up (overall 45% White, 51% African American, and 4% of other racial/ethnic groups) between participants randomly assigned to a treatment of The Coach Approach plus standard nutrition education (Nutrition Education group; n = 183) and The Coach Approach plus a version of cognitive-behavioral methods applied to caloric reduction (Cognitive-Behavioral Nutrition group; n = 247). The socioeconomic strata of most participants (90%) were classified as middle class. Within the Nutrition Education condition, some individuals might have been exposed to unplanned nutritional lectures and support within 1 of the 6 study facilities. Thus, their data were omitted, which explains the difference in group sample sizes. Exploratory analyses indicated that the omitted individuals did not significantly differ from the overall pool of participants on any personal characteristic or baseline measure.

**Measures**

**Self-efficacy**

Self-efficacy for exercise (perceived ability to overcome barriers to completing exercise) was measured by the Exercise Self-Efficacy Scale. It requires responses to 5 items that begin with the stem, “I am confident I can participate in regular exercise when:” (eg, “I am tired,” “I have more enjoyable things to do”), ranging from 1 (not at all confident) to 7 (very confident). Internal consistencies were reported to range from 0.76 to 0.82, and test-retest reliability over 2 weeks was 0.90.

Self-efficacy for controlled eating (perceived ability to overcome barriers to managing one’s eating) was measured by the Weight Efficacy Lifestyle Questionnaire. It is made up of 5 subscales of 4 items each, derived from factor analysis, that are Negative Emotions (eg, “I can resist eating when I am depressed [or down]”), Availability (eg, “I can resist eating even when others are pressuring me to eat”), Social Pressure (eg, “I can resist eating even when high-calorie foods are available”), Physical Discomfort (eg, “I can resist eating when I feel uncomfortable”), and Positive Activities (eg, “I can resist eating when I am watching TV”). Responses range from 0 (not at all confident) to 9 (very confident). Individual subscale responses are summed for a total score. Internal consistencies were reported to range from 0.70 to 0.90. The predictive validity of the Weight Efficacy Lifestyle Questionnaire for weight loss has been supported in multiple studies.

**Self-regulation**

Self-regulation for exercise and self-regulation for eating were separately measured by modified versions of a scale where items are based on intervention content. An example of a self-regulation for exercise item for the present study was, “I set physical activity goals.” An example of a self-regulation for eating item was, “I say positive things to myself about eating well.” Following the taxonomy by Abraham and Michie, items measured self-regulatory skills related to intention formation, barrier identification, specific goal setting, review of behavioral goals, self-monitoring of behavior, feedback on performance, self-talk, relapse prevention, and time management. Each scale required responses to 10 items ranging from 1 (never) to 5 (often). In a previous version, internal consistency (0.75), test-retest reliability over 2 weeks (0.77), and predictive validity were supported. Construct validity was indicated because the measure partially mediated the...
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relationship between self-efficacy and physical activity. In separate testing of the present versions, the internal consistency of the self-regulation for physical activity scale was 0.79, and the test-retest reliability over 2 weeks was 0.78. For self-regulation for eating, the internal consistency was 0.81, and test-retest reliability was 0.74.

**Mood**
Mood was measured by Total Mood Disturbance—an aggregate measure of the Profile of Mood States Short Form scales of Tension (eg, anxious), Depression (eg, sad), Fatigue (eg, weary), Confusion (eg, bewildered), Anger (eg, annoyed), and Vigor (eg, energetic) (5 items for each of the 6 subscales). Respondents rate feelings over the past week ranging from 0 (not at all) to 4 (extremely). Internal consistency for the subscales was reported to range from 0.84 to 0.95, and test-retest reliability at 3 weeks averaged 0.69. Concurrent validity was suggested through contrasts with accepted measures such as the Beck Depression Inventory, Manifest Anxiety Scale, and Minnesota Multiphasic Personality Inventory.

**Exercise**
Volume of exercise was measured by the Godin Leisure-Time Exercise Questionnaire. It required entry of weekly frequencies of strenuous (“heart beats rapidly”) (eg, running, basketball, vigorous swimming), moderate (“not exhausting”) (eg, fast walking, easy bicycling), and light (“minimal effort”) (eg, easy walking, yoga) exercise for “more than 15 minutes” per session. These responses are multiplied by 9, 5, and 3 standard metabolic equivalents (METs), respectively, and then summed. For adults, test-retest reliability over 2 weeks was reported to be 0.74. Construct validity was supported by significant correlations of scores with accelerometer and VO_2max measurements of exercise volume. Using this measure for an individual of 115 kg, a score of 10 and 20 would indicate an approximate weekly expenditure from exercise of 450 and 900 calories, respectively.

**Food Consumption**
A survey recalling the number of servings of fruits and the number of servings of vegetables consumed “in a typical day” (“looking back over the last month”), based on the US Food Guide Pyramid and its descriptions of foods and portion sizes, was used. The quantity of fruit and vegetable servings reported consumed was summed. Research suggests the adequacy of this measure for both its responsiveness in the context of the present nutrition treatments and to minimize participant burden. Test-retest reliability over 2 weeks averaged 0.82, and concurrent validity was suggested through significant correlations with longer, more invasive, food frequency questionnaires.

Pilot research suggested that the participant burden with administration of a full food frequency questionnaire (sometimes requiring approximately 60 minutes to complete), along with the aforementioned surveys within this investigation, would compromise respondents’ attention and degrade the validity of responses. Thus, because research suggests that fruit and vegetable consumption, alone, is a good predictor of overall caloric consumption, the present measure was selected.

**Weight and Waist Circumference**
A recently calibrated digital scale was used to measure weight (kg), and a tape measure was used to measure waist circumference (cm) at the umbilicus. Although used less frequently than weight, recent research suggests waist circumference to be a superior measure for the prediction of health risks.

**Procedure**
Each participant reported to a YMCA, received an orientation to study procedures associated with his or her group, and was provided full access to the facility for the duration of the investigation.

**Exercise Support Component**
The exercise adherence support component was identical in both the Nutrition Education and Cognitive-Behavioral Nutrition groups. It consisted of a standard protocol (ie, The Coach Approach) of 6 one-hour meetings with a trained wellness specialist, spaced across 26 weeks and supported by a computer program. These one-on-one sessions included an orientation to exercise apparatus and facilities, but most time was spent within an office setting on an array of cognitive-behavioral methods intended to foster adherence. Following recent suggestions, long-term goals were identified, documented, and broken down into process-oriented short-term goals where ongoing progress was tracked graphically.

Instruction in additional self-regulatory skills such as restructuring unproductive thoughts, addressing cues to exercise, and preparedness for occurrences of barriers to exercise and “slips” in one’s exercise routine (ie, relapse prevention) was given during the sessions. A summary of each self-regulatory skill also was provided for participants’ ongoing reference. In order that behavioral treatments may be accurately contrasted with others, Abraham and Michie recommended a standardized description of their components. According to their taxonomy of behavior change techniques, the following methods were included within The Coach Approach sessions according to a clearly defined protocol: 1) provision of information on consequences, 2) prompting intention formation, 3) prompting barrier identification, 4) provision of encouragement, 5) setting graded tasks, 6) provision of instruction in desired behaviors, 7) prompting specific goal setting, 8) prompting review of behavioral goals, 9) prompting self-monitoring of behavior, 10) provision of feedback on performance, 11) teaching the use of prompts or cues, 12) establishment of a behavioral contract, 13) facilitating social supports, 14) prompting self-talk, 15) teaching relapse prevention, 16) addressing stress management, and 17) facilitating time management methods.

Specific modalities used in exercise plans (eg, walking or stationary cycling) were based on each participant’s preference. Cardiovascular exercise progressed from a minimum of 20 minutes at a moderately light to moderately hard intensity according to the Rate of Perceived Exertion scale, which was explained to participants. Exercise sessions could be completed inside or outside of the YMCA facilities. Widely used recommendations for volume of weekly exercise (ie, 150 minutes of moderate aerobic physical activity) were described, but it was also suggested that any volume of exercise may be beneficial.

**Nutrition Components**
The nutrition component of the treatments varied by group. In the Nutrition Education group, a standardized nutrition
Supported Exercise Improves Controlled Eating and Weight through Its Effects on Psychosocial Factors: Extending a Systematic Research Program Toward Treatment Development

Data Analyses

An intention-to-treat design was incorporated. Thus, data from all participants initiating treatment were retained, regardless of their compliance. To account for missing data, multiple imputation was used. This method is favorable because it effectively represents uncertainty in missing values. Results were, however, nearly identical to the more straightforward method of last-observation-carried forward, often used in research on weight loss. Data from week 13 were used to improve imputation, where applicable. Consistent with related research and recent suggestions, change scores were the unadjusted difference between scores from baseline and scores from week 26. Statistical significance was set at α = 0.05 (2-tailed).

Initially, a series of mixed-model repeated measures analysis of variances (ANOVAs) were conducted. This statistical method simultaneously assesses both within- and between-group differences. Thus, the statistical significance of within-group changes in Exercise Self-Efficacy, self-regulation for controlled eating, Weight Efficacy Lifestyle (self-efficacy for controlled eating), self-regulation for controlled eating, Total Mood Disturbance, exercise, fruit and vegetable consumption, weight, and waist circumference change explained a significant portion of the variance in change in weight ...
changes were found during 26 weeks in all measures (p < 0.001). Descriptive statistics and within-group changes derived from follow-up dependent t-tests are reported in Table 1. Improvements were significantly greater for the Cognitive-Behavioral Nutrition group in self-regulation for controlled eating, F(1, 428) = 5.83, p = 0.02, η² = 0.013; fruit and vegetable consumption, F(1, 428) = 8.80, p = 0.003, η² = 0.020; weight, F(1, 428) = 5.15, p = 0.02, η² = 0.012; and waist circumference, F(1, 428) = 7.47, p = 0.007, η² = 0.017 (Table 1, with significant differences annotated by different superscripts between groups on the same measure). In the Nutrition Education group, 40 (21.9%) participants lost at least 5% of their original body weight, and 9 (4.9%) lost at least 10%. In the Cognitive-Behavioral Nutrition group, 83 (33.6%) participants lost at least 5% of their original weight and 21 (8.5%) lost at least 10%.

Changes in Exercise Self-Efficacy and self-regulation for exercise significantly predicted change in exercise volume (Table 2). Changes in Weight Efficacy Lifestyle and self-regulation for eating significantly predicted change in fruit and vegetable consumption (Table 2). Entry of Total Mood Disturbance change significantly improved the explained variances in both equations (Table 2). Change in Exercise Self-Efficacy significantly predicted Weight Efficacy Lifestyle change, β = 0.53, SE = 0.13, p < 0.001, and change in self-regulation for exercise significantly predicted self-regulation for controlled eating change, β = 0.68, SE = 0.05, p < 0.001. Changes in volume of exercise and fruit and vegetable consumption explained a significant portion of the variance in changes in weight, R² = 0.28, F(2, 427) = 81.56, p < 0.001, and waist circumference, R² = 0.28, F(2, 427) = 83.66, p < 0.001, with changes in both predictors significantly contributing, uniquely, to the variances explained, βs = -0.43 (SE = 0.01) and -0.19 (SE = 0.14), and -0.45 (SE = 0.02) and -0.17 (SE = 0.17), respectively, all p values < 0.001.

Change in Total Mood Disturbance significantly differed at exercise frequencies of 0 to 1.9 days (n = 194; mean = -2.62, SD = 9.97), 2.0 to 3.9 days (n = 129; mean = -14.47, SD = 17.16), and 4.0 to 7.0 days (n = 107; mean = -16.48, SD = 14.45) per week, F(2, 427) = 47.50, p < 0.001, η² = 0.182. A Bonferroni follow-up test indicated that the participants completing 2.0 to 3.9 and 4.0 to 7.0 days per week of exercise demonstrated significantly greater reduction in Total Mood Disturbance than those completing 0 to 1.9 days, but they did not significantly differ from one another. The correlation between Total Mood Disturbance change and change in the Negative Emotion subscale was significant, r = -0.31, p < 0.001, and stronger than those of the other 4 subscales of the Weight Efficacy Lifestyle Questionnaire. Only 12.9% of the observed weight loss was accounted for through exercise completed over the course of the investigation.

**Discussion**

**Consolidation of Findings**

Initially, a description of the problem of treating obesity with standard methods, and a review of a research program suggesting an alternate treatment route was given. An experimental research design was then established on the basis of a review of theory and our previous findings.

### Table 1. Changes in study measures during the 26-week investigation

<table>
<thead>
<tr>
<th>Measure</th>
<th>Baseline Mean (SD)</th>
<th>Week 26 Mean (SD)</th>
<th>Change during 26 weeks Mean (SD)</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nutrition Education group (n = 183)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exercise Self-Efficacy</td>
<td>29.67 (11.59)</td>
<td>33.19 (11.21)</td>
<td>3.51 (10.07)</td>
<td>2.04, 4.98</td>
</tr>
<tr>
<td>Self-regulation for exercise</td>
<td>20.13 (5.60)</td>
<td>26.31 (7.72)</td>
<td>6.17 (7.87)</td>
<td>5.03, 7.32</td>
</tr>
<tr>
<td>Weight Efficacy Lifestyle</td>
<td>98.93 (33.73)</td>
<td>115.91 (33.73)</td>
<td>16.98 (30.20)</td>
<td>12.57, 21.38</td>
</tr>
<tr>
<td>Self-regulation for controlled eating</td>
<td>21.31 (6.04)</td>
<td>25.45 (6.93)</td>
<td>4.15 (5.97)</td>
<td>3.28, 5.02</td>
</tr>
<tr>
<td>Total Mood Disturbance</td>
<td>22.17 (16.52)</td>
<td>13.30 (18.42)</td>
<td>-8.87 (14.44)</td>
<td>-10.98, -6.77</td>
</tr>
<tr>
<td>Exercise</td>
<td>9.61 (9.87)</td>
<td>22.95 (19.25)</td>
<td>13.34 (17.13)</td>
<td>10.84, 15.84</td>
</tr>
<tr>
<td>Fruits and vegetables</td>
<td>4.46 (2.08)</td>
<td>4.97 (2.17)</td>
<td>0.51 (1.40)</td>
<td>0.31, 0.71</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>118.88 (18.83)</td>
<td>116.35 (17.96)</td>
<td>-2.53 (4.44)</td>
<td>-3.17, -1.88</td>
</tr>
<tr>
<td>Waist circumference (cm)</td>
<td>122.46 (13.61)</td>
<td>118.95 (13.56)</td>
<td>-3.51 (6.61)</td>
<td>-4.47, -2.54</td>
</tr>
<tr>
<td><strong>Cognitive-Behavioral Nutrition group (n = 247)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exercise Self-Efficacy</td>
<td>29.87 (11.49)</td>
<td>32.52 (11.37)</td>
<td>2.64 (10.67)</td>
<td>1.31, 3.98</td>
</tr>
<tr>
<td>Self-regulation for exercise</td>
<td>20.87 (4.99)</td>
<td>27.28 (7.36)</td>
<td>6.41 (7.53)</td>
<td>5.47, 7.35</td>
</tr>
<tr>
<td>Weight Efficacy Lifestyle</td>
<td>96.68 (35.10)</td>
<td>117.07 (37.46)</td>
<td>20.39 (32.56)</td>
<td>16.31, 24.47</td>
</tr>
<tr>
<td>Self-regulation for controlled eating</td>
<td>21.34 (5.94)</td>
<td>26.89 (7.40)</td>
<td>5.55 (6.04)</td>
<td>4.80, 6.31</td>
</tr>
<tr>
<td>Total Mood Disturbance</td>
<td>20.44 (16.63)</td>
<td>10.27 (16.84)</td>
<td>-10.17 (15.42)</td>
<td>-12.11, -8.24</td>
</tr>
<tr>
<td>Exercise</td>
<td>9.47 (9.81)</td>
<td>25.31 (18.45)</td>
<td>15.84 (18.36)</td>
<td>13.53, 18.14</td>
</tr>
<tr>
<td>Fruits and vegetables</td>
<td>4.37 (1.80)</td>
<td>5.33 (2.01)</td>
<td>0.96 (1.64)</td>
<td>0.75, 1.16</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>116.26 (20.45)</td>
<td>112.63 (20.13)</td>
<td>-3.63 (5.38)</td>
<td>-4.31, -2.96</td>
</tr>
<tr>
<td>Waist circumference (cm)</td>
<td>122.30 (14.90)</td>
<td>117.15 (15.39)</td>
<td>-5.15 (5.79)</td>
<td>-5.88, -4.42</td>
</tr>
</tbody>
</table>

A different letter superscript adjacent to the mean score (meanchange) (a or b) within the same measure denotes a statistically significant difference between the Nutrition Education and Cognitive-Behavioral Nutrition groups; 95% CI = within-group changes with a 95% Confidence Interval. CI = confidence interval; SD = standard deviation.
of interrelations of exercise, psychosocial changes, improved eating, and weight loss. After addressing exercise adherence concerns through the use of The Coach Approach protocol in both treatment conditions, findings indicated that an exercise and nutrition treatment focused on self-regulatory skills was associated with significantly more weight loss and reduction in waist circumference during 26 weeks than a treatment where the nutrition component was educationally based (as is the typical practice). Also consistent with expectations, changes in self-regulatory skill usage and self-efficacy were significantly related to both increased exercise and improved eating, with exercise-induced mood change significantly adding to the explained variances in improvements. It was confirmed that only 2 sessions per week of moderate exercise was sufficient to improve overall mood, with a higher volume unrelated to greater improvement. Also as expected, increased use of self-regulatory skills for exercise predicted greater use of self-regulation for controlled eating, and improvements in self-efficacy for exercise predicted greater changes in self-efficacy to control one’s eating.

Although the average loss in weight in the Cognitive-Behavioral Nutrition group was a modest 3.6 kg (just over 3% of initial weight), it should be noted that the conservative intention-to-treat design used in this study included data from all individuals initiating treatment—including early drop-outs and those with very poor treatment attendance. Thus, its improvement over the Nutrition Education group (a group still receiving considerable treatment) of 30% is noteworthy. That being said, because of the improved understanding of salient psychosocial predictors of weight change, important treatment components should be carefully scrutinized for improved effect in the future. For example, findings indicated that improvement in self-efficacy for controlled eating was not significantly different between treatment conditions. Because of the present findings on the association of self-efficacy and exercise and eating improvement, more attention to this is warranted in the future. It is also not known if the considerable mood changes associated with even minimal volumes of exercise may be specifically channeled to address emotion-triggered overeating; and, if so, how this may further improve effects. Thus, it is likely that a considerably longer time frame for the nutrition component will be required to attend to these issues.

Results overwhelmingly supported relationships depicted in the proposed model (Figure 2), and extended previous research on the positive effects of self-regulation on exercise and eating, and carry-over effects from self-regulating for exercise to self-regulating for controlled eating. Although the positive effects of increased self-efficacy on exercise and appropriate eating behaviors were previously indicated, their interrelationship was only recently suggested as was the effect of improved mood on, “… a healthier psychological climate in which individuals have more cognitive and emotional resources, as well as motivation and energy, to sustain a long-term commitment to a weight-loss program.” Our own research program was also extended in a manner that may now guide the development of an original intervention that is substantially different from those previously tested; one in which physical exercise supported by methods emphasizing self-regulation, self-efficacy, and mood change is central to reliably improving eating behavior through a psychosocial pathway.

### A Look Forward

A key to meaningfully improving lagging weight-loss treatment outcomes is by reviewing past research failures and successes, better understanding relation-

<table>
<thead>
<tr>
<th>Table 2. Results of hierarchical multiple regression analyses for the prediction of changes in exercise and fruit and vegetable consumption (N = 430)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Δ Exercise</strong></td>
</tr>
<tr>
<td>Model 1</td>
</tr>
<tr>
<td>Δ Exercise Self-Efficacy</td>
</tr>
<tr>
<td>Δ Self-regulation for exercise</td>
</tr>
<tr>
<td>Model 2</td>
</tr>
<tr>
<td>Δ Exercise Self-Efficacy</td>
</tr>
<tr>
<td>Δ Self-regulation for exercise</td>
</tr>
<tr>
<td>Δ Total Mood Disturbance</td>
</tr>
<tr>
<td><strong>Δ Fruit and vegetable consumption</strong></td>
</tr>
<tr>
<td>Model 1</td>
</tr>
<tr>
<td>Δ Weight Efficacy Lifestyle</td>
</tr>
<tr>
<td>Model 2</td>
</tr>
<tr>
<td>Δ Weight Efficacy Lifestyle</td>
</tr>
<tr>
<td>Δ Self-regulation-controlled eating</td>
</tr>
<tr>
<td>Δ Total Mood Disturbance</td>
</tr>
</tbody>
</table>

Δ = change in score from baseline to week 26.
Supported Exercise Improves Controlled Eating and Weight through Its Effects on Psychosocial Factors: Extending a Systematic Research Program Toward Treatment Development

...it is proposed that psychosocial research should perhaps shift away from work on treatment failures in treatments) that, pessimistic suggestions (precipitated by recent field experiment, methods applied to such a newly focused intervention would exemplify innovation, with follow-ups of at least several years—especially emotional eating. It is hoped that this review, field experiment, consolidation of findings, and suggestions for future research and practice provides an enhanced understanding of the role that cognitive-behaviorally...
supported exercise plays in controlled eating and, ultimately, facilitates greatly improved treatment results that may be widely disseminated. It is incumbent on the fields of behavioral and medical science to collaborate in a quest for more effective methods to successfully intervene with the growing epidemic of obesity through continued extension of the existing knowledge base.

Acknowledgments

The author acknowledges the interdisciplin- ary team at the YMCA of Metropolitan Atlanta that facilitated much of the research synthesized in this article, including: Ed Munster, Dan Pile, Scott Doll, Betsy Lenahan, Kristin McEwen, Robyn Furness-Fallin, Alice Smith, Jennifer Unruh Rewkowski, Linda Vaughn, and Elizabeth Kelly, as well as the funding agencies that made the work possible.

Disclosure Statement

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

References

Supported Exercise Improves Controlled Eating and Weight through Its Effects on Psychosocial Factors: Extending a Systematic Research Program Toward Treatment Development


Supported Exercise Improves Controlled Eating and Weight through Its Effects on Psychosocial Factors: Extending a Systematic Research Program Toward Treatment Development


The Commonest Disease

Obesity is the commonest disease in the United States. The aged are particularly prone to it, when one by one other physical pleasures have been outlived or denied, and there remains only the joys of the table.


18
“Our Culture Is Medicine”: Perspectives of Native Healers on Posttrauma Recovery Among American Indian and Alaska Native Patients

Deborah Bassett, PhD; Ursula Tsosie, MSPH; Sweetwater Nannauck

Abstract
American Indian and Alaska Native (Native) people experience more traumatic events and are at higher risk for developing posttraumatic stress disorder compared with the general population. We conducted in-depth interviews with six Native healers about their perspectives on traumatic injury and healing. We analyzed the interviews using an inductive approach to identify common themes. We categorized these themes into four categories: causes and consequences of traumatic injury, risk factors, protective factors, and barriers to care. The implications of our study include a need for improving cultural competence among health care and social services personnel working with Native trauma patients. Additional cumulative analyses of Native healers and trauma patients would contribute to a much-needed body of knowledge on improving recovery and promoting healing among Native trauma patients.

Introduction
With more than 560 federally recognized tribes in the US alone, there are more than four million Americans who identify themselves as American Indian or Alaska Native (Native), representing a diversity of languages, locations, traditional practices, indigenous knowledge, and spiritual beliefs. Despite significant intergroup differences, Native people as a whole are at a greater risk than any other ethnoracial group for experiencing traumatic life events than the general population and are twice as likely to develop posttraumatic stress disorder (PTSD) when compared with the general population.

Among nearly 3000 injured trauma survivors at 69 hospitals nationwide, Native patients were found to have the highest risk of all racial and ethnic groups for developing symptoms consistent with a diagnosis of PTSD 12 months after injury. Similarly, among 269 trauma patients hospitalized at 2 level 1 trauma centers in the Western region of the US, PTSD and related symptoms were significantly more frequent among Native patients than among white patients. In the largest epidemiologic survey available regarding Native health, researchers found that two-thirds of the Native populations reported levels of lifetime trauma exposure that were higher than those in the general US population. Additionally, trauma from unintentional injury, such as motor vehicle accidents, is experienced at higher rates by Native American indigenous populations than by other ethnoracial groups (Dedra Buchwald, MD, personal communication; 2012).

In terms of PTSD, considerable research has been completed with Native populations that confirms the high prevalence of this psychiatric diagnosis among these populations. Although definitive conclusions about PTSD in Native populations are still needed and warrant additional research on trauma-related disorders in Native populations, a focus on the development of culturally appropriate intervention strategies, such as the integration of traditional Indian medicine (TIM) also appears to be warranted. TIM is a type of traditional medicine (TM) that is based on indigenous knowledge in the Americas. TM is defined by the World Health Organization (WHO) as “including diverse health practices, approaches, knowledge and beliefs incorporating plant, animal and/or mineral based medicines, spiritual therapies, manual techniques and exercises, applied singularly or in combination to maintain well-being, as well as to treat, diagnose or prevent illness.”

According to WHO, use of TM is common throughout the world in both developed and developing nations. In developed nations, TM is estimated to be used by 30% to 70% of the population, most often involves the use of complementary and alternative medicine therapies such as acupuncture or massage, and is used in conjunction with allopathic medicine (ie, Western medical approaches or biomedicine). In developing nations, TM is estimated to be used by 60% to 80% of the population and often serves as the primary or sole source of health care. Up to 90% of the population in some countries relies on TM for primary health care needs. Although biomedicine is largely replacing TM in many developing nations, a need for a complementary approach is warranted. WHO recognizes the importance of TM around the world in providing health care to vulnerable populations because of its accessibility, affordability, and cultural appropriateness. TIM fits within a larger global context of the use of TM in general as sole, primary, or complementary physical, mental, and spiritual health care in both developing and developed nations.

The literature indicates a high prevalence of openness to the use of TIM. In one study of urban Native people, 38% reported that they consulted a Native healer, and 86% of those who did not currently consult a Native healer reported that they were interested in doing so in the future. In another study of traditional health practices, 70% of urban Native primary care patients reported that they often participated in traditional health practices, including taking herbal medicine, smudging (a purification practice that involves burning a bundle of dried herbs such as sage), and participating in healing or sweat-lodge ceremonies. Their participation was predicted by strength of cultural affilia-
tion with Native culture.8 In a study of PTSD, depression, and alcohol abuse among 2 tribes, the treatment plan including traditional healers was common in both tribes (Northern Plains and Southwest), particularly the Southwest.11 In a study of Navajo patients, 62% were treated by spiritual interventions from Native healers in the past and 39% reported that their method of treatment included Native healers on a regular basis.8 In a 2000 study, researchers found that urban Native patients participated in TIM simultaneously with biomedical treatments for a variety of physical health problems.6

Integrating traditional Native American healing practices into mainstream treatment interventions is often recommended when working with Native patients9 and could be beneficial to patients.11 For example, aboriginal families receiving clinical care for domestic violence that integrated treatment by traditional healing elders showed significant improvement compared with families who did not participate in the integrated treatment.11

Since the 1990s, indigenous scholars working in mental health among Native communities have called for traditional healing practices to inform (and even transform) conventional psychotherapy.14–17 Mohatt emphasized the need for a practical grounding of indigenous psychotherapy theories in the reality of clinical practice, suggesting that case studies be used as a way to test theory in practice.7 Synthesizing work by Duran17 and Gone,16 Mohatt identified four issues that should be considered when moving from indigenous theory to practice: the need for “critical common elements” to guide the practice, spiritual development among psychotherapists in training, a cross-cultural evaluation model to assess the practice, and recognition that indigenous psychotherapy is not culture-specific but has potential to benefit all patients.16

Unfortunately, there is very little published information available to inform clinical interventions with Native patients at risk for developing PTSD (but see Manson18 for an exception). In their 2007 comprehensive review of the literature in mental health treatment, Gone and Alcántara19 discovered a complete absence of literature providing an empirical assessment of mental health outcomes for interventions with Native patients that were based on Native American traditional healing. However, focused studies on small samples and individual cases studies have been completed assessing interventions that combine Western and Native approaches to healing. The results have been promising, indicating that Native approaches to healing for PTSD and related disorders are therapeutic for Native people.20

### Native Healer Interview Guide: Traumatic Injury, Its Consequences and Treatment

This interview script is intended as a guide for use with Native healers. Its focus is on the experience of traumatic injury, with emphasis on the nature and extent of the thoughts, feelings, and behaviors that accompany such injury. As the interview progresses, follow-up questions may be asked on any of the topics discussed. Participants may decline to answer questions that make them feel uncomfortable.

Thanks again for agreeing to participate in this interview. As we talked about before, I am audiorecording and then will transcribe our conversation so we may have a record of exactly what was said. I won’t put your name on the transcript, and we won’t use your name in conjunction with any quotes I may use. I am very interested in learning how people react to traumatic injuries; the thoughts, feelings, and behaviors that are experienced as a result of such injuries; and the services needed to treat the problems that arise. Our goal is to develop better, more effective ways of caring for American Indian and Alaska Native people who suffer traumatic injuries. Any questions? Let’s begin.

- What comes to mind when I say the phrase traumatic injury? What does it mean to you?
- What kinds of events can cause traumatic injury?
- What are some of the consequences of traumatic injury?
- How often do people in your community experience traumatic injury?
- Is it a common occurrence?
- How concerned are you and members of your community about traumatic injury?
- What thoughts, feelings, and behaviors can result from traumatic injury?
- Why do people experience these thoughts, feelings, or behaviors?
- Some people who suffer traumatic injury don’t experience these thoughts, feelings, or behaviors. Why not?
- How can such thoughts, feelings, or behaviors affect people’s lives?
- Have you ever heard someone refer to these thoughts, feelings, or behaviors in a particular way?
- Who and what can help people deal with the thoughts, feelings, or behaviors they may experience as the result of traumatic injury?
- To what extent are these sources of help available in your community?
- How likely are people who experience these thoughts, feelings, or behaviors to seek help for dealing with them?
- What can keep people from seeking help? What can encourage people to seek help?
- Before we close, do you have any additional comments to share about the topic of traumatic injury?

Thank you for sharing your views with me. Do you have any more questions about the project and its goals?
Methods
Data Collection
We investigated traumatic injury, with particular emphasis on the nature and extent of the thoughts, feelings, and behaviors that often accompany such injury (eg, PTSD). Research study staff were trained to conduct semistructured interviews.

Analytic Methods
The method of data analysis used in our study is based on an approach described by Briggs in which each interview is considered on its own terms in order to understand what a participant meant by the answers s/he gave during an interview, rather than decontextualizing answers from their original context. We strove to follow the protocol of an indigenous methodology, particularly by being mindful of respect, reciprocity, and responsibility. We had regular discussions among ourselves throughout the project to discuss how to relate respectfully to the participants, to give back to the communities that we were studying, and to fulfill our roles and obligations as researchers responsibly. These discussions were an important aspect of our methodology. One way we addressed our indigenous research responsibility was by giving our participants the opportunity to read their interview data. We read through each transcript in its entirety a minimum of five times, categorizing the interviewee’s responses into similar categories. We reviewed the transcripts independently and then jointly reviewed the categories for consensus. We wrote theoretical memoranda throughout our analysis to make connections within the data and propose explanations for the findings.

We identified a purposeful, rather than random, sample of Native healers through our personal networks and referrals. Healers were identified as such on the basis of their recognition as healers within their communities as well as across Native communities. We invited the healers to participate in the interviews through e-mail or by telephone. At least one of us met each of the six healers in person on one or more occasions. Ultimately, we interviewed six Native healers using a semistructured interview (see Sidebar: Native Healer Interview Guide: Traumatic Injury, Its Consequences and Treatment) in person or over the telephone. Two study staff members were present during the interviews; one person conducted the interview while the other person took notes. The duration of interviews ranged between 60 and 120 minutes. With permission, the discussion was recorded and later transcribed verbatim. All participants were between the ages of 45 and 75 years. Five men and one woman were interviewed. All participants are affiliated with Native communities in the US; however, to preserve participant confidentiality, we have not identified here the specific communities with which they are affiliated. Each interview participant received $50 as compensation for their time.

Results
The materials we analyzed included six fully transcribed interviews with Native healers. We ultimately identified four overarching categories of responses: causes and consequences of traumatic injury, risk factors, protective factors, and barriers to care (Table 1). In what follows, we discuss each set of findings that pertain to the four categories and present quotations from the healers to illustrate our findings. To preserve confidentiality for the healers we interviewed, we refer to them simply as Healer 1, Healer 2, and so on.

Causes and Consequences of Trauma
One of the first questions we asked the healers concerned what traumatic injury meant to them. From their answers, we identified three related themes we subsumed under the category of "causes and consequences of trauma." Healer 5 explained that physical traumatic injury was caused by imbalance of three main domains: mental, physical, and spiritual. The lack of spiritual harmony, he emphasized, contributes to longer recovery from traumatic injury:

> "Traumatic injury is like three main things that I see people go through—that I’ve been taught. It’s not just the physical, which is what I feel a lot of non-Native cultures see. … and they’re just now coming around to mental injuries. … but the main thing that they don’t have a clue about—a lot of them—is spiritual harmony. That’s the main one. And if you don’t have those in balance, if you don’t check them, it takes a person longer to recover from a physical injury like a car accident."

<table>
<thead>
<tr>
<th>Causes and consequences of traumatic injury</th>
<th>Risk factors</th>
<th>Protective factors</th>
<th>Barriers to care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental</td>
<td>Historical trauma</td>
<td>Healthy home environment</td>
<td>Fear and distrust</td>
</tr>
<tr>
<td>Physical</td>
<td>Unhealthy home environment</td>
<td>High self-esteem</td>
<td>Financial need</td>
</tr>
<tr>
<td>Spiritual</td>
<td>Low self-esteem, Lack of cultural knowledge and identity</td>
<td>Strong cultural knowledge and identity, Humor, Having someone to talk to, Having someone to depend on for help</td>
<td>Having to educate clinicians about American Indian/Alaska Native context, Lack of resources or knowledge of available resources, A shortage of healers</td>
</tr>
</tbody>
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Participants
We identified a purposeful, rather than random, sample of Native healers through our personal networks and referrals. Healers were identified as such on the basis of their recognition as healers within their communities as well as across Native communities. We invited the healers to participate in the interviews through e-mail or by telephone. At least one of us met each of the six healers in person on one or more occasions. Ultimately, we interviewed six Native healers using a semistructured interview.
Healer 4 gave a few examples of serious injuries that could affect people physically, mentally, and spiritually:

- **It could be like a car accident. It could even be a snakebite or a spider bite ... or maybe an overdose on drugs, or gunshot wound, knife wound, could even be poisonous snakebite or got beat up really bad.**

Healer 6 talked about military trauma as a cause of PTSD, describing it as an amplification of preexisting trauma:

- Of course military trauma rarely is ever all by itself. There's usually preexisting childhood conditions that happen that have been traumatic, and the military trauma that is experienced tends to amplify the preexisting trauma. And making it more complicated, of course, we have alcohol and drugs and just ongoing violence in our society that continues to amplify military trauma. It's very confusing.

In this response, Healer 1 discussed different types of traumas that can be categorized as physical or mental:

- **I would have to say probably over half of our population experiences [trauma] regularly, in many different forms. It could be that we're being targeted driving down the street by the police or—I've been stopped, you know. It's also not only domestic violence but also injuries on the work site. And it also can be very clever. The way that someone says something, it's the tone of the voice. If a person has more power than you in the workplace, especially if it's male, we're considered third-class citizens.**

When asked “What are some consequences of traumatic injury?” the healers again talked about the interrelated mental, physical, and spiritual consequences. Healer 5 said that Native people are more spiritual than other people and that after experiencing a loss or going through a traumatic event, they may develop PTSD or turn to substance abuse to ease their pain if they do not understand what is happening to them:

- And all of a sudden these memories get flooded into your mind and if you don't have that balanced out with your spirituality, then people don't understand why they act out. The expression 'act out'—they don't know how to act. Some people, you know, they do what they know. They drink. ... Native people are very spiritual. That's a gift that the Creator gave us versus the other people. There are people who don't know that about themselves and they've never been part of—or they've never grown up with their culture, [and] they've never had guidance from elders. They're the ones who are left behind when someone loved passes on. They're still spiritual but they don't understand what they're going through.

Healer 5, who helps plan ceremonies that address the impact of different types of traumatic events, including combat experience and bereavement, said that the purpose of the ceremonies is to help people understand what they see and feel and learn a healthy response to the traumatic event they've experienced:

- Healer 4 talked about the relationship of spiritual trauma to physical trauma:

-- Even the doctors and the nurses and the people at a hospital can see the physical impact—the force of the physical impact—let's say if a person got hit real hard by a fist or a pipe or a car or anything else like that. It leaves a physical mark—ie, the bruise, the blood clot, the discoloration, and everything like that. But they don't see the spiritual side, the psychological or the energy impact. They can see [the physical impact]. There's energy behind every trauma. There's energy that's involved in it. So that energy can be seen physically, but it's very difficult to see it spiritually. We use the term spiritually, or even psychologically, on a person's mind and brain, which in turn affects their personality.

In a study of Vietnam veterans, Hopi men who had been initiated into the highest order of Hopi secret religious societies had the lowest scores on any measure of PTSD. Healer 6 told of his return from Vietnam, his high level of PTSD, and “hearing things in the sky and hearing sounds and having visions of campfires in the hills and hearing voices at night—people talking to you.” He went to a non-Native counselor, who encouraged him to develop his cultural identity, telling him, “You’re struggling with yourself, with your identity, with what you are,” and assured him, “You’re not crazy.” This advice and assurance was a turning point for Healer 6, who began to seek out TIM treatment for PTSD, which ultimately proved effective for him.

Speaking of Native combat veterans with PTSD, Healer 6 said:

- That’s a group in a different way: We seem to recognize it as a breaking of our spirit—part of our spirit was missing and that we had to get our spirit back—somehow find its way back to us till we could become whole again. We felt kind of empty inside.

Regarding causes and consequences of all types of trauma, the healers all stressed the importance of maintaining harmony that will restore balance in all areas of the patient’s life: the physical, spiritual, and mental. This finding is consistent with findings in similar studies of Native healers.

### Risk Factors

With respect to risk factors, historical trauma, not knowing one’s culture or language, not having a connection to elders, and growing up in an unhealthy home environment all contribute to Native traumatic injury response. In relation to those contextual factors, Healer 5 said:

- **When I see a physical injury in people—there are a lot of things that cause that, okay? The doctors don’t see that point of view. And what I’m getting at is a lot of our people, because they come from broken homes, because they lost a lot of their culture, because of dysfunctional homes—there’s more to it than a broken arm.**

Similarly, Healer 1 cited low self-esteem based on a history of racist beliefs by society as a risk factor for developing PTSD:

- **When I see a physical injury in people—there are a lot of things that cause that, okay? The doctors don’t see that point of view. And what I’m getting at is a lot of our people, because they come from broken homes, because they lost a lot of their culture, because of dysfunctional homes—there’s more to it than a broken arm.**

Well, some of it is, I think, based on low self-esteem because if you believe the system—that the only good Indian is a dead Indian!—then you’re going to spend your life trying to please. I think that’s part of the reason why we have such a high rate of suicide.

Historical trauma is highly relevant to any discussion of trauma in Native populations and provides an important explanatory model that is commonly used when talking about high rates of present-day traumatic injury and PTSD among Native populations. Briefly, historical trauma originated in the aftermath of
the Jewish Holocaust and refers to the survivors and their subsequent generations. Applied to the Native American experience, the term refers to the colonization of indigenous communities and subsequent experiences of subjugation and abuse, including coercive assimilation through boarding schools (the experience of which often included physical, sexual, and emotional abuse). Historical trauma also refers to the theft of land; the forced removal and relocation of families and communities; and cultural genocide, including loss of Native language, cultural practices, social structures, and spiritual beliefs and practices.37

Brave Heart and DeBruyn29 suggested that the first generation of survivors of genocide had PTSD symptoms that might have included depression, hypervigilance, anxiety, and substance abuse. As cultural genocide also took place, Native people were not allowed to practice their traditional rituals of mourning and healing, which included phases of grief that would have provided adjustment to their loss, ceremonial and ritual mourning, and family and community support. Brave Heart and DeBruyn stated that “Disenfranchised grief results in an intensification of normative emotional reactions such as anger, guilt, sadness, and helplessness.”39 This unresolved grief is a result of historical trauma that is transmitted down through each Native generation and is cumulative and compounded as more traumatic events occur.

Healer 1 explicitly cited historical trauma as a reason for traumatic injury among Native people:

… Well, actually trauma also—not just trauma injury—also in my mind also means historical trauma, which is 500 years of intergenerational oppression from the dominant culture. And so it looks like—historical, emotional, physical, cultural. Individual characteristics such as strength of tribal affiliation, knowledge of culture, and family of origin were cited by Healer 4 as determining how someone would react to a traumatic injury: … People are—they’re individuals. They could be full blood. They could be half-breed. They could be another heritage and culture and language. They might not know anything at all. I mean it—all of that is going to affect their thoughts and feelings and their behavior. You know, if they grew up in dysfunctional families—for example, alcohol and drugs, a lot of abuse, physical and verbal abuse—a lot of that is going to affect them—a lot of that will start surfacing and coming up from an accident—a car accident, injury, gunshot wound, or a stab.

Protective Factors

In terms of protective factors, studies of Native patients indicate that cultural identity is an important aspect.20,31 In a case study of a combat veteran with PTSD, themes important to Native experiences of trauma included boarding-school abuse, the interruption of cultural identity formation, and lifelong experiences of racism.33 Key elements of this patient’s recovery were active involvement with his Native culture, which instilled in him a sense of Native pride; preparation for and participation in traditional ceremonies; and having the support of his family and tribal community. Our analysis of the interviews with the healers showed cultural identity to be a primary protective factor. Culture is an ever-evolving process for indigenous people that is based on traditional values and helps to establish an identity and a sense of belonging in the world; describes the origin of a people through an oral tradition of legends, songs, and stories; and defines people’s understanding of why things happen and what they can do to make changes.52

Healer 5 gave some examples of positive outcomes of physical injury, one for people who know their culture and one for those who do not. Of those who know their culture, Healer 5 said:

… People visit him. … We take him to the longhouse, and he gets to do the songs every Sunday. … He’s going to learn more about his culture. … Maybe this person will learn their language a little more because this person is going to listen … learn to respect your elders and listen. … When you’re spiritual, you listen to your inside, you listen to who’s there. You can understand that it would be good to have the Creator there. That’s huge. That’s a big difference … you learn how to listen to your body a whole lot more. Your spirituality goes up a notch when you get hurt. It goes up. They get stronger.

Of those who do not know their culture, Healer 5 said that they can still experience positive outcomes related to their physical injury:

… The person—the other guy—has negative thoughts … when a person who doesn’t have his culture, who’s not hooked up spiritually and is Native, that’s the positive thing that can help him is he learns to accept no … and whether he learns to accept no in a healthy way, that depends on who’s around him … people that are there even if they’re from another tribe … you get closer to God. You get closer to the Creator. … It’s called vision. You learn to see past tomorrow. That’s the thing that I feel happens to both kinds of people [ie, those who know their culture and those who don’t]. You have vision … so now their vision [provided by knowing their culture] helps them see past their emotions, helps them see past their pain or their sadness, and they accept it.

Thus, according to Healer 5, although both types of trauma survivors can potentially experience positive outcomes from their trauma, those who know their culture will benefit more quickly than those who do not. For both types of survivors, however, culture is indeed viewed as medicine for trauma patients, regardless of the strength of their cultural identity.

The theme of culture as medicine that Healer 5 explicitly articulated and that the other five healers we interviewed described is one that appears repeatedly in the literature on Native healers. In a study of four Native women healers, the healers talked about indigenous healing occurring within a cultural context of Native traditions, values, and knowledge.27 In a similar study with four Native men healers, the healers described culture as interwoven with healing.15

Healer 5 described knowing one’s language and culture both as a “spiritual support” and as “medicine” for the patient. In the city, in Western medicine, the best part of their environment is pharmacy. And you’re giving that kind of medicine to people who are used to getting their medicine from somewhere else. It’s not all there. They need that spiritual support … You’re talking, our culture is medicine. Our Creator doesn’t make mistakes. That’s sort of the basic thing I teach people who don’t know their culture who want to know “Why should I learn it?” I tell them—I ask them first, “Do you believe in God? Do you
believe in the Creator?" Yeah, I do. "You think He makes mistakes or She makes mistakes?" No, He doesn't make mistakes. I go, "He gave you your culture, right? Where do you think that culture came from?" It came from God, okay, so when you don't have it, that culture is medicine to you.

Indigenous therapeutic interventions usually involve an individual's family and community, and healing occurs within the context of the community as a whole. The healed person is able to then help the community. Thus, curing an individual is important to the community because it strengthens all members. In his interviews with traditional healing elders in North America, Mehl-Madrona found that the elders identified the importance of the community in the healing of an individual.

Healer 2 said:

It was a traditional healing. … It reached deep into my soul and just made me feel real. … This is from the old people. They've come back to help, to talk, to be with, to share.

Healer 6 told us that it was only after he turned to his Indian culture that he was able to make peace with his own PTSD, which he developed after his military combat experience. By reaching out to his community for healing, he was able to pass on those traditional values through singing and drumming for Indian men who have lost hope in the prisons he visits:

And sometime in the eyes—or most of the time in the eyes—of the people that I talk to in prison or, say, [in the prison sweat-lodge ceremony], I see that fear of being alone, being trapped. Everything is gone. You know, no family, no friends. They're just in trouble now. They don't know if they'll ever get out. There's no sense of future. Teaching the traditions and songs and the drum seem to help people like that a great deal.

In the following excerpt in which Healer 6 described a healing ceremony for combat veterans, the elements of cultural identity, having someone to talk to, and humor are all present:

You know, it was a traditional healing. … It reached deep into my soul and just made me feel real. And, I mean, this is real. This is from the old people, you know. They've come back to help, to talk, to be with, to share, you know. Even to laugh a little bit. It was just incredible.

Healer 2 told a story from his past when he was down on his luck and had received an injury. He was treated at the hospital, but he did not know how he would pay for his treatment when the time came to release him. He called his boss, and his boss paid for everything. He remarked on the importance of knowing that "someone is there for you" when coping with the aftermath of a traumatic event.

Bars to Care

We asked the six healers what they thought kept people from seeking help after experiencing PTSD. According to these six healers, patients will not seek help because of the following five barriers: fear and distrust, financial need, having to educate clinicians about Native context, lack of resources or lack of knowledge of available resources, and a shortage of healers. The following responses from the interviewees illustrate the barrier of fear and distrust.

Healer 2 said:

They tend to shy away from any people like yourself, and the reason they do that is that they don't want no one else to know about their problems.

Healer 1 said:

It's all complicated, and so that—so often people are afraid to go for help because they're afraid whatever they share is going to be used against them. … I mean, you don't really know who you can trust. And so if you've been raised with the people who historically don't trust the very agencies that are supposed to be helping you, where do you go?

Indeed, Gone suggested that Native preference for traditional healers might be a result of distrust of European-American institutions, which have a history of participating in the oppression of indigenous people in North America.

Many patients need help addressing their basic needs, such as food, shelter, and transportation, and these needs must be dealt with before other, more complex psychological issues can be adequately addressed. Healer 2 said:

[A lot of patients] really don't get any help after they leave the hospital because they are on assistance or unable to pay for their help from the hospital. And this causes them a lot of distress.

In their study of Native healers, Struthers et al emphasized the need for Western clinicians to learn about basic cultural beliefs of indigenous patients in order to provide the integrated care that those patients need.

Healer 1 described a unique barrier to help-seeking that she personally experienced as having "to teach while I'm going through my trauma":

So I went to a couple of places personally, and they ended up being wonderful, but they were non-Native, and I had to really educate them as I was going through my trauma. So I can't really just express my trauma. I have to teach while I'm going through my trauma, which is really burdensome.

Healers also noted that a lack of resources knowledge about Native patients posed barriers within more conventional medical models. The interviews indicated that some Native patients are unsure of where to initially go for medical assistance.

Healer 2 said:

I'm not too sure what [trauma survivors] do to deal with [mental health needs], because they don't know where to turn and who to ask.

Healer 3 said:

I've been away from [a particular city] for a long time, so I'm not sure what has been going on there, but when I was there, there wasn't a lot. I mean, people go to [the city] to the Native hospital there to get some help. But they don't stay at [the city]. And then they have to come back to [the city] after they've been in the hospital, but there's no follow-up.

Although many patients are unaware of available resources, Healer 3 said that there were a lot of resources accessible to people in the complimentary and alternative medicine realm:

I don't know if a lot of people are aware of what's available. There's a lot of resources here, but people may not be aware of it. I mean alternative-medicine-wise, and complementary medicine can assist people with traumatic experiences.

In terms of needing more healers, Healer 4 said:

I've been saying it for years. We need more medicine people. We need more Native healers … male and female.
**Discussion**

Our analysis of interviews of Native healers provides rich insight into the perspectives of these healers and in turn provides guidance for developing more adequate and appropriate treatment plans for trauma patients from North American indigenous populations. After soliciting their perspectives on the causes and consequences of traumatic injury, we asked the six healers if they had any advice on how to approach Native trauma patients and encourage help-seeking.

Healer 1 had the following simple advice: “Offer, offer, offer. Over and over again,” adding:

> You know, when I’m under these circumstances and I don’t know where my next meal is coming from, I don’t know how you can help. I don’t even know what kind of help I’m going to need. You know, sometimes it’s just talking. Sometimes it’s a need to cry or vent. It depends. I might need a ride, or I might be afraid.

Similarly, Healer 2 said:

> Well, just make sure that you’re there to help and not ask any questions. And that if they have any questions themselves—just make sure that if they have any questions ... that you’re willing to answer them.

In terms of encouraging help-seeking among trauma patients, Healer 5 said:

> The main thing is, it’s a real simple word. It’s trust. They gotta have trust. ... If they don’t have family or they don’t have people that look like family walking around, it’s hard for them to have trust.

Healer 5 went on to give practical examples of how trust could be developed in a hospital setting, based on his own experience in his tribe, to indicate to patients that the clinicians know something about their specific culture. These examples included physicians covering their stethoscopes with beads, wearing a turquoise ring, or putting Native art on the walls of the hospital. He explained why these visible symbols of something about their specific culture. These examples included physicians covering their stethoscopes with beads, wearing a turquoise ring, or putting Native art on the walls of the hospital. He explained why these visible symbols of inclusion were so important to Native patients and their families:

> You know, one little thing when they walk in—and the parents who are coming to see their kids, and these people who are coming from [a remote region] to [a large urban hospital]—they walk in there and they see something about Native people, right in the lobby. All of a sudden ... they can think clearly. Because the hardest thing—one of the harder things for people being hurt is that people have to watch it—people who love them. So if you make that easier for them—and sometimes it’s as simple as putting a display case as you walk into the hospital—they would see it. The things that I’m explaining to you are the same things that everybody else has and ... they take it for granted. ... So for us to walk into a place—it’s like walking into a foreign country. So if we saw something from us like what they take for granted, all of a sudden we would have a better chance of being more positive.

Healer 5 said it was important for hospitals to have a list of Native healers that Native patients and families could contact if they wanted to do so. In terms of educating hospital staff, Healer 4 said:

> [Hospital staff] need staff training. When I was out in Billings, Montana, I came out and I did some staff training for the hospitals with the doctors and the nurses and those that were in the medical profession and the medical role, and I talked to them about traditional Native healing concepts and practices and approaches to healing and the different kinds of medicine people that there were.

Healer 4 also talked about the importance of educating both hospital staff and Native people about the value of Native healing:

> You know, it all depends on who’s the director. If you’ve got white people managing Indian health clinics and they have the Western, conventional orthodox view, with no cultural base or understanding or need for a cultural-based approach, they’re not going to do it. And the same thing even with Native people. Native people weren’t really raised in the Native way. They can be totally assimilated before—totally assimilated and Christianized and all that and don’t believe in it or don’t see the value of it. They have no knowledge about it, so once again, a lot of our Native people have to be educated themselves.

As discussed earlier, Mohatt identified spiritual development as one of the key issues in training a new generation of indigenous psychotherapists who can bring traditional healing to clinical practice in Native communities. Similarly, in his interviews with traditional healing elders, Mehl-Madrona reported that “spiritual healing” was one of the most important points that elders identified for mental health clinicians to consider when working with Native patients. Because spirituality is such a central part of medicine and healing in Native communities, an indigenous approach to mental health care would require that the clinicians be spiritually developed themselves.

Although spiritual development may seem like a daunting task to clinicians trained in biomedicine, Shore et al offered some guidelines for psychiatrists who want to collaborate with Native healers. Their recommendations included that clinicians take the initiative in educating themselves about the Native community they are serving both in terms of general cultural knowledge and in the particular healing practices relevant to the given community; that they actively seek opportunities for collaboration within the community; and that they develop relationships with healers in the community. One way to accomplish these goals would be to study under a traditional healer. For example, one of the healers we interviewed provides mentorship for Native physicians interested in learning about TIM.

According to the healers we interviewed, culture is the primary vehicle for delivering healing. The overarching principle articulated here, that “culture is medicine,” means that connecting with one’s culture has both protective and therapeutic value, promoting both resilience to and recovery from traumatic events. The details of treatment will differ depending on the cultural specifics related to one’s culture; however, the principle of culture as medicine is the same across Native cultures, according to the healers we interviewed. Thus, indigenous means of treatment through culture may include any or all of the following: language, traditional foods, ceremonies, traditional values, spiritual beliefs, history, stories, songs, traditional plants, and canoe journeys. Connecting Native patients with their Native culture promotes better health outcomes.

Our findings are based on interviews we completed with six Native healers and are not intended to represent or speak for all Native people, who represent a diversity of cultures, lan-
guages, and beliefs. Our aim in this project was to inform the development of a care-management intervention with Native trauma patients to be implemented at a level 1 trauma center. Although it is beyond the scope of this article to discuss the outcome of that intervention, the insight we received from the healers we interviewed was crucial to developing a culturally tailored intervention with Native trauma patients. Although the cultural particulars of our findings may differ among Native populations (and we expect that they will), the overall emphasis on culture as medicine is one that we suggest is transferable across Native populations.

Our analysis contributes to a much-needed body of research on indigenous perspectives on health. Our study differs from similar studies that have been done in at least two important ways. First, we conducted interviews with healers from six tribes across North America rather than with healers who all represented the same tribe. Second, the focus of our interviews was traumatic injury, a focus we have not encountered in our reviews of the literature. Given the high prevalence of traumatic injury and PTSD among Native populations, future studies with this focus are warranted.

Practically speaking, the information presented here may prove useful to clinicians seeking culturally informed interventions for treating Native patients, particularly in trauma settings, but also in the settings of substance abuse, counseling, and general medicine. We have presented here many of the practical suggestions that the healers shared with us in the interviews. One important practical suggestion that was made repeatedly was to provide Native cultural training for hospital staff. Our experiences as researchers working at a level 1 trauma center has been that hospital staff are interested in learning more culturally informed ways of treating their Native patients. Periodic workshops could be held as part of an ongoing lecture series that introduces hospital staff to main concepts of Native health. Many of the healers we interviewed generously offered to give presentations to hospital staff on their work.

**Conclusions**

Through an in-depth interview process, our study identified important culture-specific themes that relate to the treatment of Native patients within the setting of trauma medicine. Limitations in this research design exist, and we acknowledge those here. We initially opted to employ an interview guide (included in the Sidebar: Native Healer Interview Guide: Traumatic Injury, Its Consequences and Treatment) that had been used effectively in other studies assessing PTSD in Native populations. However, the interview guide was less effective than we hoped as an interview instrument with the healers we interviewed, all of whom were more comfortable with the genre of storytelling as interview rather than with a question-and-answer format. We noticed this preference after completing three of the interviews and turned to a more open, free-flowing format for the remaining three interviews, in which we used the interview guide at the start of the interview, allowing the healers to talk freely without leading them back to specific questions. We found this approach effective for two reasons: 1) uninterrupted, the healers shared more insight with us than they did when they were trying to directly address our specific questions, and 2) as they told stories of their experiences in healing, they actually answered all of our questions without being directly asked. Thus, we recommend the use of an interview guide as simply an opener when working with Native healers, recognizing the cultural importance (and appropriateness) of the storytelling tradition among indigenous populations, particularly elders.

Another possible limitation of our study is that the six healers we interviewed represented different tribes and nations, rather than one group; similar studies with healers have involved healers from one group. However, the six interviews we conducted contained common themes around TIM and recovery from traumatic injury that suggest a unified perspective regarding healing in North American indigenous populations, irrespective of the specific means used (eg, eagle feathers, sweat-lodge ceremonies, prayer, singing). Additionally, because our population of interest is a diverse Native population seen at a level 1 trauma center that serves a five-state region, we were interested in identifying what common healing strategies could be applied across Native populations.

The interview data obtained here are rich in their descriptive and interpretive elements related to improving recovery for Native trauma patients. Additional ethnographic and qualitative work is needed to provide a more complete understanding of the role of TIM in Native wellness. In particular, ethnographic research with Native communities is needed to inform the development of effective diagnostic measures and mental health interventions for clinical practice. Future analyses will help generate a fuller understanding of the terms and concepts presented here. Cumulative analyses of indigenous healers’ perspectives on health and wellness in indigenous populations are urgently needed to address the health disparities in Native populations. Future research might focus on specific health concerns that are experienced excessively across all Native populations, such as diabetes and cancer, and elicit Native healer perspectives on preventing and treating these diseases.

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**Disclosure Statement**

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

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2. This phrase appears to have originated in a speech given by James Michael Cavanaugh, a Montana congressman, during a debate in 1868. It became a stereotype used as a racial slur against Native people in North America (Mieder W. "The only good Indian is a dead Indian": History and meaning of a proverbial stereotype. Journal of American Folklore 1993;106[419]:38-60).

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One important practical suggestion that was made repeatedly was to provide Native cultural training for hospital staff. ... that introduces [them] to main concepts of Native health.
References


The Circle

The Circle has healing power. In the Circle, we are all equal. When in the Circle, no one is in front of you. No one is behind you. No one is above you. No one is below you.

The Sacred Circle is designed to create unity.

— Dave Chief, Oglala Lakota
ORIGINAl RESEARCH & CONTRIBUTIONS

Pharmacist Glycemic Control Team Improves Quality of Glycemic Control in Surgical Patients with Perioperative Dysglycemia

Karen S Mularski, MD; Cynthia P Yeh, PharmD; Jaspreet K Bains, PharmD, BCPS; David M Mosen, PhD, MPH; Ariel K Hill, MS; Richard A Mularski, MD, MSHS, MCR

Abstract

Context: Perioperative hyperglycemia is a risk factor for increased morbidity and mortality. Improved glycemic control has been demonstrated to reduce surgical site infections, reduce perioperative morbidity, and reduce length of stay. However, safe and effective perioperative glycemic control can be limited by expert clinician availability.

Objective: To improve quality by reliably providing safe and effective glycemic control to surgical patients with diabetes or stress hyperglycemia.

Design: A designated group of pharmacists, the Glycemic Control Team (GCT), worked under protocol, on a consultation basis, to manage perioperative dysglycemia during hospitalization.

We used a pre-post, observational study design to assess the effectiveness of the intervention and implementation of the GCT.

Main Outcome Measures: The proportion of patients pre- and postintervention with good glycemic control and with hypoglycemia were measured and compared. We defined good glycemic control as having all, or all but one, point-of-care blood glucose values between 70-180 mg/dL in each 24-hour period. We defined hypoglycemia as having any point-of-care test glucose value <70mg/dL in any of the 3 days evaluated.

Results: During the preimplementation period, 77.4% of postoperative patient days demonstrated good glycemic control. In the postimplementation period, this percentage increased to 90.3%. Over the same period, the rate of hypoglycemia decreased from 8.6% to 4.6%.

Conclusion: Implementation of a pharmacist team to manage glycemic control in hospitalized, postoperative patients led to safer and better quality of glycemic care as measured by improved glycemic control and lower rates of hypoglycemia.

Introduction

Patients with diabetes and stress hyperglycemia are hospitalized frequently for surgical procedures. Although the primary reason for hospitalization is not related to acute glycemic problems, these patients require attention to safe and effective glycemic control care throughout hospitalization. Improved glycemic control has been demonstrated to reduce surgical site infections, reduce perioperative morbidity, and reduce length of stay (LOS). Increasing evidence points to an association between hospital hyperglycemia and surgical outcomes. There is strong evidence that patients with hyperglycemia undergoing cardiac surgery and admitted to the Intensive Care Unit have an increased rate of deep sternal wound infection, hospital complications, and mortality, and that hospital complications, LOS, and mortality may be reduced with improved glycemic control. Also, after noncardiac surgery, perioperative hyperglycemia has been associated with postoperative infections, increased LOS, hospital complications, and mortality. Although the benefits of intensive insulin therapy (targeting 80-110mg/dL) in critical care patients have recently come into question, there is general agreement that moderate glycemic control targets are beneficial and that surgical patients may be a population at lower risk for hyperglycemia and therefore potentially able to benefit more from moderate glucose control. One randomized controlled trial has recently reported that, in general surgery patients, the use of basal-bolus insulin regimens led to reductions in a composite of postoperative complications including wound infection, pneumonia, bactereemia, respiratory failure, and acute renal failure. Unfortunately, patients admitted to hospitals primarily for surgical services may not have optimal attention paid to glycemic control. Expertise in the recommended processes of care, and in prescribing and adjusting appropriate insulin regimens in patients with rapidly changing needs, may not be readily available to all surgical patients.

Delineation of Local Problem

At Kaiser Sunnyside Medical Center (KSMC), our data indicates that, since implementing universal screening for hyperglycemia of all patients admitted, approximately 40% have either a previous diagnosis of diabetes, or have at least 2 blood glucose tests ≥140 during their first 24 hours in the hospital. KSMC participates in the American College of Surgeons National Surgical Quality Improvement Program (NSQIP), the first nationally validated, risk-adjusted, outcomes-based program to measure and improve the quality of surgical care. In reviewing local NSQIP data, it was noted that our hospital had an unacceptably high rate of complications in patients with diabetes as opposed to patients without diabetes. A surgeon hypothesized that increased attention to screening for diabetes,
Pharmacist Glycemic Control Team Improves Quality of Glycemic Control in Surgical Patients with Perioperative Dysglycemia

Methods
To directly address these barriers, the GCT protocol was created by the pharmacy clinical coordinator who worked closely with physicians experienced in inpatient diabetes management from the Endocrinology, Hospitalist, and Surgery Departments, using principles defined by guidelines from the medical literature. The protocol was designed to direct the safe and appropriate use of intravenous and subcutaneous insulin in surgical and medical patients with diabetes, or at risk for or demonstrating hospital hyperglycemia. Important components of the protocol included recommendations on how to transition from intravenous to subcutaneous insulin, how to calculate subcutaneous insulin doses, when to resume oral agents, how to manage patients on tube feedings and total parenteral nutrition, and discharge planning. The GCT protocol allows the GCT pharmacist to provide comprehensive inpatient glycemic management. In addition to writing and adjusting daily insulin orders, the GCT pharmacist can also order labs (e.g., serum creatinine, HbA1c), place consultation requests for the registered dietician and the certified diabetes educator, and via verbal collaboration with clinicians place outpatient orders for insulin and diabetic supplies (glucometer, lancets, test strips, insulin syringes). The protocol was approved by the hospital Pharmacy and Therapeutics Committee and is regularly reviewed and updated to reflect current evidence from the medical literature, current practice and systems issues, expanded services, full scope of practice, and additional needed details. The GCT pharmacist was available by pager or electronic order entry 7 days a week, 10 hours a day, to all surgical patients in need of perioperative glycemic control. On average they were able to consult on 15 to 20 patients per day. After-hours consults were deferred until the following morning. The inpatient pharmacy GCT pharmacist initially trained 5 full-time GCT pharmacists and 1 part-time GCT pharmacist, who would rotate to the glycemic control service. By June 2010, the GCT pharmacist grew to 6 full-time pharmacists, 2 part-time pharmacists, and an additional 5 cardiovascular pharmacists. During the first several months, the GCT pharmacist consulted on just a few patients a day, which increased to 25 to 30 patients a day after 4 to 6 months, and a second 10-hour GCT pharmacist was added. Physicians noticed the work of the GCT pharmacist and wanted their patients' hyperglycemia managed by the GCT. At this point, inclusion/exclusion criteria were developed to help limit the number of inappropriate consultation requests, which created a more manageable workload to provide safe and effective care. The team currently sees 20 to 35 patients in a typical day. Some other surgical patients are seen instead by the physicians in the Hospitalist or Critical Care Departments.

Daily Duties and Workflow
After reviewing the patient's chart and meeting with the patient's nurse, the GCT pharmacist enters insulin orders into the
electronic medical record (EMR) order entry system. Kaiser Permanente (KP) has a developed EMR that integrates inpatient and outpatient records, thus simplifying chart review. All of the following are available to the GCT pharmacist: the point-of-care-test (POCT) glucose results, laboratory test values, electronic medication administration record, all clinician notes, and outpatient records (including medication orders, chart notes, and laboratory test results). After entering necessary orders for all patients, the GCT pharmacist meets with most of the patients to obtain important history from new patients or, especially for patients without known diabetes, to explain why blood glucose is tested, and why they are receiving insulin during their hospitalization. The GCT pharmacist also gathers home blood glucose control information and identifies barriers to good outpatient control. Education is provided to patients with newly diagnosed diabetes or patients at high risk of developing diabetes. The certified diabetes educator, dietician, and the patient’s nurse are involved when appropriate. Finally, the GCT pharmacist documents a structured daily electronic progress note on each patient.

**Discharge from the Hospital**

Discharge glycemic control needs are addressed as early as possible in the hospitalization as clinically feasible to allow for needed patient education and planning of patients’ transition regimens. Patients without discharge needs (ie, patients without diabetes or with resolved stress hyperglycemia, or patients with known diabetes with good control on their prior-to-admission regimen) are discharged without novel GCT interventions. Patients who have discharge needs (eg, patients with new insulin starts or patients with poor control) receive intervention by the GCT pharmacist and coordination of care with the health care team. Patients receive extensive education from the GCT pharmacist, the patient’s nurse, the registered dietician, and the certified diabetes educator, as needed. In general, the GCT is responsible for: communicating the discharge plan to the patient; providing basic education and reviewing signs or symptoms of hypoglycemia and its management; constructing a discharge instruction sheet for new insulin starts or if significant changes were made to the home insulin regimen; obtaining authorization from the attending physician regarding the discharge plan; entering discharge orders for outpatient regimens when indicated; electronically routing progress notes to the primary care physician, communicating with floor nurses to provide glucometer teaching (if indicated); and communicating with the certified diabetes educator who provides more in-depth, individualized diabetes education to the patient and/or caregiver when needed.

**Evaluation of Effectiveness**

When implementation dates of the GCT were determined, we developed a plan to collect and analyze data on its effectiveness in the surgical population in collaboration with researchers and analysts from KP’s sister institution, the Center for Health Research. Our evaluation question was: Would implementing a consultation-based, pharmacist-staffed GCT improve glycemic control measures in surgical patients at KSMC?

We used a pre-post, observational study design to test the effectiveness of the intervention. The preimplementation period included the 12 months before the GCT implementation: January 1, 2008 through December 31, 2008. The postimplementation period, after the GCT team was fully implemented at KSMC, included the 12 months from July 1, 2009 through June 30, 2010. A 6-month, January-to-July 2009 gap was chosen to increase internal validity. The target population was identified by including all patients with 2 or more POCT glucose values during each index PACU admission. Thus we identified a study population of surgical patients at risk for perioperative dysglycemia at KSMC. This design should generate high external validity at managed care organizations structured like KSMC, but the results may not generalize to other populations or care delivery settings.

We conducted an observational, data-only quantitative analysis. All data elements used for the analysis were obtained from the KP Northwest EMR, which produces valid and reliable information and has been used extensively in quality evaluations and research published in peer-reviewed journals. We used χ² analysis to assess differences in glycemic control metrics between the postimplementation period versus the preimplementation period. We defined good glycemic control as having all, or all but one, POCT blood glucose values of 70 mg/dL to 180 mg/dL in each 24-hour period with day 1 defined as the
Pharmacist Glycemic Control Team Improves Quality of Glycemic Control in Surgical Patients with Perioperative Dysglycemia

date of the surgical procedure. We defined hypoglycemia as having any POCT glucose value <70 mg/dL in any of the 3 days evaluated. The unit of analysis for glycemic control measures occurred at the POCT level.

To account for the effect of potential confounders, we further performed logistic regression to measure the independent effect of the GCT intervention on glycemic control. Using our pre-post quality evaluation, we used multivariate modeling to assess the efficacy of the GCT intervention, adjusting for potential confounders identified by EMR extraction including: age, gender, severity of illness (constructed via Charlson Comorbidity Index), health care use, race and ethnicity (approximated via census information), poverty status (approximated via census information), surgery type (eg, general, orthopedic, urology, etc), and LOS of index hospital admission. The logistic regression demonstrated persistence of improved glycemic control when adjusting for potential confounders; a higher proportion of perioperative patients achieved good glycemic control on day 1 (odds ratio [OR] 3.10, 95% confidence interval [CI] 2.62, 3.67), and day 2 (OR 1.65, 95% CI 1.34, 2.04) after implementation of the GCT. Similarly, the modeling demonstrated that fewer patients experienced hypoglycemia (OR 0.34, CI 0.28, 0.40) during the postimplementation period.

The results of our analysis demonstrate that after implementation of a pharmacist-run GCT, measures of glycemic control improved and hypoglycemia events decreased in surgical patients. These results demonstrate that the GCT is meeting its goal of improving the safety and quality of care in patients with glycemic issues in the postoperative setting.

Discussion

The work of quality improvement seeks to minimize the “Implementation Gap,” or the observed difference between scientific understandings of what “should” happen to manage a specific disease state and what actually occurs during an episode of patient care. The National Quality Forum prioritized inpatient glycemic control as one of the 34 Safe Practices it recommends to optimize hospital care of patients, admonishing hospitals to “Take actions to improve glycemic control by implementing evidence-based intervention practices that prevent hypoglycemia and optimize the care of patients with hyperglycemia and diabetes.”

| Table 1. Multivariate logistic regression for postimplementation Glycemic Control Team vs preimplementation Glycemic Control Team |
|---------------------------------|---------------------------------|
| Outcome Measure                | Postimplementation GCT vs Preimplementation GCT |
| Glycemic Control Measures      | Odds Ratio | 95% CI | P value |
| Good glycemic control (Day 1; N = 5888) | 3.10 | 2.62, 3.67 | <0.0001 |
| Good glycemic control (Day 2; N = 2763) | 1.65 | 1.34, 2.04 | <0.0001 |
| Good glycemic control (Day 3; N = 1941) | 1.21 | 0.96, 1.54 | 0.1129 |
| Hypoglycemia (any POCT < 70, Day 1-3; N = 5935) | 0.34 | 0.28, 0.40 | <0.0001 |

CI = confidence interval; GCT = Glycemic Control Team; POCT = point of care test

8.6% to 4.6% of patient days (Figure 2). The number of severe hypoglycemia (<40 mg/dL) events was very low, at 1.5% of patient days preintervention, but also fell in the postimplementation period to 1.0% of patient days.

Table 1 summarizes the multivariate logistic regression analysis for the postimplementation versus the preimplementation periods adjusted for age, gender, severity of illness (constructed via Charlson Comorbidity Index), health care use, race and ethnicity (approximated via census information), poverty status (approximated via census information), surgery type (eg, general, orthopedic, urology, etc), and LOS of index hospital admission. The logistic regression demonstrated persistence of improved glycemic control when adjusting for potential confounders; a higher proportion of perioperative patients achieved good glycemic control on day 1 (odds ratio [OR] 3.10, 95% confidence interval [CI] 2.62, 3.67), and day 2 (OR 1.65, 95% CI 1.34, 2.04) after implementation of the GCT. Similarly, the modeling demonstrated that fewer patients experienced hypoglycemia (OR 0.34, CI 0.28, 0.40) during the postimplementation period.

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Figure 2. Proportion of postoperative patients with hypoglycemia (<70 mg/dL) before, during (ramp-up period), and after implementation of the Glycemic Control Team at the Kaiser Sunnyside Medical Center.
Our institution identified a typical quality problem: implementation of known best practices was suboptimal because of systemic barriers, which were only revealed by continuing to engage in quality improvement processes (such as keeping run charts of glycemic control metrics, walk-throughs, root cause analyses, and interviews with frontline staff and physicians). KSMC’s GCWG actively sought a solution to further improve the quality of care for the dysglycemic surgical population. We sought to break down the barriers of limited time and expertise in inpatient glycemic management of surgical patients. The results of our analysis demonstrate that perioperative and postoperative dysglycemia can be better managed by developing a specific team of pharmacists whose sole task is to focus on inpatient glycemic management.

It is known that optimizing inpatient glycemic control can be expensive, labor intensive, and require significant effort in coordination of the services of many hospital divisions. However, this incremental expense has previously been shown to be cost-effective in a variety of settings. Given the current focus on efficiency in health care, it will be important to determine whether the improvements in glycemic control measures in the current study will result in measurable improvements in patient outcomes and utilization.

In the postimplementation period, there were many more patient days included per month. During the preimplementation period, approximately 175 patient-days were recorded each month; in the postimplementation period, approximately 175 patient-days were included in the postimplementation group, inflating the overall average. This possibility, however, is not well supported by internal quality data later collected hospitalwide. In November 2010, KSMC implemented a policy to complete screening glucose testing on all patients. When the entire hospital rolled out universal glucose testing for all admitted patients, the hospital’s rate of patient-days with good glucose control actually decreased, suggesting that it was not only patients in good control who were being newly tested. In the 10 months before universal hyperglycemia screening, the hospital as a whole averaged 73% of inpatients screened, and in-control patient-days averaged 72.7% hospitalwide. In the 3 months after implementing universal hyperglycemia screening protocols, the hospital screened 98% of all inpatients, and the overall level of control remained approximately stable at 71.3% in-control (Inpatient Pharmacy Manual: Glycemic Control Protocol [2/12] available online at: www.thepermanentejournal.org/files/Winter2012/InpatientPharmacyManual.pdf). The pre-post design of our study was chosen because we did not think it would be desirable or ethical to randomize patients to receive attention from the team. A retrospective design was also considered, but we were concerned about selection bias in that it was likely that the GCT would be consulted more frequently on “sicker” or more “problematic” patients than on those “easy to control.” Therefore, our study is limited as expected by its design, in that there are potential secular factors other than the intervention affecting the “post” period. Other quality-improvement activities, mainly spearheaded by the GCWG, were ongoing during the same period as implementation of the GCT. For instance, several physician and nurse education sessions were held. We publicized an Inpatient Glycemic Control Practice Resource and physician pocket card. We implemented Glycemic Nurse Champions, a group of nurses who participate in quarterly educational meetings and serve as nurse resource experts for each unit. Universal screening for hyperglycemia went live in November 2010. Finally, though it would be impossible to measure, we feel the “culture” of the institution has essentially changed in its attention to and appropriate response to inpatient hyperglycemia. It is therefore likely that not all of the improvements measured preimplementation reflect solely the effect of the GCT pharmacists’ work.

Lessons Learned
There were a few lessons learned as expected with any new program or clinical service. We intentionally did not initially communicate the existence of the GCT to all hospital staff because we wanted to start the program slowly to avoid being inundated with consultation requests and unable to manage high numbers of patients safely and effectively. There were several nuisances that arose because of lack of advertisement. Only a handful of surgeons and anesthesiologists knew of the program initially. Sometimes physicians would adjust insulin subcutaneous orders, not knowing that the GCT was managing the patient. Surgeons and their residents would sometimes inappropriately discontinue insulin infusion orders, not knowing that the GCT had been consulted, and this led to rebound hyperglycemia. We realized the scope of practice and protocols for the team must be clearly defined and disseminated. For example, maintenance intravenous fluids are out of the scope of practice for GCT pharmacists and orders for these were not included in the protocol, although surgeons sometimes assumed otherwise. We recommend optimizing communication to all stakeholders before implementation as an essential part of this type of quality improvement intervention.

Future Directions
Currently there are plans to spread the learnings at KSMC regarding inpatient glycemic control to the rest of the Northwest Region. Our goal is to optimize the integrated nature of the KP system to provide consistent and standardized glycemic control care to all patients through the spectrum of their care experiences. The issue of safe transitions in developing a patient’s glycemic control care plan is a next priority for the GCWG. We wish to optimize the opportunity to provide truly “seamless” medical care, leveraging resources such as our communications systems, integrated EMR, and outpatient care management programs. The ideal situa-
tion of various team members being able to access and execute an individualized glycemic control plan from the preoperative setting (primary care physician’s office or preoperative clinic visit), to the surgical preparatory unit, the operating room, the PACU, the floor, and to hospital discharge, has yet to be realized. Work is ongoing to attempt to hardwire appropriate transition processes surrounding the use of insulin in the perioperative setting as well as other transitions in the hospital (such as moving from critical care to the floor). The GCT pharmacists will continue to be key stakeholders in implementing improved processes to guide the patient through each of these transitions and in arranging the necessary continued care and follow-up after hospital discharge.

Because of good initial results, the GCT is being expanded and the roles are being redefined to allow each member of the health care team to maximally use their skills. We are proceeding with efforts to more clearly delineate each team member’s role in patient education and engagement, including nurses, certified diabetes educators, registered dieticians, GCT pharmacists, and physicians to avoid duplication of effort and confusion for each patient. The GCT may then be able to expand work to manage some nonsurgical patient populations with unmet glycemic control management needs in the hospital, such as oncology patients on high-dose steroid regimens.

Conclusion

Important components of implementation of the GCT included robust detection of hyperglycemia, knowledge of outpatient regimens and data via an integrated EMR, of hyperglycemia, knowledge of outpatient discharge, has yet to be realized. Work is ongoing to attempt to hardwire appropriate transition processes surrounding the use of insulin in the perioperative setting as well as other transitions in the hospital (such as moving from critical care to the floor). The GCT pharmacists will continue to be key stakeholders in implementing improved processes to guide the patient through each of these transitions and in arranging the necessary continued care and follow-up after hospital discharge.

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Disclosure Statement

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

Reference


* Retired General Surgeon from Northwest Permanente.
A US Olympic team hopeful rises from the water during practice at the Olympic Training Center in Colorado Springs. The Olympic Training Center hosts US team hopefuls in a variety of sports throughout the year.

This photo was taken using available light with a Nikon D700, and a 400, f2.8 lens at 1/500 sec, ISO 1000, f2.8 at 4400K.

Dr. Paluch is a staff surgeon at the San Diego Medical Center where he has practiced for 22 years, specializing in minimally invasive surgery. He has been taking and making pictures for more than 25 years, focusing recently on sports photography, with an occasional foray into operating room portraits.
How Do Adolescents Access Health Information? And Do They Ask Their Physicians?

George Ettel, III; Ian Nathanson, MD; Donna Ettel, PhD; Christine Wilson, PhD, ARNP; Paul Meola

Abstract

Objective: To improve understanding about how high school students use electronic tools to obtain health information and how this information affects their behavior.

Design/Methods: Using a cross-sectional design, we administered an anonymous survey to high school students in grades 9 through 12 at a single private Catholic high school, inquiring about their use of electronic tools to obtain health information, topics of interest, sources used to obtain information, and modifications in their behavior based on that information. Descriptive statistics and multivariate analysis of variance were used to compare trends across grade levels.

Results: Of 705 students enrolled, 24.7% were either absent or chose not to participate in the survey. Of the remaining 531 students, 497 completed the surveys, for a response rate of 70.5% (497 of 705) and a participation rate of 93.6% (497 of 531). All students were comfortable using the Internet, and >90% used it at home and in school. Access to broadband applications averaged 95% at home and 80% at school. A significant proportion (0.66; p < 0.0001) of students reported that they trusted the information found online, and 22% (not significant) modified their behavior on the basis of the information they found. Forty-two percent searched for general health information, and 43% investigated specific medical conditions or disease states. Topics related to skin were researched significantly more than nutrition, birth control, and sexually transmitted diseases. Although a significant number of students (p < 0.05) reported conducting e-mail conversations related to health topics with their teachers, <5% had e-mail communications with physicians.

Conclusions: These data indicate that most high school students use the Internet and broadband applications at school and at home as resources for health care information. A significant number of students trusted the online information, and at nearly one-quarter subsequently modified their behavior. Students conducted e-mail conversations with teachers about health-related topics, but few students used this tool to communicate with their physicians. This information raises questions about design and implementation of strategies to provide adolescents access to appropriate health care information, including that provided by physicians.

Introduction

Adolescents seeking health information have available to them multiple sources, including physicians, families, schools, organized activities outside of school, the “street,” and the Internet. As a result, adolescents may struggle to decide which sources provide them with information that is understandable and useful, particularly related to potentially risky health behaviors such as smoking, sexual behavior, drug use, and physical inactivity.

Evidence shows that the Internet serves as a major, if not primary, source of information for health-related issues for adolescents. It provides gateways and links to sources for information about effective preventive services and health care, and it can serve as a tool for an electronic support group. However, that adolescents find such information online does not ensure that they will practice healthy habits. For example, adolescents undergoing specific Internet-based interventions for weight loss or depression appeared to respond to treatment better than those using Internet-based health education alone, although the improvements appeared to decrease over time.

Given the seeming prevalence of electronic communication among adolescents, it is safe to assume that they could find the means to obtain information using virtual sources or by direct electronic communication with others.

Physicians would seem to be a rich source of primary or secondary health information for teenagers, but adolescents do not appear to communicate much with physicians. One report showed that a majority of adolescents (70.9%) acknowledged 1 or more of 8 potential health risks, but relatively few (37%) actually talked with their physician about these. A survey of physicians practicing in Florida showed that only 14.4% to 20.4% of clinicians for children (general pediatricians, pediatric subspecialists, and family physicians) use e-mail to communicate with their patients. Although physicians recognize that an electronic medical record is an important tool that can integrate data about growth, development, patient safety, and changes in physiology and diseases, a variety of barriers preclude widespread use of such applications.

We were interested in learning how and where high school students obtained health care information, the degree of trust they had regarding the health information found online, and how online health information influenced their behavior. We were also interested in learning what role their physicians had in their search for health care information. To study this, we developed a survey for high school students inquiring about their use of electronic communication tools to find health information.

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Methods

We used a cross-sectional design to conduct an anonymous survey related to how students obtain health information using electronic tools. Initially, homeroom teachers hand-delivered a letter describing the purpose of the study and a questionnaire tracked by a 6-digit identifying code to students in grades 9 through 12 at a high school in the southeastern US. After collecting the questionnaires, we noted that numerous surveys had handwritten comments that we subsequently analyzed. Finally, a follow-up survey was administered to students enrolled in the medical program to further clarify the specific Web sites used.

According to school records, the school population consisted of 705 students (50.9% males) with a racial makeup that was 89.8% white and 4.1% black. The majority of students (88.1%) were Catholic, and 18.9% were from single-parent families. On the day the survey was distributed, 174 (24.7%) students either were absent or declined to participate, and no further information is available about this group. Of the remaining students, 497 of 531 (93.6%) completed the survey in about 30 minutes on the homeroom setting. Incomplete questionnaires were not included in the data analysis.

Students answered 32 questions that surveyed their 1) use of the Internet at home and at school, 2) access to broadband applications at home and at school, 3) comfort/ease with navigating the Internet, 4) ability to search for general health information and other topics related to specific medical conditions or diagnoses, 5) e-mail communication with physicians, and 6) behavior changes related to information obtained.

Results

More than 70% of students knew that physicians kept records about their health during visits, and 28% reported that their physicians used an electronic tool (computer or personal digital assistant) to record information at the time of the visit. The survey asked students if they e-mailed their physicians. As shown in Figure 1, the overwhelming majority of students reported that they had ready access to the Internet and broadband applications both at home and at school. On average, a significant proportion of students (0.66) reported that they trust online information (p < 0.0001), and 22% (not significant) acknowledged that they changed their behavior on the basis of information found on the Internet. Forty-two percent of students used the Internet to search for specific health-related information and/or information about specific disease states. Students searched topics related to skin significantly more frequently than other topics (p < 0.05). Freshmen and seniors were more likely than sophomores and juniors to investigate this topic. Students reported researching sites related to wellness (activity and nutrition) and to sexuality (birth control and sexually transmitted diseases), although the percentage engaging in this activity was not statistically significant; fewer students searched for information about injuries.

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Discussion

Our results showed that a majority of high school students in grades 9 through 12 at a single school use the Internet both at

Table 1. Proportion of students by grade searching the Internet for specific health care topics

<table>
<thead>
<tr>
<th>Topic</th>
<th>Freshmen</th>
<th>Sophomores</th>
<th>Juniors</th>
<th>Seniors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin*</td>
<td>0.79</td>
<td>0.44</td>
<td>0.25</td>
<td>0.59</td>
</tr>
<tr>
<td>Nutrition</td>
<td>0.41</td>
<td>0.51</td>
<td>0.63</td>
<td>0.59</td>
</tr>
<tr>
<td>Activity</td>
<td>0.38</td>
<td>0.41</td>
<td>0.75</td>
<td>0.46</td>
</tr>
<tr>
<td>Injury</td>
<td>0.18</td>
<td>0.24</td>
<td>0.13</td>
<td>0.31</td>
</tr>
<tr>
<td>Birth control</td>
<td>0.26</td>
<td>0.32</td>
<td>0.25</td>
<td>0.39</td>
</tr>
<tr>
<td>Sexually transmitted diseases</td>
<td>0.24</td>
<td>0.34</td>
<td>0.25</td>
<td>0.39</td>
</tr>
</tbody>
</table>

*Skin searched significantly more frequently than other topics (p < 0.05).
home and at school (Figure 1), and they also use e-mail regularly. These findings are consistent with reports about other adolescents.14

Nearly half the students used the Internet to search for information related to specific health issues. As shown in Table 1, students sought information related to skin significantly more frequently than other topics. It is noteworthy that a substantial proportion of students sought information about birth control and sexually transmitted diseases. The reasons for this are not clear, but abstinence is the only method of birth control taught in this school as being acceptable. The most popular topics are similar to those reported by Borzekowski and Rickert, who also reported that sophomore students at a public high school in New York sought information from a range of other sources, such as books, clergy, friends and family, and clinics.15 Although the trend did not reach statistical significance, 22% of students reported modifying their behavior on the basis of the content of their findings in online searches. It is unknown what the outcome of these changes in behavior were or whether they were sustained.

A significant number of students in this study trusted information found on the Internet, similar to what was found by previous studies.15 Although adolescents use the Internet as a source of information for health-related issues,1 questions remain about their ability to conduct thorough searches. Hansen et al reported that 69% of students could find a correct and useful answer to a health question but used trial-and-error approaches to find sites and did not necessarily consider the source of the content when searching.16 Similarly, Gray et al reported that adolescents had deficiencies in their health literacy skills.17 Richardson et al reported that as applications designed to block access to pornographic sites become more restrictive, they disproportionately block access to health information sites.18 This may not interfere with access to health sites if the pornography blocking is not restrictive, but as the degree of restriction increases, the number of health information sites blocked increases substantially, particularly sites related to sexuality. Therefore, limited sophistication in using search strings coupled with restrictive blocking applications could seriously impair students’ access to accurate information that addresses their needs.

Given that adolescents use e-mail routinely for private and group communication, we asked them if they used this method to communicate with their physicians. Less than 5% of students, regardless of grade level, reported communicating by e-mail with their physicians. The reasons for this are unclear, but it does not appear to be because of trepidation, because a significant proportion of students regularly e-mail their teachers about health-related issues (Figure 2). This raises important questions about access to health sites if the pornography blocking is not restrictive, but as the degree of restriction increases, the number of health information sites blocked increases substantially, particularly sites related to sexuality. Therefore, limited sophistication in using search strings coupled with restrictive blocking applications could seriously impair students’ access to accurate information that addresses their needs.

These data clearly show that physicians appear to be an underused source of vital information that affects children in critical stages of their lives. Thus, these findings raise questions about the prevalence of access to health sites if the pornography blocking is not restrictive, but as the degree of restriction increases, the number of health information sites blocked increases substantially, particularly sites related to sexuality. Therefore, limited sophistication in using search strings coupled with restrictive blocking applications could seriously impair students’ access to accurate information that addresses their needs.

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These data clearly show that physicians appear to be an underused source of vital information that affects children in critical stages of their lives. Thus, these findings raise questions about how to ensure that adolescents have access to health information that is accurate, understandable, and culturally sensitive.

Ideally, a connected system of reliable and accurate electronic health care information would be valuable when addressing issues of health care quality, safety, education, and efficiency for adolescents.20,21 If physicians are to assume a major role in such a system by providing essential health information to adolescents, not only must they overcome their own deficiencies related to electronic technology but also, health care systems and payers must address issues of timeliness of informational exchanges, protection of conversations, parental involvement, and reimbursement.

This study has several limitations. We studied students from a single religion-affiliated high school whose students do not necessarily reflect the population at large. For this reason we are reluctant to imply that our findings are generalizable. However, one reason for selecting this particular school was to attempt to find the “best-case scenario” where participating students likely had ready access to the Internet, attended a school that limited teaching of certain subjects, and knew who their personal physician was. We did learn that these students clearly had ready access to virtual sites and the means to communicate electronically. We also learned that the school limited its teaching of birth control to abstinence. Because the survey was anonymous, we could not identify individual students or their personal physicians. Therefore, we do not know the willingness of the clinicians of these students to communicate by e-mail, but physicians practicing in this geographic region were included in the survey of Florida physicians.20

**Conclusion**

Adolescents have ready access to the Internet at home and at school and are comfortable using this tool to search for health information. They trust the information they find and tend to modify their behavior on the basis of that information. The real difficulty with obtaining health information from the...
Internet is that there are limited ways to determine whether the information is coming from a legitimate source or instead from an uninformed person with basic knowledge about building a Web site. “Researching” on the Internet by students often includes sites such as Wikipedia, an online encyclopedia that everyone is allowed to edit. It is unreasonable to expect adolescents to delve into peer-reviewed medical literature. Similarly, it is unreasonable for busy physicians to make themselves available whenever an adolescent has a question. We contend that it would be more effective if students and their physicians communicated asynchronously to enable students to find trustworthy information either directly from the physician or at physician-approved Web sites. For such communication to be successful, physicians must overcome several obstacles, including liability, billing, and ensuring that online conversations lead to the correct diagnosis and care plan.

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

Acknowledgment
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References

Not Monsters
Adolescents are not monsters. They are just people trying to learn how to make it among the adults in the world, who are probably not so sure themselves.

— Virginia Satir, 1916-1988, American author and psychotherapist
Abstract

The National Surgical Quality Improvement Program (NSQIP) of the American College of Surgeons provides risk-adjusted surgical outcome measures for participating hospitals that can be used for performance improvement of surgical mortality and morbidity. A surgical clinical nurse reviewer collects 135 clinical variables including preoperative risk factors, intraoperative variables, and 30-day postoperative mortality and morbidity outcomes for patients undergoing major surgical procedures. A report on mortality and complications is prepared twice a year. This article summarizes briefly the history of NSQIP and how its report on surgical outcomes can be used for performance improvement within a hospital system. In particular, it describes how to drive performance improvement with NSQIP data using the example of postoperative respiratory complications—a major factor of postoperative mortality. In addition, this article explains the benefit of a collaborative of several participating NSQIP hospitals and describes how to develop a “playbook” on the basis of an outcome improvement project.

Introduction

The National Surgical Quality Improvement Program (NSQIP) is a surgical outcomes database of the American College of Surgeons (ACS) designed to measure risk-adjusted outcomes of surgical interventions so as to compare results between hospitals.¹ This is achieved with a validated risk adjustment using a logistic regression model. This risk adjustment allows unbiased comparison of results between hospitals of different sizes serving different patient populations.²,³

History

NSQIP was born in the mid-1980s from a US government mandate⁴ to improve surgical outcomes among 133 Veterans Administration (VA) hospitals because of a high-observed rate of mortality and surgical complications. This provision was hampered by the absence of a risk-adjusted database and of a reliable national average for surgical outcomes. Therefore the legislative act provided for the development of a risk-adjustment model that would take into account the severity of a patient’s illness and thus enable “apple-to-apple” comparisons of results from participating hospitals. Following the National VA Surgical Risk Study conducted by the Department of Veterans Affairs between October 1, 1991, and December 31, 1993, parameters of risk adjustment were established⁵ and the VA-NSQIP was created in 1994 allowing risk-adjusted comparison of the 133 VA hospitals.⁶ This constituted the birth of NSQIP. By mandate all VA hospitals were required to participate. The program has proved so successful—with NSQIP participation, mortality and morbidity in the VA system was reduced by 27% and 45%, respectively⁷—that the ACS adopted NSQIP and tested it in a small number of academic medical centers and private hospitals. The results in this initial cohort of private hospitals validated the VA results and were very well received. In 2004, NSQIP of the ACS (ACS NSQIP) was initiated at the national level (Figure 1). Currently there are over 350 participating hospitals in the US and the Middle East.

Figure 1. Timeline of the events that led to the creation of the American College of Surgeons National Surgical Quality Improvement Program, 1985 to 2004.

ACS = American College of Surgeons; NSQIP = National Surgical Quality Improvement Program; VA = Veterans Administration

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**Methods**

**How It Works**

NSQIP is based on 135 variables collected preoperatively and up to 30 days postoperatively. The variables are collected from the following categories: 1) demographics, 2) surgical profile, 3) preoperative, 4) intraoperative, and 5) postoperative data. Each hospital submits an average of 1600 major operations per year into the NSQIP database. Nine categories of complications are reported: 1) overall mortality; 2) overall complications; 3) cardiac complications; 4) postoperative pneumonia; 5) intubations required within 48 hours postsurgery (>48-hour intubations); 6) unplanned intubations; 7) pulmonary embolism and venous thrombosis; 8) renal dysfunction; and 9) surgical-site infections including superficial, fascia, and deep infections.

The collection of variables is performed by a Surgical Clinical Reviewer trained by NSQIP in the analysis of medical records. It is noteworthy that in hospital systems with established electronic medical records, such as Kaiser Foundation Hospitals, reliability of the data records is consistently very high. The Surgical Clinical Reviewer is audited yearly to ensure reliability of abstraction to at least 95%. The strength of this system lies in the strict definition of complications and validation of risk adjustment. For example, the definition of postoperative pneumonia is predetermined for all participants. Appropriate adherence to these definitions is monitored through regular audits carried out by the central NSQIP office.

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The variables are subjected to logistic regression to determine their ability to predict the risk of complications. Table 1 shows the ranking by importance of the first nine variables used for risk adjustment obtained by logistic regression analysis. The consistency of the three primary factors (albumin, presence of cancer, American Society of Anesthesiologists [ASA] score) demonstrated a robust system. The risk adjustment allows precise comparison of hospitals. Each vertical line represents the confidence interval (CI) of one hospital. The CI lines of hospitals with significantly better outcomes are entirely below the mean (solid horizontal line); the CI lines of hospitals with significantly better outcomes are entirely above the mean. Confidence interval = 90%; NSQIP = National Surgical Quality Improvement Program; O/E = observed vs expected

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**Table 1. Rank of the first nine NSQIP variables used for risk adjustment obtained by logistic regression analysis**

<table>
<thead>
<tr>
<th>Rank</th>
<th>Variable</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Albumin*</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>ASA*</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
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<td>Cancer*</td>
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<td>3</td>
<td>3</td>
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<td></td>
</tr>
<tr>
<td>4</td>
<td>Emergent operation</td>
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<td>7</td>
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<td>7</td>
</tr>
<tr>
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<td>12</td>
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<td>8</td>
<td>9</td>
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<td>7</td>
<td>SGOT &gt;40 IU/mL</td>
<td>9</td>
<td>17</td>
<td>28</td>
<td>13</td>
<td>11</td>
<td>10</td>
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<td>Weight loss &gt;10%</td>
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<td>7</td>
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<td>5</td>
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<td>8</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>

*The three most important determinants of outcome over time.

ASA = American Society of Anesthesiologists, BUN = blood urea nitrogen, NSQIP = National Surgical Quality Improvement Program, SGOT = serum glutamic oxaloacetic transaminase

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**Figure 2.** Initial rank of two hospitals in the category of mortality is reversed after risk adjustment because of the difference of expected mortalities of their patient populations. This demonstrates the importance of risk adjustment.

**Figure 3.** Overall nonmultispecialty 30-day mortality of observed vs expected ratios for participating NSQIP hospitals.

Each vertical line represents the confidence interval (CI) of one hospital. The CI lines of hospitals with significantly better outcomes are entirely below the mean (solid horizontal line); the CI lines of hospitals with significantly better outcomes are entirely above the mean. Confidence interval = 90%; NSQIP = National Surgical Quality Improvement Program; O/E = observed vs expected
variables described above. Without interference from the participating hospitals, Outcomes Sciences, Inc (Cambridge, MA), an independent data management company, performs the calculation of the risk-adjusted outcomes using the patient variables submitted by each hospital.

**Display of National Surgical Quality Improvement Program Results**

NSQIP results are presented through a “caterpillar” chart depicting observed vs expected ratio for each participating hospital and for each category of complication. Each line corresponds to the result of one particular hospital with the confidence interval (CI) included. The most successful hospitals are to the left of the graph in Figure 3, the worst performers to the right. When the results of a particular hospital are significantly better than the average, the CI line is entirely below the mean (horizontal black line); when the results of a particular hospital are significantly worse than the average, the CI line is entirely above the mean. This “Risk-Adjusted Report” is generated every six months for each category of complication for all participating hospitals. More recently this information has been depicted in bar graphs, which allows for a more concise visual demonstration of these findings (Figure 4).

A graph is generated for each hospital showing the risk-adjusted results for all of the categories of complications (mortality, overall morbidity, cardiac complications, pneumonia, unplanned intubations, >48-hour intubations, deep venous thrombosis and pulmonary embolism [DVT/PE], renal failure, urinary tract infections [UTIs], and surgical site infections) with hospital-specific ranking indicated by a large arrow (Figure 5). This allows each hospital to evaluate its own performance as compared with other participating hospitals. Each category graph includes a small insert that shows the performance of the specific hospital throughout the period of participation. Each individual hospital’s performance can thus be followed over time.

**Results**

**Intubation >48 Hours**

After receiving the first 12 months of risk-adjusted data from NSQIP, the Kaiser Permanente Northern California (KPNC)
Walnut Creek Medical Center NSQIP group chose its first performance improvement project on the basis of outcome information on >48-hour intubations. This was an obvious choice because Walnut Creek Medical Center ranked among the significantly worst performers for this complication. The observed incidence was almost twice that of the expected rate after risk adjustment (Figure 6). We benefited from the simplicity of the processes involved to improve this parameter compared with other complications that required more complex processes, such as pneumonia or surgical-site infection. When choosing a first performance improvement project as a new participant of NSQIP, it is important to consider the complexity of the processes involved and to choose one in which the parts involved are relatively easy to decipher. For example, UTI of >48-hour intubations is a complication with relatively low levels of complexity and a low number of involved processes compared with pneumonia or mortality.

In response to our risk-adjusted results for >48-hour intubations, we implemented an improvement project with 3 main steps (see Sidebar: Principal steps of the performance improvement project: >48-hours intubation): 1) creation of a working group comprising all stakeholders; 2) identification of all operational problems; 3) development of processes to change practice (small test of change); and 4) verification of results using the NSQIP database, both the risk-adjusted

![Figure 6](Image)

**Figure 6.** Risk-adjusted results of >48-hours intubation for the Walnut Creek Medical Center in 2008 and 2009, comparing results before and after implementation of the performance improvement project.

![Figure 7](Image)

**Figure 7.** NSQIP raw data and run chart: >48-hours intubation performance improvement project.

The initiation of the performance improvement project led to a reduction of the incidence and mortality of this complication. Benchmark refers to the mean performance of the whole NSQIP cohort.

First half of 2007 (approximately 700 patients), n = 22; 10 patients died. First half of 2008 (approximately 800 patients), n = 20; 6 patients died. First half of 2009 (approximately 800 patients), n = 15; 4 patients died. Second half of 2009 (approximately 800 patients), n = 10; 3 patients died.

NSQIP = National Surgical Quality Improvement Program

### Principal steps of the performance improvement project >48-hours intubation

**Create A Team**
- Surgeon, anesthesiologist, intensivist, Intensive Care Unit (ICU) Nurse Manager, Respiratory Therapy Department Manager, frontline Respiratory Therapist (RT), Quality Department representative, Post-Anesthesia Care Unit (PACU) Representative, Nurse Manager

**Identify Issues**
- PACU does not communicate with RT
- Limited availability of RT in ICU
- Lack of involvement of RT

**Change Practice**
- Educate RT on weaning within 48 hours
- Audit patient charts to assess weaning criteria and do multiple attempts of weaning
- Document why patient failed <48-hour weaning
- Add second shift for RT in ICU
- Specific weaning order set
- RT to start setting ventilator in PACU and to provide weaning parameters
- Anesthesia, operating room staff and RT communicate on expected extubation time
- Night shift nurse decrease sedation as updated in the sedation/vacation policy
- Night shift RT begin weaning at 3:00 am for early morning extubation
results (Figure 6) and the raw data results (Figure 7). It is important to mention here that both risk-adjusted data and raw data from the NSQIP database are helpful in guiding a performance-improvement project. Whereas risk-adjusted data gives the most ‘objective’ rank of performance and allows comparison to group performance (Figure 6), raw data (Figure 7) allow a rapid assessment of progress made on a short-term basis with a “small test of change” improvement project. Critical adjustments and changes can be made on the basis of the results of raw (run chart) data.

The main results of this project were the identification of major communication shortcomings among the clinicians caring for patients in the immediate postoperative period. The lack of efficient communication between the treatment team and the respiratory therapy team, and the relative absence of respiratory care during postoperative recovery of patients because of staffing issues were discussed and presented to the individual department and the hospital leadership. It is important to note that all problems identified were related to systems and not individual performance of a surgeon, nurse, or respiratory therapist (RT). This is the case for almost all problems identified by NSQIP.

Performance improved within one year after the implementation of a number of small tests of change. The changes implemented included: identifying patients at risk, expanding respiratory care coverage, and avoiding oversedation of patients scheduled to be weaned. We have moved from right to left on the caterpillar graph with an important reduction in the absolute and risk-adjusted incidence of prolonged postoperative intubations (Figure 6). Our observed versus expected quotient is now as expected on risk-adjusted analysis. Interestingly, the mortality associated with this complication was reduced as well (Figure 7).

Postoperative Pneumonia

The success of this project encouraged us to expand and to address the reduction of postoperative pneumonia, a more complex complication with less well-defined operational issues. Again, we implemented an improvement program including pre-, intra- and post-operative interventions with education and enforcement both in the surgery clinic, Post-Aesthesia Care Unit and on the wards (see Sidebar: Principal steps of the performance-improvement project: postoperative pneumonias). We included in our program for the prevention of postoperative pneumonia the processes listed in the Sidebar: The postoperative-pneumonia prevention bundle, including description of all perioperative interventions. This bundle was initially implemented in high-risk patients undergoing major upper abdominal surgery but has since been expanded to include any major abdominal surgery requiring hospital admission beyond one day. It is apparent that this project exceeds the complexity of the previous project by several magnitudes. The difficulty resides in the details of implementation and ensuring close to 100% adherence to the processes in clinical practice. This requires a coordinated approach by the nursing leadership and strong motivation and buy-in of the involved caregivers: surgeons, anaesthesiologists, nurses, nursing assistants, RTs, and medical assistants.

Principal steps of the performance-improvement project: postoperative pneumonias

Patient group
- All elective gastrointestinal, colorectal, and thoracic surgical patients

Preoperative interventions
- Incentive spirometer
- Oral care: chlorhexidine rinse

Postoperative interventions
- Oral care
- Head of bed elevated
- Incentive spirometer
- Mobilization

Assess
- Percentage who received a bundle in preoperative care
- Percentage who received a bundle in postoperative care

Outcome
- Number of pneumonias and pneumonia rate by NSQIP
- Number of deaths and mortality by NSQIP

NSQIP = National Surgical Quality Improvement Program

Figure 8. Risk-adjusted NSQIP results for postoperative pneumonias in general surgery patients for 2009.

After implementation of the postoperative pneumonia bundle, our hospital achieved significantly better outcomes than the NSQIP cohort (see inset) on the basis of risk-adjusted outcome improvement. The inset shows the performance of our hospital for this complication from early 2007 to late 2009.

NSQIP = National Surgical Quality Improvement Program
The Power of the National Surgical Quality Improvement Program—Achieving A Zero Pneumonia Rate in General Surgery Patients

The incidence of postoperative pneumonia declined considerably and currently places our hospital among the best performers (Figure 8). More compelling is the raw data on the incidence of postoperative pneumonia. The absolute number of patients with pneumonia following general surgery remained at zero from May 2010 until February 2011. This represents an average reduction of 2 to 3 postoperative pneumonias per month in general surgery patients (Figure 9). Since February 2011, we have seen a few pneumonias in our patient population, but the observed incidence places us well below the mean observed versus expected ratio in the entire NSQIP cohort. Clearly our next challenge is to sustain the achieved reduction of postoperative pneumonias in our patient population.

National Surgical Quality Improvement Program Consortium

The role of a NSQIP consortium is to create a synergy between hospitals participating in a region. It has been shown that regional cooperation can reduce expense and surgical complications. In 2009, an Interregional NSQIP consortium with participation of all KP Regions was created assembling 18 NSQIP participating Kaiser Foundation Hospitals. The consortium serves as a platform to exchange and to share the results among all participating hospitals, to learn from the best and worst results, and to develop common improvement projects. A “playbook” is created from successful projects and distributed to all hospitals within the consortium. On the basis of shared information, monthly meetings, and occasional site visits,
the consortium partners learn from each other and share best practices. In 2011, a Northern California NSQIP collaborative was formed as participation in NSQIP was spread to all 21 KPNC Medical Centers.

Create a Playbook

A playbook is a compilation of all elements necessary to implement a performance-improvement project after successful testing at one or two beta sites. For example, our KPNC collaborative developed a playbook on the basis of the successful implementation of a performance-improvement project focused on wound classification in the operating room. The goal of this project was the correct classification of wounds to assure greatest accuracy of the risk-adjusted reporting of postoperative wound infection into the NSQIP database. This is a good example of how to address one of the key issues with outcomes databases such as NSQIP: how to ensure validity and accuracy rate of the reported data. Our goal was an accuracy of at least 90% in postoperative documentation of wound class.

In this example, the process of Plan-Do-Study-Act (PDSA) was used. An improvement plan was set in motion with successive re-evaluations and adjustments. More rapid cycles of PDSA followed to improve the education process and verification of the classification of wounds (Figure 10). Figure 11 shows the gradual achievement of at least 90% accuracy in wound classification. As part of the playbook, posters with the definition of wound classification (per the ACS) are distributed in all operating rooms. The classification of wounds is now part of the formal debriefing after surgery. The educational materials, posters, and debriefing checklists are now used by all operating rooms in the KPNC collaborative.

Discussion Summary

NSQIP is central to our efforts to achieve high-quality and effective surgical care for our patients. It has been shown that by using processes similar to the ones described in this article, participating institutions can reduce postoperative mortality and complications by an average of 27% or 45%, respectively. Each participating NSQIP hospital has been shown to eliminate an average of 250 postoperative complications and 12 to 27 surgical deaths per year. The economic implications are impressive. The Walnut Creek Medical Center has saved more than 1 million USD per year since the implementation of the NSQIP. This far exceeds the cost of the program of (100,000 to 150,000 USD per year): 35,000 USD for the processing of data and 50,000 to 100,000 USD to hire the NSQIP Surgical Nurse Reviewer (US wages) for data collection.

Disclosure Statement

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

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4. Veterans’ Administration Health-Care Amendments of 1985, Pub L No 99-166, 99 Stat 941. (Dec 3, 1985); Title II: Health-Care Administration, Sec. 201-4.
Dr Weisberger is presently a “Partner Emeritus” of the Southern California Permanente Medical Group and Chairman of the Southern California Regional Product Council. Dr Weisberger's photography and writing have been published in *The Permanente Journal* and in other venues. This photograph was taken with a Nikon D90 and 50-300mmVR lens during 4 hours under a tree in the Serengeti watching this beautiful animal's behaviors. The processing was with Paint.net and DxO programs.
Single-Incision Laparoscopic Surgery—Hype or Reality: A Historical Control Study

Maryam N Saidy, MD; Michele Tessier, PA; Deron Tessier, MD

Abstract

Introduction: Single-incision laparoscopic surgery (SILS) is a “new” method to perform “old” operations. Though SILS has been referred to by many names, for the sake of this paper, any procedure done laparoscopically through one incision (regardless of the number of ports or working channels) will be considered a SILS procedure. This brief review will discuss the history of SILS, current applications, and potential pitfalls.

Methods: To explore the outcomes of SILS cholecystectomy in a community setting, we conducted a historical control study comparing, through retrospective review, 50 laparoscopic cholecystectomies to 50 SILS cholecystectomies, all performed by one of the authors (DT).

Results: Of the 50 patients selected, 12 patients had cholangiograms performed at the same time. The mean operative time for all cases was 50.4 minutes (range 31 minutes to 108 minutes). For the noncholangiogram group, the mean operative time was 48 minutes whereas it was 57.7 minutes for patients requiring a cholangiogram. Mean estimated blood loss was 28 mL. There was a 20% “conversion” rate (n = 10): 4 with an additional trocar, 5 with a 4-port technique, 1 with an open procedure.

Discussion: We conclude that, although SILS is a relatively new procedure for general surgery, we feel it is here to stay. Although the only documented benefit is cosmetic, SILS is equivalent to conventional laparoscopy in all other respects.

Introduction

Single-incision laparoscopic surgery (SILS) was first described in the gynecology literature in 1969; tubal ligation being the first procedure routinely performed through a single incision at the umbilicus.1,2 The first published report in general surgery appeared in 1992 with appendectomies.3 Currently, the debate continues of whether SILS has anything more to offer to the patient, to the surgeon, or to the health care industry compared with the conventional laparoscopic approach. As SILS’ media coverage rises along with its popularity amongst surgeons, the importance of this debate gains more significance.

In this article, we will discuss the history of SILS, the current applications of SILS and a literature review. Additionally we will discuss a single surgeon’s experience with 50 SILS cholecystectomies and draw conclusions about the viability, advantage and appropriateness of SILS compared with standard laparoscopic techniques.

The Evolution of Single-Incision Laparoscopic Surgery

The advent of SILS was in the field of gynecology. Wheless reported on the first 4000 cases of SILS tubal ligation in 1969.12 The procedure was done using an offset eyepiece and a 5-mm working port to introduce instruments to perform the procedure. They reported that healing was “so satisfactory that no scar was grossly visible.” Since then, SILS tubal ligation has become the standard of care for elective female sterilization. The first application of SILS in general surgery was a SILS appendectomy by Pelosi in 1992 in 25 patients.3 That same year, D’Alessio described a technique for appendectomy in pediatric patients in which a special port was used at the umbilicus to allow the surgeon to bring the appendix out through the umbilicus to perform an extracorporeal appendectomy.4 In this study, of the 166 patients enrolled, 19% required additional trocars to assist in the operation, and 4% required conversion to an open operation. When the operation was able to be completed with a single port, the mean operative time was 35 minutes with a 7-day return to normal activity, compared with 10 days for those that required additional trocars. The technique showed promise.

The Evolution of Single-Incision Laparoscopic Surgery for Cholecystectomy

The first reports of SILS cholecystectomy came in 1997 in a letter to the editor in the British Journal of Surgery by Navarra.5 In 30 patients two 10-mm ports were placed side-by-side with a small skin bridge between them. The surgeon placed multiple transabdominal sutures through the gallbladder to manipulate it. Once the gallbladder was able to be removed the small skin bridge was transected and the gallbladder was removed via this common incision. This was a technical

Various terms cited in the literature for single-incision laparoscopic surgery

- Single Port Surgery
- Embryonic Natural Orifice Transumbilical Endoscopic Surgery (E-Notes)
- Laparo-Endoscopic Single Site Surgery (LESS)
- Single-Port Access (SPA)
- Single-Access Surgery (SAS)
- Single Site Surgery (S3)
- Trans Umbilical Endoscopic Surgery (TUES)
- Natural Orifice Trans-Umbilical Surgery (NOTUS)
- Single-Access Video Endoscopic Surgery (SAVES)
- Single-incision, multiport laparoscopy (SIMPL)
- Single-incision laparoscopic surgery (SILS)
paper with minimal results reported. In 1999, Piskun reported on 10 patients on whom he performed a SILS cholecystectomy by placing two 5-mm trocars through a common umbilical incision and using transabdominal sutures to manipulate the gallbladder. The fascial bridge between the two trocars was then joined and the specimen extracted through this single umbilical incision. Since that time, sporadic reports of SILS cholecystectomy have been reported under various names (see Sidebar: Various terms cited in the literature for single-incision laparoscopic surgery). With the introduction of natural orifice transluminal endoscopic surgery (NOTES), there has been renewed interest in SILS procedures. SILS can be differentiated from NOTES in the fact that NOTES is performed with no incision on the abdominal wall, rather the incision is made through another organ (stomach, vagina, rectum) in order to perform a laparoscopic operation.

Current Literature Review

Current literature is composed primarily of the experiences of various surgeons using the SILS technique. These are mainly case reports or case series. Nearly every operation imaginable has been reported using SILS techniques (see Sidebar: Summary of general surgery operations performed using single-incision laparoscopic surgery techniques). Similar to the controversy surrounding laparoscopic appendectomy versus open appendectomy, there is little data comparing SILS procedures to their traditional laparoscopic counterparts. Indeed there is no evidence that SILS is any better than current standard laparoscopic procedures other than the obvious cosmetic results. Some worries about SILS surgery include the possible increase in pain because of larger fascial incisions needed to place the large ports into the abdomen and increased risk of umbilical hernia formation. There are very few randomized studies comparing SILS cholecystectomy to the conventional 4-port technique (we could only find two⁸⁹). Navarra performed a randomized study of traditional laparoscopic cholecystectomy to their single-incision technique as described above.¹⁰ They found longer operative times with the SILS procedure with no difference in postoperative pain or cost and a higher rate of umbilical herniation. It should be noted, however, that in this study the fascial defect required to remove the gallbladder was 2.5 cm, because of the use of two 10-mm ports (a 5-mm clip applier was not available during the study period). Early results from a current study, which is designed to compare SILS and conventional cholecystectomy, have shown no differences in operative time, postoperative pain, and blood loss. The only advantage seen has been in cosmesis. In this study 68% of patients would have opted for a SILS cholecystectomy if they had to have the operation done again. It should be noted that this is a preliminary study that has only enrolled 25 of the 200 patients needed to complete the study.⁹ A recent study presented at the Society of American Gastrointestinal and Endoscopic Surgeons found no difference in total operating room cost, charges to the patient, and hospital charges when comparing SILS cholecystectomy to standard cholecystectomy.¹¹ Further randomized studies are needed to determine if SILS is any better than conventional laparoscopic surgery.

This review of literature shows that there is a paucity of quality data comparing SILS to its counterpart. The studies we have do not reveal any significant advantage to SILS over standard laparoscopic techniques thus far, except with respect to cosmesis.

Methods

Patient Inclusion Criteria

We conducted a historical control study comparing, through retrospective review, 50 laparoscopic cholecystectomies to 50 SILS cholecystectomies, all performed by one of the authors (DL).

Fifty patients from March 2009 through February 2010 were selected to undergo SILS cholecystectomy. Initially patients were excluded if their body mass index (BMI) was >40 or they had acute cholecystitis, however, once more experience was obtained this was liberalized to every patient requiring cholecystectomy. There were 43 women and 7 men with
Single-Incision Laparoscopic Surgery—Hype or Reality: A Historical Control Study

Operative Technique

Patients were placed in a supine position with their arms abducted. After induction of general anesthesia, an 11-mm curvilinear supra-umbilical incision was made and a cut down onto the umbilical stalk. A veress needle was inserted into the abdomen at the base of the umbilicus and pneumoperitoneum was established. A 5-mm port was placed into the left lateral aspect of this common incision and the patient was positioned into reverse Trendelenburg, left side down. The abdomen was surveyed and, if the gallbladder was visualized, then a SILS cholecystectomy was attempted. Another 5-mm port was placed in the right lateral aspect of the 11-mm incision (Figure 1). A transabdominal suture was placed through the fundus of the gallbladder to suspend it to the anterior abdominal wall. This was achieved with an O-silk suture on a Keith-needle passing it through the right lateral abdomen at the midclavicular line just below the costal margin and subsequently brought back out near the point of entry (Figure 2). A second O-silk suture was then brought through the abdominal wall in the subxiphoid area with two passes through the infundibulum of the gallbladder. This suture was then brought out through the right lateral abdominal wall. The assistant then “marionettes” the fundus of the gallbladder allowing it to be suspended to the anterior abdominal wall. The “critical view” was then obtained. If a cholangiogram was performed this was done by placing a 14-gauge angiocatheter through the abdominal wall and a cholangiographic catheter was introduced into an incision made in the cystic duct. Once the surgeon was satisfied that the cystic duct and artery were identified, the structures were clipped with a 5-mm clip applier. If the cystic duct was too large for the 5-mm clips then the right-sided 5-mm port was replaced with an 11-mm port and a 10-mm clip applier was used. We found that when the use of an 11-mm port was needed, the mobility of the surgeon becomes very limited because the 5-mm and 11-mm port are in such close proximity. Once the cystic duct and artery were divided, the gallbladder was taken off the gallbladder bed using electrocautery. The suture used to suspend the gallbladder to the anterior abdominal wall was then removed; the gallbladder was centered and the “marionetting” sutures were then cut at the skin level. Both ends of the “marionetting” sutures were then grasped intracorporeally and the gallbladder was brought out through the 11-mm incision. The fascial incision was closed in a usual fashion with absorbable suture.

Results

Of the 50 patients selected, 12 patients had cholangiograms performed at the same time. The mean operative time for all cases was 50.4 minutes (range 31 minutes to 108 minutes). For the noncholangiogram group the mean operative time was 48 minutes whereas it was 57.7 minutes for patients requiring a cholangiogram. Mean estimated blood loss was 28 mL. There was a 20% “conversion” rate (n = 10) in the study group, with “conversion” considered placement of at least one additional trocar. In 4 of these patients an additional trocar was placed to put an endoloop around the cystic duct stump, because their cystic duct was too large for even a 10-mm clip. Five patients were converted to a 4-port technique (3 for adhesions and 2 for acute cholecystitis, making dissection too difficult). In one patient the anatomy was too difficult to discern with the SILS technique so the operation was converted to a traditional 4-port technique. During this dissection the cystic artery began bleeding and the suction and pneumoperitoneum simultaneously failed necessitating conversion to an open procedure.

Discussion

SILS is emerging as a new method of performing laparoscopic operations. General surgeons with laparoscopic skills are now performing many simple operations (ie, cholecystectomy and appendectomy) using the current technology. Surgeons with more advanced laparoscopic skills can perform more advanced procedures (ie, splenectomy and adrenalectomy) with the current tools available; however, it is recommended that they start with simpler procedures.
Operative Pitfalls and Pearls

Currently SILS procedures require working inline with the camera using the same incision with either multiple ports placed through the common incision or a single specialized port with multiple access ports. Current technology available includes specialized trocars, instruments, and cameras that prevent crowding of instruments and that maintain adequate pneumoperitoneum. Many of these technologies do not require any special training but do require a change in the way one operates.

SILS requires working inline with the camera making movements difficult to perform because of instrument crowding. This can be circumvented by using articulating instruments of which there are numerous manufacturers. Additionally, ports and instruments of different lengths can be used to make the distance between the surgeon's hands greater allowing greater mobility. As mentioned previously using all 5-mm ports is preferable because using anything larger limits the mobility of the trocar movements. As shown in the technique described above, transabdominal sutures can be used to manipulate the organ of interest decreasing the need for additional trocars.

Visualization during SILS procedures is obscured by the inline nature of traditional scopes. Using a flexible scope or angled scope can allow a surgeon to see around difficult corners. Additionally a bariatric length scope can help keep the scope out of the way of the surgeon's working hands.

Leakage of pneumoperitoneum can be problematic using SILS procedures. This is true if you are using traditional ports placed through the common incision (as described above) or using some of the manufactured ports that contain multiple ports within the single large port. This is especially true if the surgeon is torquing the instruments to perform the procedure. Placing a piece of gauze with surgilube around the port can help prevent leakage. Additionally trocars can slip out easily and suturing them to the skin can help prevent this from occurring.

In our experience with SILS for cholecystectomies, the two most important factors for the future may be patient selection criteria and recognizing the limitations of SILS. In our experience, acute ongoing infection/inflammation of the gallbladder resulted in a 50% (n = 2 of 4) “conversion” rate to multiple ports. Patients without acute pathology had a conversion rate of 16%. Moreover importantly, the decision of when to “convert” is very important. We emphasize the use of various transabdominal suture techniques to obtain the critical view. If the critical view cannot be achieved, it is in the patient’s best interest to convert early to prevent serious morbidities. Undoubtedly, as experience with this surgery rises, exposure techniques will be refined and instruments available will improve. As new surgeons are being exposed to SILS techniques in their training, the learning curve will likely become much more favorable.

Conclusion

Thus far, the only documented benefit of SILS procedures is cosmetic, although it is equivalent to conventional laparoscopy in all other respects. We conclude that the most important factor for success with SILS is likely in judicious patient selection criteria.

From the literature review and our surgeon’s personal experience, we believe that SILS is a reality that is here to stay, especially as experience with SILS grows, and the learning curve shortens. We look forward to future studies on the learning-curve associated with the procedure, SILS in the hands of advanced laparoscopic surgeons versus general surgeons, and long-term follow-up studies.

Disclosure Statement

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

References


Operative Skill

Actual operative skill cannot be gained by observation, any more than skill in playing the violin can be had by hearing and seeing a virtuoso performing on that instrument.

— Allen O Whipple, MD, 1881-1963, American surgeon known for the Whipple procedure and for Whipple’s triad
Mr Gee was so tired of feeling so tired. And his seasoned internists and subspecialists were exhausted by their futile attempts to establish a diagnosis for his debilitating fatigue. Sure, they were treating their 50-year-old patient for diabetes, hypertension, heart disease, and renal insufficiency. But, informed by their collective clinical acumen, they knew that, on any clinical scale, his fatigue outweighed any plausible measure.

Besides, Mr Gee’s blood chemistries and cell counts doggedly remained near normal limits all the while his profound fatigue relentlessly progressed. Although reporting that he retired to bed every night for an eight-hour minimum, he still easily nodded off throughout the day—often at inopportune moments—which impaired his capacity for work and socialization. Despite his increasing debilitation and isolation, his physicians did not think he was depressed, and they could not implicate any of his usual medications. No evidence supported a causal role for a host of inflammatory, autoimmune, thyroid, adrenal, and sleep disorders.

Mr Gee’s primary physician was even more concerned about a second diagnostic conundrum. Reportedly, for weeks, Mr Gee had experienced abrupt elevations of his systolic blood pressure to worrisome levels—beyond 200 mmHg—that tended to occur at night. During those “episodes” he also experienced headaches, tinnitus, nausea, and fear about succumbing to a stroke. Laboratory and radiographic tests in pursuit of secondary causes like pheochromocytoma failed to yield an explanation for these episodes. Multiple antihypertensive trials—with epidemic, and I was actively practicing as an internist, rheumatologist, and geriatrician. My most winning qualification for drawing to the care of patients with complex multisystem illnesses.

My background had included doctoring during the early AIDS epidemic, and I was actively practicing as an internist, rheumatologist, and geriatrician. My most winning qualification for being drawn to the care of patients with complex multisystem illnesses. My background had included doctoring during the early AIDS epidemic, and I was actively practicing as an internist, rheumatologist, and geriatrician. My most winning qualification for being drawn to the care of patients with complex multisystem illnesses. My background had included doctoring during the early AIDS epidemic, and I was actively practicing as an internist, rheumatologist, and geriatrician. My most winning qualification for being drawn to the care of patients with complex multisystem illnesses. My background had included doctoring during the early AIDS epidemic, and I was actively practicing as an internist, rheumatologist, and geriatrician. 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Mr Gee’s Story Unfolding

Mr Gee cast his eyes downward when I entered the exam room and greeted him. Sitting precariously on the edge of a chair and dressed in casual attire (not quite befitting his nervous demeanor), he murmured “hello” and abruptly stood. He walked toward the doorway and asked, “How long is this appointment going to take?”

“We have an hour to talk,” I answered. “Is this a bad time for you?”

“No,” he replied. “I just thought the nurse made a mistake when she scheduled this. A whole hour? Why so long?”

“Because,” I explained, “what we need is time—not another CAT scan or blood test now—to try to figure out why you’re feeling bad. Is that okay?”

Mr Gee nodded and slowly returned to his chair. I placed several blank sheets of paper on the table between us and asked, “So tell me—when was the last time you ever felt completely well?”

It had been months since Mr Gee had felt well—long before the onset of his fatigue and hypertensive episodes as recorded in his medical record. This allowed us to more accurately examine an extended time frame in which to contextualize his complaints and search for overlooked contemporaneous somatic and psychosocial clues of potential diagnostic relevance. Notably, we newly established that when he’d begun to feel unwell, “something happened” between him and a friend—but he declined to further explain. “It’s personal, and I don’t want to talk about that,” he said. “It makes me feel ashamed.”

Mr Gee had trouble continuing his story after this poignant self-admonition, so I invited him to restart his story at its end and proceed backwards. And that’s when one big missing piece of the narrative track newly snapped into rightful alignment.

For, when imagining his future with his mystifying symptoms, Mr Gee twice mentioned his father in a seemingly incidental way. For, when imagining his future with his mystifying symptoms, Mr Gee twice mentioned his father in a seemingly incidental manner. This was intriguing because I had learned through

Gathering the Patient’s Story and Clinical Empathy

Jodi Halpern, MD, PhD

While nothing replaces meeting with a patient, reading another physician’s description of interviewing a patient can provide insights into physician-patient interactions that we cannot get when we ourselves are involved. In my view, “A Case of Baffling Fatigue with a Spectral Twist” illustrates clinical empathy in action. Often confused with compassion, sympathy, and other benevolent emotions, clinical empathy involves emotional resonance, but is distinguished by curiosity. Whereas sympathy involves feeling as if one were “in the same boat” with another, empathy involves curiosity about another’s distinct experience. Vividly and specifically imagining another’s distinct world becomes possible with careful, attuned listening.

Until the past two decades, physicians (unlike other caregivers) have been skeptical about empathy, assuming that it would interfere with their clinical objectivity and effectiveness. This has shifted as research has shown that empathy plays a fundamental role in both diagnostic accuracy and treatment effectiveness. Repeated studies show that patients first give superficial clues about their histories until they sense empathy, and only then disclose anxiety-provoking information (as happened in the reported case). Such disclosure is crucial for making the correct diagnosis. Empathy is also important for establishing trust, and trust is a powerful determinant of adherence to treatment and thus effectiveness of care. Even when clinicians need to deliver bad news, their empathic engagement matters, empowering patients to take earlier steps in optimizing treatment and self-care.

Clinicians today want to provide empathic care, but are unsure of just what actions they are supposed to incorporate into their daily practice. Since we cannot just will ourselves to feel certain emotions, what needs to be taught are specific skills or approaches that engender empathy. One of the best studies thus far suggests that one way to “practice” empathy is to learn to help patients tell their stories, exactly as Kate Scannell, MD, does here. However, readers may wonder how Dr Scannell connects so well with this patient, enabling him to share his story. What specific skills or lessons can we glean from Dr Scannell’s approach?

First, she is genuinely curious about the patient. This requires tolerating uncertainty, so that when the data points don’t connect, Dr Scannell is intrigued rather than frustrated.

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family history-taking that his father had died decades earlier. How was he somehow still active in the patient’s felt experience of his illness? Endeavoring to “see” the patient’s story, I asked: “Can you tell me how your father looks in this future of yours?” Silence followed. Mr Gee looked away and stared at the wall. Maybe 30 very long seconds passed before he finally said, “He looks like a person who is dead.”

A variety of images (some unsettling) sprung to my mind, so I asked for clarification. “You mean, like a dead body, someone in a coffin?”

“No,” he replied matter-of-factly. “Like a ghost. Like he looked when he was alive, but he has no body.”

Mr Gee then described how his father had appeared during life, and he reported that his father’s ghost had most recently visited him several months earlier. I asked, “And what is that like for you, seeing your father as a ghost? Is it frightening or pleasant—or what?”

“It feels good to see him,” Mr Gee replied. He explained that he’d been raised within a household that was regularly inhabited by ancestral ghosts who were revered by his Asian parents. His parents had taught him to stay ever-mindful and respectful of the ghosts who, in turn, would watch over him and fend off evil specters. To imagine his father’s ghostly presence afforded him great comfort. I was trying to see the patient now in the context of suffering his symptomatic hypertensive episodes—wanting to visualize what he actually did during those nightly attacks; wondering if he saw his father “around”; needing to envisage how he actually took his blood pressure readings and documented the spikes. So I asked him to describe these things in solid details—“like a video of your experience, in your words.”

He described his bedroom and the way he slept—always on his back—when his episodes occurred. But when I asked him to show me how he used a cuff, he simply stated: “I don’t.”

I was distracted momentarily by the loud “thud” sounding within my head. A moment later, I was able to ask the obvious question: “Then where do those high blood pressure numbers come from, Mr Gee—the ones you’ve been reporting to your doctors?”

Med-speak translation revealed that Mr Gee’s notion of “blood pressure” and its metric assessment could be wholly subjective. As he explained, the discomfort he felt during the “episodes” felt like some terrible build-up of internal pressure that, when extreme, would merit his assignment of a “200 or more” point rating.

“Oh,” I managed, understanding now that his hypertensive crises were … well, not hypertensive crises. I wondered what other essential elements of his story had been lost in our translation. Scrambling for answers, I then asked Mr Gee to describe in detail what he actually did during the attacks.

“Nothing,” he said. “I am just in bed, and I stay there.”

“But you said you felt like vomiting when your pressure was high. Don’t you sometimes get up, maybe turn on the lights and run to the bathroom or …”

“No. The lights are already on,” he explained. “I don’t get up.”

“But why are the lights on if you’re in bed, sleeping?”

He looked directly at me, and the subsequent tone of his voice made it sound as though the answer was obvious. He
said, “I keep the lights on while I am in bed because the ghosts come out in the dark. I keep the lights on to keep them away, so I do not sleep.”

Within that illumination, the rest of the story became increasingly visible. Importantly, we could now see that the diagnosis for his cryptic fatigue was not sleeping, for fear of ghostly visitations.

But why was his father’s ghost no longer visiting and capable of comforting him? Where were the protective ancestral ghosts? Mr Gee explained that they had abandoned him. Whatever had caused him to experience shame—marking his defined onset of feeling unwelcome—had also merited their strong disapproval.

“I am sorry,” I said, handing a tissue to Mr Gee.

I interpreted Mr Gee’s subsequent silence as continuing indication that he did not want to speak about that troubling event. Still, I could not see what he was actually afraid of, what caused him to wear himself down and become so ill. I asked, “What do the bad ghosts look like?”

“No—it is just one ghost,” he answered. “He was a neighbor in my apartment building, and he died.”

Through his further detailed telling of the “who, what, where, when, and how” of his illness, it was revealed that the neighboring tenant had died a few days after having accidentally witnessed Mr Gee’s self-incriminating indiscretion. Consequently, Mr Gee believed the tenant’s ghost had come to haunt his apartment in punishing retribution, taking advantage, too, of his protector ghosts’ parallel abandonment.

In essence, the only thing to do was to keep the lights on throughout the night. Not sleeping. Abiding panic attacks. Waiting for the ghost of a chance at redemption.

Dénouement

I saw Mr Gee once more, for a final visit two months after our initial one. By then, he was happily in treatment with the psychiatrist I’d consulted who had helped to ease his insomnia and panic attacks, while not pathologizing his cultural beliefs. He was also able to reveal to her the nature of his shame, and that seemed to open up another avenue for healing—down-to-earth talk-therapy in the psychiatrist’s office. His primary care physician and subspecialists were relieved that rational diagnoses had been established for Mr Gee’s clinical complaints, and they were able to downscale his antihypertensive protocol. Mr Gee was grateful that “all the blood testing and x-rays” in pursuit of diagnoses had stopped.

As we shook hands goodbye, Mr Gee said, “Thank you for letting me tell about the ghosts. You did not make me feel stupid.”

It pained me in the moment to hear how he had felt silenced by his fear of such judgment from my profession. But I also made note to remember his words on behalf of future patients, to stay vigilant for the confounding power of shame to subvert diagnostic clarity and create perplexing distances between physicians and patients.

“Mr Gee,” I called out as he passed through the exit. “Did your father ever come back?”

He turned to me and pointed his index finger upward. “Not yet. But I know he is coming soon.”

Note: Personally identifiable features have been altered to protect the patient’s identity.

How did the patient experience the silence? Research shows that patients judge the trustworthiness of the clinician on the basis of their nonverbal attunement or lack thereof. Being silently present with the patient as Dr Scannell describes is a good example of nonverbal attunement. Interrupting at such moments, in contrast, has repeatedly been shown to cut off patient disclosure. Assuming that Dr Scannell’s facial and other gestures conveyed to the patient that she was present and not just spacing out, the patient is likely to have felt accompanied by her during the silence. Patients appreciate it when they feel a sense of “being with” their caregivers.

There are other specific lessons from Dr Scannell: ask the patient to restate medical terms in his or her own words, and ask them to describe medical procedures they do at home. In this case, for example, the patient tells her that he doesn’t actually measure his blood pressure, so we realize that his description of blood pressure going up to “200 or more” is meant to describe the boiling up of intolerable feelings of guilt, fear, and anxiety.

In summary, empathic communication can be enhanced by specific practices, many of which are illustrated in this case report. When possible, invite the patient to tell you his or her own story, from its beginning to its imagined ending. Try to pause when the patient is obviously processing an emotional issue. Practice patience by becoming more aware of your own embodied reactions, and if you feel anxious, take breaths or otherwise relax yourself, to give the patient the message you are truly present and not in a rush. Your tone and gestures will convey your genuine emotional resonance, but be wary of making overreaching statements like: “I know how you feel.” When a patient says something contradictory or seemingly irrational, avoid correcting him or her and ask instead, “Tell me what I’m missing?”

Beyond all these suggestions, cultivate an overarching attitude of engaged curiosity. This involves recognizing that patients bring in complex histories that we often misunderstand, and that we truly need to listen to their accounts to help us help them. Crucially, empathic curiosity is not the curiosity of a detective. Patients will not tell their stories if they feel harangued, or under an inquisition. Thus clinicians need to be mindful of their own emotional responses, and take quiet moments when necessary, so that they can be truly present and nonverbally attuned to their patients.

References

abstract

introduction: the practice-guideline process of collecting, critically appraising, and synthesizing available evidence, then developing expert panel recommendations based on appraised evidence, makes it possible to provide high-quality care for patients. Unwanted variability in the quality and rigor of evidence summaries and Clinical Practice Guidelines has been a long-standing challenge for clinicians seeking evidence-based guidance to support patient care decisions.

methods: A multidisciplinary group of stakeholders, with representation from all eight Kaiser Permanente Regions, is responsible for creating National Guidelines. Conducting high-quality systematic reviews and creating clinical guidelines are time-, labor-, and resource-intensive processes, which raises challenges for an organization striving to balance rigor with efficiency. For these reasons, the National Guideline Program elected to allow for the identification, assessment, and possible adoption of high-quality systematic guidelines and systematic reviews using the ADAPTE; Appraisal of Guidelines Research and Evaluation; Assessment of Multiple Systematic Reviews (AMSTAR); and Grading of Recommendations Assessment, Development, and Evaluation (GRADE) frameworks. If no acceptable external guidelines are identified, the Guideline Development Team then systematically searches for relevant high-quality systematic reviews, meta-analyses, and original studies. Existing systematic reviews are assessed for quality using a measurement tool to assess systematic reviews (the AMSTAR systematic review checklist).

study appraisal: Following the screening and selection process, the included studies (the “body of evidence”) are critically appraised for quality, using the GRADE methodology, which focuses on four key factors that must be considered when assigning strength to a recommendation: balance between desirable and undesirable effects, quality of evidence, values and preferences, and cost. The evidence is then used to create preliminary clinical recommendations. The strength of these recommendations is graded to reflect the extent to which a guideline panel is confident that the desirable effects of an intervention outweigh undesirable effects (or vice versa) across the range of patients for whom the recommendation is intended.

dissemination: The Care Management Institute disseminates all KP national guidelines to its eight Regions via postings on its Clinical Library Intranet site, a Web-based internal information resource.

introduction

as the US health care system continues to undergo significant structural and financial change, evidence-based medicine—which, through clinical recommendations and practice guidelines, brings to the bedside the best available evidence of effective testing and treating—has become increasingly important. However, the effort to reduce unwarranted variation in care and to form the basis for efficient, high-quality care, guidelines want to provide the best-quality care; the practice guideline process of collecting, critically appraising, and synthesizing available evidence, then developing expert panel recommendations based on appraised evidence, makes this possible.

at times, national and international health care organizations and professional societies have issued conflicting recommendations about various clinical processes of care. Unfortunately, this inconsistency has made the identification and selection of high-quality clinical guidance a daunting task for any frontline clinician. It also has made cooperation in guideline development difficult, creating some confusion and contributing to the resource intensive nature of guideline development. Differences in the criteria and processes used to appraise and interpret the same body of evidence are a part of the problem, as are inconsistencies in the processes used to translate evidence into recommendations.

how can we, as consumers or clinicians, be certain of the quality and rigor of clinical practice guidelines (CPGs)? One would assume that guideline developers follow a standard, transparent protocol when searching for, evaluating, analyzing, synthesizing, and summarizing relevant data. One might also assume that expert guideline panels formulate recommendations in the same way. However, unwanted variability in the quality and rigor of evidence summaries and CPGs represents a long-standing challenge for clinicians seeking evidence-based guidance to support patient care decisions.

until recently, there have been no universally accepted standards for evidence summaries and guidelines, which has led to significant variability in the way guidelines are developed. Similarly, because there have not been common standards for documentation, there has been a lack of transparency in materials available for
review, making informed guideline comparison and adoption difficult.

Kaiser Permanente’s (KP’s) methodological approach to guideline development, together with the recently published standards of the Institute of Medicine (IOM),¹ may provide some assurances. The IOM standards call for the development of unbiased, scientifically valid, and trustworthy evidence reviews and CPGs. As KP and other guideline development organizations analyze and adopt these recommendations, it is not unreasonable to suggest that the new IOM standards might well form the basis against which transparency, objectivity, and consistency of guidelines will be measured (see Sidebar: Institute of Medicine Standards).

Kaiser Permanente’s Guideline Development Infrastructure

Kaiser Permanente (KP), the largest nonprofit integrated health care delivery system in the US, includes 8 geographic Regions in 9 states and the District of Columbia, covering more than 8.6 million members. KP’s National Guideline Program (NGP) was established, first as an initiative, in 2005

The NGP receives direction and oversight from its National Guideline Directors (NGD), who represent the 8 Regions and Medical Groups of KP.

The CPGs, together with a variety of evidence-based clinician and patient tools linked to KP’s electronic health record (EHR), provide evidence and reminders to help reduce unwarranted variation in care, and to improve clinical outcomes. To ensure that recommendations are framed consistently and accurately reflect the body of scientific evidence, the Guideline Quality (GQ) committee—a subcommittee of the National Guideline Directors—ensures that guideline development follows a set of rigorous, evidence-based, systematic, and transparent processes. Additionally, through active involvement in national and international organizations, members of the GQ committee remain current on evidence-based medicine and the guideline-development processes, and contribute to the ongoing development of the science of evidence-based practice.

In general, the need for evidence and/or guidance regarding a specific clinical problem prompts a search for existing evidence—most commonly in the form of a formal systematic review. Evidence is then appraised and synthesized to create CPGs that provide guidance for clinical decisions. Guidelines based on well-conducted systematic reviews of the evidence provide an explicit linkage between the best evidence and clinical practice.

A Closer Look at the Institute of Medicine Standards

The IOM standards were developed in part in response to the Medicare Improvements for Patients and Providers Act of 2008 when the US Congress asked the IOM to study and to report on best methods used to develop CPGs. The IOM then developed eight standards for the development of rigorous, trustworthy systematic reviews and CPGs (Figure 1).¹⁻³ These two recent IOM reports—Finding What Works in Health Care: Standards for Systematic Reviews and Clinical Practice Guidelines We Can Trust and A Closer Look at the Institute of Medicine Standards—provide detailed standards to increase the rigor of evidence reviews and guideline development, documentation, and reporting. Having received immediate attention on an international level, both reports raise the bar for conducting reviews of scientific evidence and developing evidence-based CPGs. It is expected that adherence to these standards will reduce bias, conflicts of interest, and variability in guideline development. Proponents also hope these standards present a unique opportunity to increase national and international evidence-based medicine and guideline development.

Institute of Medicine Standards

The eight Institute of Medicine standards for the development of unbiased, scientifically valid, and trustworthy clinical practice guidelines (CPGs) include:

1. Establishing transparency
2. Management of conflict of interest
3. Guideline development group composition
4. CPG-systematic review intersection
5. Establishing evidence foundations for and rating strength of recommendations
6. Articulation of recommendations
7. External review
8. Updating

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international collaboration for guideline development and dissemination, and will make the guideline development process less resource intensive.

**Historical Perspective on Kaiser Permanente’s National Guideline Development Program**

KP’s development of evidence-based CPGs began in 1991, when the Southern California Region hired David Eddy, MD, a pioneer in evidence-based medicine, to consult on the development of the Region’s clinical guideline and technology assessment programs. At that time, most of KP’s Regions had been developing practice guidelines based on expert consensus and review of selected studies. Dr Eddy’s methodology—detailed in a manual developed in collaboration with the Council of Medical Specialty Societies Task Force on Practice Policies—emphasized a rigorous and explicit approach based on systematic searching and selection of all available evidence for the topic of interest. He also emphasized the importance of critical appraisal of relevant studies, detailed estimation of an intervention’s effect on important health outcomes, and an explicit description of the link between the evidence and eventual guideline recommendations.

By the mid-1990s, a growing interest in evidence-based guideline methodology, coupled with a desire to share guideline development resources across KP’s Regions, led to the founding of the KP Interregional Guidelines Steering Group (IRGSG). Influenced by Dr Eddy’s explicit approach, the IRGSG developed a position paper for interregional collaboration and a common methodology outlining principles and processes for evidence-based guideline development. By the late 1990s, under the sponsorship of CMI, the IRGSG evolved into the National Guideline Directors with representation from all Regions and agreement on a core set of nationally endorsed guidelines to be developed using rigorous evidence-based methods.

In 2010, KP’s NGP became a member of the Guidelines International Network (G-I-N), a collaborative, international, not-for-profit association of organizations and individuals involved in development and use of CPGs. G-I-N seeks to improve the quality of health care by promoting systematic development of clinical guidelines and application of these guidelines in practice. Through G-I-N, the NGP was exposed to a number of international collaborative groups that had been developing frameworks and tools to improve the guideline development process, including:

- **ADAPTE collaboration:** provides a structured framework and systematic approach to adopt or adapt preexisting CPGs as an alternative to de novo guideline development.
- **Appraisal of Guidelines Research and Evaluation (AGREE) tool:** used to assess the methodologic quality of existing CPGs.
- **Assessment of Multiple Systematic Reviews (AMSTAR) tool:** used to evaluate the methodologic quality of systematic reviews.
- **Grading of Recommendations Assessment, Development, and Evaluation (GRADE):** used to grade the quality of a body of evidence and the strength of recommendations.

Although KP’s NGP had invested significant resources to create a unique internal guideline development process, the ADAPTE, AGREE, AMSTAR and GRADE frameworks offered opportunities and suggestions to make KP’s guideline development process more systematic, transparent, and explicit. Furthermore, the appropriate application of these tools allows KP to extend its rigorous processes to adopt or to adapt preexisting high-quality guidelines and evidence summaries, and to tailor recommendations for KP’s specific cultural and organizational context.

In early 2010, backed by KP’s CMI, guideline quality methodologists, and KP Regions, the National Guideline Directors agreed that the ADAPTE, AGREE, AMSTAR, and GRADE frameworks should be incorporated into KP’s guideline methodology. To reflect these changes, the KP National Guideline GQ Committee revised the NGP methodology. The Kaiser Permanente National Guideline Program Process and Methodology for Systematic Development of Clinical Practice Recommendations defines and describes the methods the NGP employs when creating CPGs. The following is a high-level overview of the KP National Guideline development processes.

**Guideline Development and Methodology at Kaiser Permanente**

KP employs an integrated, evidence-based, systematic, and transparent approach to the development of clinical guideline recommendations. This iterative process involves collection of data to create evidence-based resources, including CPGs and point-of-care decision-support tools within the EHR.

Following guideline implementation, care processes and outcome measures are compared with internal targets and...
external benchmarks; data are fed back into the system to further improve clinical practice (Figure 2).

A multidisciplinary group of stakeholders, with representation from all eight KP Regions, is responsible for creating National Guidelines. Each Guideline Development Team (GDT) includes physicians and other clinical experts (such as psychologists, pharmacists, clinical nurse experts, social workers, etc), evidence analysts, and a methodologist. The GDT serves as the expert panel that refines and approves the clinical recommendations that compose each guideline. To ensure that recommendations accurately reflect the body of scientific evidence, and are relevant to clinician and patient needs, the guideline development process follows the process described in Table 1 and schematically in Figure 3.

Choosing Topics for Clinical Guidelines: Challenges and Implications

Each year, the NGP evaluates and selects priority topics to be included in its guideline portfolio. Clinical questions to be addressed are prioritized on the basis of an assessment of several internal and external factors. These factors may include:

- Quality-of-care concerns
- Unwarranted variation in clinical and/or operational practice
- Multiple treatment options
- Evolving evidence base
- High cost or resource use
- High prevalence of condition or risk factor
- Regulatory and/or accreditation requirements and metrics
- Strategic priorities
- Public interests
- Payer or employer group interests.

Each of the eight KP Regions has the opportunity to present topics of interest, which are then reviewed and voted on by the National Guideline Directors, taking into consideration the criteria above. If any KP primary or specialty care group presents topics that are not selected for inclusion in NGP priorities (e.g., the topic doesn’t meet prioritization criteria or resource availability), the group has the option to pursue the development of other practice support tools independent of the NGP.

Guideline Scope

Once a topic has been identified, a GDT is assembled; this team helps specify

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Table 1. The Kaiser Permanente process for clinical practice guideline creation

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
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<tbody>
<tr>
<td>Determine scope of the clinical content to be addressed in the guideline</td>
<td>Develop key clinical questions, including specification of patient populations, comparative interventions, and outcomes</td>
</tr>
<tr>
<td>Identify and evaluate existing recommendations and guidelines</td>
<td>Conduct a comprehensive search of relevant databases and other sources to identify relevant evidence</td>
</tr>
<tr>
<td>Conduct a comprehensive search of relevant databases and other sources to identify relevant evidence</td>
<td>Screen, select, and extract data from studies</td>
</tr>
<tr>
<td>Assess, synthesize, and grade the body of evidence</td>
<td>Perform a critical appraisal of the strengths and limitations of the identified studies</td>
</tr>
<tr>
<td>Develop recommendations and rationales that are consistent with the evidence</td>
<td>Review recommendations</td>
</tr>
<tr>
<td>Approve guideline</td>
<td></td>
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<tr>
<td>Disseminate and implement guideline</td>
<td>Update underlying evidence periodically</td>
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</tbody>
</table>

Table 2. Adaptation of ADAPTE process used by the Kaiser Permanente Guideline Program

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
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<tbody>
<tr>
<td>Preparation for the ADAPTE process</td>
<td>Identify Guideline Development Team (GDT) and staff</td>
</tr>
<tr>
<td>• Solicit suggestions for external guidelines from the GDT or other subject matter experts</td>
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</tr>
<tr>
<td>Define health questions (clinical questions)</td>
<td>Search and screen guidelines that address the clinical questions</td>
</tr>
<tr>
<td>Assess the identified guidelines, by clinical question, using the AGREE II tool, with an emphasis on Domain 3, Rigor of Development</td>
<td></td>
</tr>
<tr>
<td>Decide whether to adopt certain recommendations or the entire guideline</td>
<td></td>
</tr>
<tr>
<td>Draft modifications of recommendations or guidelines for specific needs and circumstances of Kaiser Permanente (KP) and its members</td>
<td></td>
</tr>
<tr>
<td>Draft a guideline report (this is a report to the GDT from the Lead Team consisting of the guideline assessment and recommendations for GDT consideration)</td>
<td>Other ADAPTE steps that may be used within the KP National Guidelines Program process include:</td>
</tr>
<tr>
<td>• External review (for example, by Chiefs of relevant specialties)</td>
<td></td>
</tr>
<tr>
<td>• Plan for updates and implementation</td>
<td></td>
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<tr>
<td>• Guideline production and dissemination</td>
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</table>

AGREE = Appraisal of Guidelines Research and Evaluation

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Figure 3. Schematic representation of Kaiser Permanente’s process for guideline creation. AGREE = Appraisal of Guidelines Research and Evaluation; AMSTAR = Assessment of Multiple Systematic Reviews; GRADE = Grading of Recommendations Assessment, Development, and Evaluation.
Table 3. AGREE domains of guideline quality and usability*  

<table>
<thead>
<tr>
<th>Domain</th>
<th>AGREE tool Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope and purpose</td>
<td>AGREE evaluates the scope and purpose of the guideline for clarity, completeness, and relevance.</td>
</tr>
<tr>
<td>Stakeholder involvement</td>
<td>AGREE assesses the involvement of stakeholders in the guideline development process.</td>
</tr>
<tr>
<td>Rigor of development</td>
<td>AGREE evaluates the rigor of development processes used to create the guideline.</td>
</tr>
<tr>
<td>Clarity of presentation</td>
<td>AGREE examines the clarity and appropriateness of the presentation and language.</td>
</tr>
<tr>
<td>Applicability</td>
<td>AGREE assesses the applicability of the guideline to a range of target populations.</td>
</tr>
<tr>
<td>Editorial independence</td>
<td>AGREE evaluates the editorial independence of the guideline development process.</td>
</tr>
</tbody>
</table>

AGREE = Appraisal of Guidelines Research and Evaluation

The scope of the guideline, including target populations, comparative interventions, important outcomes, and other clinical issues. This process provides direction for framing specific clinical questions, which commonly address issues of risk, diagnosis, prognosis, therapy, and harm.

Traditionally, KP’s CPGs have been created in-house; that is, the GDT maintained control of the entire guideline development process—from defining the clinical question through conducting systematic reviews, evaluating the evidence, and creating clinical recommendations within the framework of a clinical guideline—regardless of other preexisting external evidence reviews or guidelines.

**External Guidelines**

Conducting high-quality systematic reviews and creating clinical guidelines are time-, labor-, and resource-intensive processes, which raises challenges for an organization striving to balance rigor with efficiency. For these reasons, the NGP elected to allow for the identification, assessment, and possible adoption of existing evidence-based guidelines and systematic reviews using the ADAPTE, AGREE, AMSTAR and GRADE frameworks.

Using these frameworks, the NGP is able to evaluate the quality and applicability of preexisting external guidelines. For example, if KP were interested in creating a guideline related to human immunodeficiency virus (HIV) prevention and screening, the GDT might investigate whether any high-quality relevant guidelines or systematic reviews had previously been created or conducted by groups such as the Centers for Disease Control and Prevention, the US Preventive Services Task Force, the Cochrane Collaboration, etc.

If such guidelines are found, the guideline team uses the ADAPTE process to assess congruence with identified clinical questions, analyze guidelines for quality, and make adaptations as needed to fit KP’s context and needs (Table 2). Guidelines are further evaluated using the AGREE tool (part of the ADAPTE process), which evaluates guideline quality standards in six domains of guideline quality and usability (Table 3).

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**No External Guidelines Available**

If no acceptable external guidelines are identified, the GDT then systematically searches for relevant high-quality systematic reviews, meta-analyses, and original studies. Existing systematic reviews are assessed for quality using a measurement tool to assess systematic reviews (the AMSTAR systematic review checklist), another tool new to KP’s methodology (Table 4). If systematic reviews are identified and deemed high quality by the AMSTAR checklist, the GDT may opt to use a preexisting review, rather than complete a systematic review de novo. In these cases, evidence analysts perform a supplementary search to identify any new studies that may have been published following the date of the preexisting review.

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Table 4. AMSTAR review checklist

<table>
<thead>
<tr>
<th>Question</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Was an ‘a priori’ design provided?</td>
<td>The research question and inclusion criteria should be established before the conduct of the review.</td>
</tr>
<tr>
<td>2. Was there duplicate study selection and data extraction?</td>
<td>There should be at least two independent data extractors and a consensus procedure for disagreements should be in place.</td>
</tr>
<tr>
<td>3. Was a comprehensive literature search performed?</td>
<td>At least two electronic sources should be searched. The report must include years and databases used (eg, Central, EMBASE, and MEDLINE). Keywords and/or MESH terms must be stated and where feasible, the search strategy should be provided. All searches should be supplemented by consulting current contents, reviews, textbooks, specialized registers, or experts in the particular field of study, and by reviewing the references in the studies found.</td>
</tr>
<tr>
<td>4. Was the status of publication (ie, grey literature) used as an inclusion criterion?</td>
<td>The authors should state that they searched for reports regardless of their publication type. The authors should state whether or not they excluded any reports (from the systematic review), based on their publication status, language, etc.</td>
</tr>
<tr>
<td>5. Was a list of studies (included and excluded) provided?</td>
<td>A list of included and excluded studies should be provided.</td>
</tr>
<tr>
<td>6. Were the characteristics of the included studies provided?</td>
<td>In an aggregated form such as a table, data from the original studies should be provided on the participants, interventions, and outcomes. The ranges of characteristics in all the studies analyzed (eg, age, race, sex, relevant socioeconomic data, disease status, duration, severity, or other diseases should be reported).</td>
</tr>
<tr>
<td>7. Was the scientific quality of the included studies assessed and documented?</td>
<td>‘A priori’ methods of assessment should be provided (eg, for effectiveness studies if the author(s) chose to include only randomized, double-blind, placebo-controlled studies, or allocation concealment as inclusion criteria); for other types of studies, alternative items will be relevant.</td>
</tr>
<tr>
<td>8. Was the scientific quality of the included studies used appropriately in formulating conclusions?</td>
<td>The rigor and scientific quality of the methods used should be considered in the analysis and in the conclusions of the review, and explicitly stated in formulating recommendations.</td>
</tr>
<tr>
<td>9. Were the methods used to combine the findings of studies appropriate?</td>
<td>For the pooled results, a test should be done to ensure the studies were combinable, to assess their homogeneity (ie, χ² or I² tests for homogeneity). If heterogeneity exists a random effects model should be used and/or the clinical appropriateness of combining should be taken into consideration (ie, is it sensible to combine?).</td>
</tr>
<tr>
<td>10. Was the likelihood of publication bias assessed?</td>
<td>An assessment of publication bias should include a combination of graphical aids (eg, funnel plot, other available tests) and/or statistical tests (eg, Egger regression test).</td>
</tr>
<tr>
<td>11. Was the conflict of interest stated?</td>
<td>Potential sources of support should be clearly acknowledged in both the systematic review and in the included studies.</td>
</tr>
</tbody>
</table>

Grading Evidence Quality

Following the screening and selection process, the included studies (the “body of evidence”) are critically appraised for quality, using the GRADE methodology. This approach allows guideline developers to understand the combined weight and quality of the evidence, including direction and strength of association, and possible underlying heterogeneity (or differences in the estimates of effects between studies).

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The evidence is then used to create preliminary clinical recommendations. The strength of these recommendations is graded to reflect the extent to which a guideline panel is confident that the desirable effects of an intervention outweigh undesirable effects (or vice versa) across the range of patients for whom the recommendation is intended. GRADE focuses on four key factors that must be considered when assigning strength to a recommendation: balance between desirable and undesirable effects, quality of evidence, values and preferences, and cost (Table 6). The final outcome of this process is the creation of evidence-based clinical recommendations that address the clinical questions posed at the outset of the process. A recommendation may contain one or more parts. Rationale statements—explicitly addressing the four GRADE strength of recommendation domains—are written to explain the logic that links the evidence synthesis and GRADE analysis to the appropriate recommendation (Table 7).

Guideline Dissemination and Implementation

Following the completion of a CPG, next steps in KP’s process include dissemination and implementation activities.
CMI disseminates all KP national guidelines to its eight Regions via postings on its Clinical Library Intranet site, a Web-based internal information resource. From the Clinical Library, physicians and health care professionals throughout KP can then access the guidelines.

Ideally, the goal of guideline implementation is to enhance the likelihood of successful changes in practice, specifically the increased application of evidence-based practices. KP’s multifaceted approach to guideline implementation (Figure 4) includes, as the central feature of its process, its integrated EHR, KP HealthConnect. This allows KP to provide point-of-care support and guidance for clinicians.

Guidelines are embedded in the process of care delivery through KP HealthConnect standard orders, alerts and clinical tools, program protocols, clinician reminders, member education and outreach, and other tools. Generally, these tools are developed by each Region to meet local needs. Prompts within the EHR or “SmartRx” prompts provide explicit guidance regarding pharmacologic choices; best practice alerts provide active reminders to clinicians and patients; “SmartSets” are standard order sets that provide comprehensive recommendations (e.g., lab tests, medications, etc) for a variety of illnesses and disease states.

A variety of additional decision support tools and summary documents, including guideline change documents, diagnosis-specific quick reference guides, clinician and staff educational materials, and patient education materials may be developed to support recommendations. Guideline change documents outline any changes as compared with previous versions of a CPG.

Support of Quality Improvement Initiatives
KP’s CPGs are intended not only to enhance patient and clinical decision making but to improve health care outcomes and quality of care, to meet state and federal regulatory requirements, and to support voluntary organization accreditation and internal quality improvement and patient safety initiatives. Through the use of KP patient data, clinical care gaps can be identified, performance and quality goals developed, and specific initiatives implemented through clinical guideline recommendations that address best practices.

Conclusion
If you are a user or developer of guidelines, a consumer or clinician, or are an administrator or operations specialist, transparency regarding CPGs and how they are developed should matter to you.

Table 7. Rationale/decision table example: aspirin therapy in the general primary prevention population

<table>
<thead>
<tr>
<th>Subgroup</th>
<th>Quality of evidence</th>
<th>Balance of benefits vs harms and burdens</th>
<th>Values and preferences</th>
<th>Resource implications</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>General primary prevention population</td>
<td>High—no serious limitations</td>
<td>These analyses show a modest benefit overall. However when investigated independently, evidence fails to show the benefit of aspirin in healthy patients without a history of diabetes, stroke/TIA or CKD. There may be minimal benefit of aspirin in patients with low risk for CVD, although a small risk of major bleeding would also exist. At &lt;10% 10-year CVD risk, the GDT believes risk would outweigh benefits. As risk for CVD increases, the benefit of aspirin outweighs the risk of major bleeding.</td>
<td>The GDT believes, as risk for CVD increases, patients would generally value the potential mortality benefit of aspirin higher than the potential risk of serious bleeding. Because of variation in CVD risk, there would likely be significant variability in patient acceptance of aspirin therapy.</td>
<td>Low</td>
<td>For patients with no established CVD, atherosclerotic cerebrovascular disease, noncoronary atherosclerosis, type 2 diabetes, or CKD; clinicians: 1. Should prescribe aspirin to those with &gt;20% 10-year risk for CVD. (Strong Recommendation) 2. May prescribe aspirin to those with 10% to 20% 10-year risk for CVD. (Weak Recommendation) 3. Should probably not prescribe aspirin to those with &lt;10% 10-year risk for CVD. (Weak Recommendation)</td>
</tr>
</tbody>
</table>

CAD = coronary artery disease; CKD = chronic kidney disease; CVD = cardiovascular disease; GDT = guidelines development team; TIA = transient ischemic attack
Transparency Matters: Kaiser Permanente’s National Guideline Program Methodological Processes

Anecdotalism

The danger as always is anecdotalism, the inherent deception of drawing a broad generalization from very few cases. A pejorative cloud hangs over the anecdote in medicine. Exceptions are allowed: there seems to be little danger in the illustrative use of a similar case during the discussion of a differential diagnosis or in the citation of a notable exception as a cautionary example that marks the limits of a topic under discussion.

— Doctor’s Stories, Kathryn Montgomery Hunter, PhD, Professor of Medicine and Medical Ethics and Humanities
“Green Bridge—Florence, OR”

photograph

John Davenport, MD, JD

Dr Davenport is the Director of Primary Care Services for the Orange County Service Area and the area Physician Risk Manager.
Altered Mental Status in an Elderly Woman with Concurrent Takotsubo Syndrome and Polymyalgia Rheumatica: A Case of Treatable Geriatric Delirium

Hien Nguyen, MD; Connie Le, MD; Hanh Nguyen, MD; Nam-Tran Nguyen

Abstract

We present a unique case of a patient, aged 80 years, who presented with delirium and takotsubo syndrome. Also known as “broken heart syndrome” because it often originates following an emotional stress, takotsubo syndrome may be difficult to distinguish from myocardial infarction because of similar symptoms and demographics. However, the distinction of these opposing diagnoses is significant because takotsubo syndrome is associated with more favorable prognosis for complete recovery, especially with early diagnosis and expedient supportive therapy. To our knowledge, we present the first case of takotsubo syndrome in which the diagnosis was made in an elderly patient presenting with delirium and in the absence of the hallmark symptoms of chest pain and dyspnea. Finally, we describe this patient’s coexistent diagnosis of polymyalgia rheumatica and speculate on its possible theoretic relationship to takotsubo syndrome.

Introduction

Takotsubo syndrome has historically been considered quite rare but currently is suspected to be underdiagnosed, because the estimated incidence is approximately 1.7% to 2.2% of patients presenting with acute myocardial infarction (MI).1,2 It is important that physicians be familiar with this diagnosis because the elderly are rapidly becoming a large segment of the population. An enigmatic condition first described in 1990, takotsubo syndrome has the cardinal symptoms of angina and dyspnea, mimicking acute coronary syndrome.1,2 We present a case of rapidly reversible delirium heralded by the diagnosis of concurrent takotsubo syndrome and polymyalgia rheumatica (PMR).

Case Report

A black woman, age 80 years, with type 2 diabetes and hypertension was admitted to the hospital because of an acute change in sensorium evolving over two days, with abrupt aberrant sleep-wake cycles (agitated and awake at nighttime; sleeping in the daytime), fluctuating disorientation to family members, and refusal of food. At admission, it was found that her medications included mirtazapine, lisinopril, metformin, atenolol, simvastatin, and aspirin. A full review of organ systems revealed a five-pound weight loss, fatigue, myalgias, and low-grade fevers over the preceding month. The patient reported no chest pain, shortness of breath, headaches, abdominal pains, or falls at any time period before or during her acute decompensation. However, later during her hospital stay, a family member reported that the patient’s sister had recently died.

At admission, she was febrile, with a temperature of 100.3°F, and this continued intermittently throughout her hospitalization. Examination showed her blood pressure to be 73/49 mm Hg, her pulse to be 90 beats/minute, and her respiratory rate to be 22 breaths/minute. She had leukocytosis (30,000 cells/mm³), mild acute renal insufficiency (creatinine of 1.8 mg/dL), normal acid-base values, and slightly elevated liver enzyme levels. Her erythrocyte sedimentation rate was elevated, at 91 mm/h, and her C-reactive protein level was elevated, at 153 mg/L. Findings were normal on flow cytometry studies and on tests to evaluate for connective-tissue diseases, including antinuclear antibody, rheumatoid factor, anti-SSA, anti-SSB, cytoplasmic antineutrophil cytoplasmic antibodies, perinuclear antineutrophil cytoplasmic antibodies, hepatitis, cryoglobulins, and anticardiolipin antibody. Findings on blood cultures for infectious etiologies and on tests for mononucleosis, Lyme disease, thyroid disease, syphilis, human immunodeficiency virus, tuberculosis, and Clostridium difficile infection were all normal. Neither whole-body computed tomography (CT) scanning of the chest, abdomen, and pelvis nor postron-emission tomography, indium white-blood-cell scanning, or gallium scanning revealed occult infection or malignancy.

An initial electrocardiogram revealed new acute deep T-wave inversions in all precordial leads, along with an old right bundle-branch block (Figures 1 and 2). Initial creatine kinase MB fractions and troponin levels were normal, as were follow-up serial cardiac enzyme levels. An initial echocardiogram demonstrated mild concentric left ventricular hypertrophy with a severely depressed ejection fraction of 20% and prominent apical ballooning (Figure 3). Complete restoration of cardiac ejection fraction was confirmed by echocardiography one week later (Figure 4). Cardiac CT scans demonstrated normal coronary vasculature, other than minimal coronary calcifications. Findings on a nuclear stress test were normal, with an ejection fraction of 58%. Thus, the consulting cardiologist recommended medical management. Initially, cardiac catheterization was contemplated, but it was not completed because cardiac function was rapidly reversible and because of benign findings on noninvasive evaluations. In the interim, the patient was treated with standard supportive therapy, including oxygen, acetylsalicylic acid, and intravenous hydration for hypotension.

Once infectious etiologies were excluded, a rheumatology consultant initiated corticosteroidal therapy at a dose of 20 mg of prednisone daily because of concern about the possibility of PMR, which was based on the patient’s clinical presentation and strikingly elevated levels of markers for inflammation. The patient’s cognition, laboratory-test findings, and...
functional status improved rapidly within less than one week, so she was transferred to subacute care with indefinite continuation of the prednisone dosage.

**Discussion**

**Delirium**

To the best of our knowledge, the case we present here is the first reported case of takotsubo syndrome in which delirium, in the absence of chest pain and shortness of breath, was the primary and unexpected manifestation. Our findings are in contrast with those of Malone et al., who reported that delirium may be the initial presentation for MI, the closest correlate of takotsubo syndrome. In that study of very old patients with acute MI, delirium developed in 28%; delirium was only rarely the initial presentation for MI.

Delirium involves acute global changes in cognition and consciousness. Its causes can be placed into four broad categories: metabolic, toxic, structural, and infectious. An alternative classification scheme is medical, chemical, surgical, or neurologic. However, delirium often has multiple causes, as was the situation with our patient, who had multiple preexisting medical comorbidities and presented with multisystemic disease. We believe that her delirium was primarily caused by metabolic derangements (hypotension, renal insufficiency, and transient heart failure). A frequent iatrogenic cause of delirium in the elderly is overmedication with, for example, tricyclic antidepressants and antiparkinsonian drugs. Elderly persons are especially at risk for delirium because of preexisting cognitive impairment, medical and psychiatric comorbidities, functional impairments, and polypharmacy.

**Takotsubo Syndrome**

A diagnosis of takotsubo syndrome is based on four criteria developed by the Mayo Clinic: transient hypokinesis or akinesis of the left ventricle, sparing the apex; exclusion of obstructive coronary disease; electrocardiographic changes, including ST segment or T-wave inversions, and/or mild cardiac enzyme elevations; and exclusion of pheochromocytoma or myocarditis. The syndrome is sometimes called “broken heart syndrome” because of its high correlation with a stressful life event. Diagnosis is important because cardiogenic shock, pulmonary edema, dysrhythmia, left ventricular thrombus or free wall rupture, and death (mortality, 1.7%–2.3%). Takotsubo syndrome is also known as the broken heart syndrome because a stressful emotional stressor is often the trigger for the disease.

In spite of the well-defined symptomatology of takotsubo syndrome, its diagnosis may be challenging because of ethnicity-, age-, and sex-related differences in presentations. Although 90% involve postmenopausal women older than 67 years, occurrences have been...
The literature describes two distinct cases of takotsubo syndrome associated with other acute conditions in which corticosteroids were interestingly prominent in the resolution of this cardiomyopathy, such as is illustrated in our case. Ukita et al reported resolution of takotsubo syndrome after corticosteroid therapy; the syndrome had developed during an acute adrenal crisis because of isolated adrenocorticotropic deficiency. Radhakrishnan and Granato reported resolution of this cardiomyopathy after corticosteroid therapy; it had developed during thyroid storm.

PMR has not been previously described with delirium to our knowledge, and it is most closely related to temporal arteritis. Pascuzzi et al reported that a patient with temporal arteritis had a primary presentation of delirium—delusional thinking without concomitant headache or visual loss. We acknowledge, though, that our patient presented with other metabolic impairments that we believe contributed strongly to the development of delirium.

Conclusion

We presented the case of a patient with rapidly reversible delirium heralded by concurrent takotsubo syndrome and PMR. Both conditions are uncommon in general and even rarer when diagnosed concurrently in a single patient. Furthermore, our patient is black, a group that is not typically considered prone to PMR. Scandinavian people have been reported to have the highest rate of PMR, whereas black and Hispanic groups have the lowest rates.

Our case demonstrates valuable teaching points in the challenging management of delirium in an elderly patient. Delirium can have multiple etiologies, and atypical presentations for common medical conditions are commonplace in elderly patients presenting with delirium. Further research may be useful in searching for a possible relationship, based on sympathetic dysfunction, between takotsubo syndrome and PMR. This research will likely be facilitated by the rapid acceleration in the world’s geriatric population and an accompanying increase in the incidence of both of these medical conditions.

Disclosure Statement

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

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References

CASE STUDY

Patient Safety in Surgical Residency: Root Cause Analysis and the Surgical Morbidity and Mortality Conference—Case Series from Clinical Practice

Samir Johna, MD; Taylor Tang, MD; Maryam Saidy, MD

Abstract
Although the surgical morbidity and mortality conference (SMMC) has been a core educational venue for surgical education and quality assurance (QA), its current format focuses mainly on human errors rather than system failures, which are responsible for the vast majority of medical errors. To avoid having surgeons seemingly put on trial, root cause analysis (RCA) can be used as an effective way of analyzing system failures and of finding possible solutions for them. Preliminary data confirm the value of RCA in that respect and promise a great potential for improving patient safety away from the culture of blame. Bringing the findings of RCA to the SMMC has the advantage of having both perspectives—human errors and systems failures—thus enhancing surgical education, improving QA, and hopefully improving patient safety. However, although this seems to be a novel approach, several factors should be considered before its implementation, such as the quality of analysis, cost-effectiveness, and actual impact on patient safety. We believe that to maximize learning, sentinel events that currently require RCA should not be discussed in SMMCs until the findings of RCA are available for review. The use of some of the tools of RCA should be considered when discussing nonsentinel events during SMMCs.

Introduction
Historically, the surgical morbidity and mortality conference (SMMC) has been a core educational venue, a quality-assurance (QA) tool, and a way to socialize a surgical trainee into the culture of surgery.1 Traditionally, the hospital course for a given patient is presented with the rationale for the provided care. The decisions are then critiqued by the most experienced and senior surgeon in attendance. Any perceived errors in the patient’s care are highlighted. The primary premise is that we learn from our errors, and through this education, the quality of subsequent patient care is improved.2 However, along with the candid discussion of error, the surgeon’s personal culpability in any error or death of a patient has been the cornerstone of the SMMC. This proclamation of accountability is the means by which a surgical apprentice is socialized into a surgeon.3 However, the hierarchy that has been created, in which a surgeon accepts full responsibility for everyone’s actions, particularly in cases of gross error, has led to a culture of blame.4 Thus the SMMC is often focused on human errors and only occasionally addresses system failures that are responsible for the vast majority of medical errors. Recent evolution in health care delivery mandates a de-emphasis of personal responsibility for error. Root cause analysis (RCA) is one of the most effective ways to analyze system failures and find possible solutions to them. Preliminary data showed that RCA not only shifted analyses of adverse events toward system vulnerabilities4 but also improved patient safety.5 Using RCA results in SMMC may bring the best of the two worlds together to enhance surgical education, QA, and teaching of patient-safety skills in surgical residency.

Case Series
To put matters into perspective, we consider here a case series of three sentinel events that were discussed in SMMCs and were also subjected to RCA, analyze the findings from each approach, identify what was learned, and pinpoint how it was translated into potential patient-safety practices.

First Case
During a mastectomy for breast cancer, the surgeon discovered a piece of a guidewire under the superior skin flap from a long-term central venous access catheter that was placed by a different surgeon. The retained foreign body was removed without any further complications.

Second Case
A few hours after completing a laparotomy, a surgeon suspected that a laparotomy sponge might have been left behind in the patient’s abdomen. The patient was taken back to the operating room for removal of the retained foreign body.

Third Case
A patient underwent spinal decompression. The surgery was completed as planned on the proper side but at the wrong level, in spite of the use of intra-operative imaging modalities.

Analysis
Not much was learned from the SMMC; all three surgeons accepted responsibility for their errors and indicated that they should have been more vigilant during surgery. Are surgeons the only responsible professionals for these errors, though? Do we know if other members of the surgical team could have been responsible too? To find out, we subjected all three cases to RCA as required for all sentinel events.

First Case
In the first case, RCA showed two factors to be the proximate cause for the error: 1) a process factor when a post-insertion chest x-ray was not obtained and 2) a controllable environmental
CASE STUDY

Research has shown that there is a wide variability in the quality of RCAs between institutions.

factor when the surgeon failed to realize that the guidewire was much shorter than expected. At the time of the insertion of the central venous catheter, there was no policy requiring the surgeon to inspect the guidewire when it was pulled out. In view of these findings, three action plans were adopted: 1) the operating-room committee enforced a policy mandating that all such procedures be performed under fluoroscopy and be followed by the acquisition of a chest x-ray; 2) all staff involved in these procedures completed an in-service education program; and 3) random audits by the QA Department were set in motion to ensure compliance with procedures.

Second Case

In the second case, RCA showed two factors to be the proximate cause for the error: 1) a process factor when the circulating registered nurse and the scrub technician did not view the laparotomy sponges as they counted them and 2) a human factor when a drift in policy was identified regarding where to place the sponges as they are being counted. An additional system issue or human resources issue was identified: The circulating nurse and the scrub technician did not perform their duties as expected. The surgeon in this case was not at fault. In view of these findings, new strategies were adopted: 1) a Devon Bag-It sponge counter bag (Covidien, Mansfield, MA) was to be used in all operating rooms. This bag looks like a shoe holder that hangs on a pole. Each slot holds one sponge that can be viewed by the scrub technician and by the circulating nurse as they are counting aloud and concurrently; 2) leadership accountability was also put in place to prevent drift from and workarounds of existing policies; 3) adequate in-service education programs were provided; and 4) random audits by the QA Department were set in motion to ensure compliance.

Third Case

In the last case, RCA showed process factors to be the sole proximate cause for the error: The translation of the preincision marking for the proper level on the spine turned out to be a difficult task because of anatomic considerations. In view of these findings, policies were created to deal with potentially difficult situations in which preoperative marking with clamps and spinal needles at the intervertebral levels may be used before an incision is made: 1) intraoperative radiology consultation was to be considered when necessary; 2) a final confirmatory intraoperative radiograph was to be obtained and the proper site was to be confirmed before the wound was closed; 3) all surgeons were provided with in-service education and were proctored for proper execution of the policies; and 4) random audits by the QA Department were set in motion to ensure compliance with policies.

Discussion

The traditional format of SMMCs, particularly for sentinel events, has cultivated a culture of blame in which the surgeon is expected to accept full responsibility for everyone’s actions. Such an approach may not be in the best interest of patients, given that the vast majority of errors result from system failures rather than human errors. To complicate matters, professionals from other disciplines that play a pivotal role in the safe conduct of operations sometimes in which preoperative marking with clamps and spinal needles at the intervertebral levels may be used before an incision is made: 1) intraoperative radiology consultation was to be considered when necessary; 2) a final confirmatory intraoperative radiograph was to be obtained and the proper site was to be confirmed before the wound was closed; 3) all surgeons were provided with in-service education and were proctored for proper execution of the policies; and 4) random audits by the QA Department were set in motion to ensure compliance with policies.

although RCA is currently required for all sentinel events, the results of the analyses are not shared among professionals because they are considered privileged and confidential material, which means that no one other than the parties involved will ever learn from them. It is no wonder, then, that surgeons often resent having to accept new policies; they are not often given the rationale behind the policies. Sharing RCA results with all surgeons in yet another protected SMMC may narrow the gap between policy makers and practicing surgeons by making possible, in a safe environment, a mutual discovery of the forces that are driving policy changes in efforts to prevent litigation. Such a process is likely to provide a single platform for addressing medical errors and their causes, whether human error, system error, or combination of both. Although discussion of error analysis as an aspect of personal failure is a potent stimulus for education, there is a strong belief that correcting adverse events should not be done through any assessment of blame or personal culpability. Such opportunity enables learners to find the best measures in a friendly environment to avoid future errors and could play a major role in enhancing patient safety. Once the culture of blame is eliminated or minimized, such discussions should probably be considered for near-miss events, particularly in the setting of SMMCs, where members of all disciplines will be able to learn from error analysis and move forward with further education, QA, and potential enhancement of patient safety.

In spite of its potential benefits, RCA is a complex and labor-intensive process with many problems of its own. Research has shown that there is a wide variability in the quality of RCAs between institutions. Many RCAs are performed incorrectly or incompletely and do not produce usable results. Furthermore, RCAs are time consuming and very costly, and there have not yet been any studies of their effectiveness in reducing risk or improving patient safety.

Data from the US Department of Veterans Affairs (VA), the pioneer of RCA, show that more than 7000 RCAs had been completed as of 2009. Experts estimate that each RCA requires 20 to 90 person-hours to complete. At an average of 55 person-hours each, RCAs conducted by the VA have required a total of 385,000 person-hours. Even with a very conservative estimated cost of $25 per person-hour, those RCAs cost the VA $9,625,000. To date, there have been no evaluations of the cost or cost-effectiveness of RCAs compared with other tools for mitigating hazards.

Because RCA is currently required by QA rules for all sentinel events, it would be appropriate for the time being to delay the discussion of any sentinel event
in an SMMC until the RCA results are available. Such an approach will provide more insight into the events that led to the error, particularly with input from other disciplines involved in the care of the patient. For near-miss events when RCA is not required, some principles of RCA can still be used during SMMCs to further surgical education, improve QA, and increase the potential for enhancement of patient safety. Once the idea is applied, enough data can be generated to measure its efficacy, cost-effectiveness, and its impact on patient safety.

Conclusions

Although combining RCA with SMMCs appears to be a novel tool for minimizing errors, enhancing surgical education, and improving patient safety in a friendly, blame-free environment, several factors should be considered, such as quality of the analysis, cost-effectiveness, and actual impact on patient safety. QA professionals, Surgery Department leaders, and surgery educators should work hand in hand to experiment with and fine-tune modalities that can achieve their goals in an efficient and cost-effective manner. 

Disclosure Statement

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

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References

Image Diagnosis: Perilunate and Lunate Dislocations

Jennifer A Newberry, MD, JD; Gus M Garmel, MD, FACEP, FAAEM

Perilunate Dislocation

Anterior-posterior (AP) view (Figure 1) demonstrates the distal and proximal carpal rows overlapping, as well as a complete radial styloid fracture. Lateral view (Figures 2 and 3) demonstrates dorsal dislocation of the capitate, whereas the lunate remains articulated with the radius. More often seen in young men in their teens to twenties, rather than children or the elderly, it is a high-energy mechanism that causes wrist hyperextension resulting in perilunate dislocation.1 As seen here, it is more common to see an associated fracture of a carpal bone, such as the scaphoid, or an associated radial or ulnar styloid fracture, rather than a dislocation alone. An estimated 16% to 25% of perilunate dislocations are missed on initial exam, resulting in increased morbidity eventually requiring open reduction with fixation and sometimes salvage repair.1
Lunate Dislocation

Lateral view (Figures 4 and 5) demonstrates volar displacement of the lunate. Known as the “spilled teacup sign,” the lunate on end resembles a tipped cup. In addition, the capitate is seen dorsal to the lunate. AP view (Figure 6) shows disruption of the greater and lesser arcs with the lunate having a triangular silhouette, known as the “piece of pie” sign. Often caused by falling on an outstretched hand, patients will have tenderness to palpation over the dorsum of the wrist and may have sensory deficits in the median nerve distribution. All carpal dislocations require immediate reduction and stabilization, often by an orthopedic surgeon. If reduced successfully in the Emergency Department with procedural sedation, consultation with a hand, orthopedic, or plastic surgeon is advised. Complications include median nerve entrapment and chronic carpal instability.

References
There are in fact two things, science and opinion; the former begets knowledge, the latter ignorance. —Hippocrates

Abstract

Medicine has traditionally focused on specialty and subspecialty expertise, which subsequently leads to fragmentation, inefficiencies, and lack of accountability. From this focus came a new idea: The Institute. The Institute has transformed our culture, fundamentally affecting the way we approach patient care and how we foster accountability rather than blame. It focuses on system failures rather than individual ones, which ultimately drives us to act. The result is a peer-review process built on strong interdisciplinary relationships.

Essential Elements

Four essential sets of elements have influenced the formation and success of The Institute at CSM: 1) the right people with the right attitude, 2) timing and tempo, 3) a common language, and 4) a common process.

The Right People with the Right Attitude (Stacking the Deck): The key to any initiative is not the project idea itself but the people who embody the concept. Finding champions is simple in theory but difficult in practice. The “right” people should have certain character traits that allow the concept to take root and grow:

- They should be well-respected clinicians who are open and honest and yet exhibit a healthy level of caution and prudence, rather than cynicism or pessimism.
- They should promote teamwork and be capable of facilitating difficult but needed discourse while remaining focused, respectful, and professional.
- They should be not only champions of the concept but also formal or informal leaders. Finding one or two individuals with the right attitude is quite possible; finding an entire group can be challenging. This leads us to the second set of elements: timing and tempo.

Timing and Tempo (Pull, Don’t Push): The key to the success of The Institute at CSM was medical staff involvement in design and implementation. We started small and focused on areas of need or interest. As those areas experienced success, other areas began to show interest and the concept spread. Our strategy was to recognize those individuals who were ready for change and to provide them with timely knowledge and support. Having the right people at the right time was not enough. We needed the third element: a common language.

A Common Language: A common language is the cornerstone of the exchange of ideas. To advance The Institute concept, we had to adopt a common language. To achieve this, we formed a relationship with Healthcare Performance Improvement, LLC, a consulting company specializing in improving human performance in complex systems. They developed the Safety Event Classification as a reliable methodology to define, classify, and measure harm in health care. This taxonomy allowed us to exchange ideas more effectively and efficiently. We were then ready to implement the fourth element: a common process.

A Common Process: The common process begins with qualified individuals, extends to multidisciplinary group consensus, and concludes with an action plan that incorporates both individual and system issues across the continuum of care. Respecting the integrity of the process forces us to focus on the facts rather than the individual. This process prevents the hijacking of a healthy exchange of ideas. The following five steps outline the common process.

The Process Steps

There are five steps in our peer review process: 1) identifying a reason for review, 2) conducting the review, 3) reaching a consensus, 4) creating an action plan, and 5) improving performance. By completing these steps, we have transformed from a physician-centric specialty-focused model to one that is multidisciplinary, patient-focused, and accountable.

Step 1. Identifying a Reason for Review: As a first step, the reason for review is identified by a quality-improvement professional assigned to The Institute. Review reasons serve as primary decision-making

Introduction

Columbia St Mary’s (CSM), like so many health systems, historically structured its organized medical staff around specialties and subspecialties, which led to fragmentation and inefficiency. As a result, peer review followed the same form, which fostered feelings of frustration and disappointment. What for years passed as peer review was nothing more than the opinions of the powerful, used against the less well prepared or less confident. Out of this frustration came a new idea: The Institute. This innovative approach renewed enthusiasm and engagement.

The Institute is a concept that moves from a traditional, specialty-focused, and physician-centric model to one that is interdisciplinary, service-oriented, and patient centered. The Institute promotes transparency, efficiency, and accountability. This innovative approach brought CSM out of our myopic paradigm and propelled us forward to a culture of high reliability. Our ultimate vision is to incorporate clinical practice, quality improvement, education, and research as illustrated in Figure 1. In this article, we describe the essential elements and process steps of The Institute concept, an exciting outgrowth of bringing functional data analysis to effect real change in real time.

Figure 1. Template for The Institute model.

CSM = Columbia St Mary’s
filters for case selection and vary according to the patient population served by The Institute. The categories can include the Joint Commission’s core measures, unscheduled readmissions, unplanned returns to the operating room, and referrals. The Safety Event Classification is then applied, and the level of harm and event type are determined. Finally, a case summary is presented.

Step 2. Conducting the Review: A qualified reviewer leads step 2. Typically a physician, the reviewer clarifies the area of concern, using the chosen common language. The reviewer identifies and categorizes each area of concern by articulating the reason for occurrence (ie, who, what, when, where, and why).

Step 3. Reaching a Consensus: In step 3, consensus is reached regarding the area of concern and reason for event occurrence. These two components of review focus on system needs and institutional change rather than solely on individual corrective actions. In this process, learning is inherent.

Step 4. Creating an Action Plan: The discourse of issues in step 3 leads to step 4, creating an action plan. The action plan explicitly defines accountability for the individual practitioner, the peer group, and the institution as a whole. This promotes system reliability and cultural transformation.

Step 5. Improving Performance: The final step is improving performance. What hospitals need in this dynamic health care climate is an informatics platform that supports performance improvement, one that stores data, analyzes trends, and provides reports in a consistent and timely manner.

Discussion
Every new concept requires time to flourish, and this certainly was the case for The Institute. Initially we encountered limited physician engagement and skepticism. We learned early on that we had to educate both formal and informal leaders so that they could develop an understanding of and trust in The Institute concept. We started with informal, one-on-one discussions, using case-by-case examples. These conversations resulted in a level of understanding that evolved into enthusiasm and support, allowing us to take the next step—implementing a pilot that incorporated a multidisciplinary approach. By moving in this direction, we discovered that the existing medical staff infrastructure did not efficiently or effectively address complicated care issues.

By reorganizing the medical staff structure, we promoted more rapid change throughout the organization. Our Institute of Hospital Medicine incorporated physicians from the emergency medicine, hospital medicine, internal medicine, family medicine, and critical care areas, along with pharmacy, nursing, administration, and clinical excellence. Use of a standard taxonomy has broadened our approach to discussing and solving problems.

Similar institutes are formed in the areas of surgery, behavioral medicine, cardiovascular, women, infants and children, and orthopaedics. We envision additional institutes being formed in clinic-based medicine, cancer, and neuroscience. The concept is translatable to the evaluation of nursing care processes (that discipline has begun using The Institute concept at CSM), pharmacy, and perhaps more divergent hospital services such as environmental services, human resources, and finance. Time will tell.

Conclusion
This is the start of our story, as depicted in Figure 2. What has been most gratifying is how this work has been embraced intuitively by the medical and hospital staffs. Our ultimate vision is to move toward a patient-centered model that removes the fragmentation—the silo effect—by integrating clinical, operational, and administrative responsibilities. This culture exhibits a sense of interdisciplinary accountability that leads not to embarrassment or punishment but instead to innovation and reliability.

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

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References
Story to Stay Alive

An Oregon naturalist, Barry Lopez, wrote in his Native American tale, *Crow and Weasel*, “The stories people tell have a way of taking care of them. If stories come to you, care for them. And learn to give them away where they are needed. Sometimes a person needs a story more than food to stay alive. That is why we put these stories in each other’s memory. This is how people care for themselves.”

Writing Story

In this issue we publish 15 original stories and 2 poems written in 10 minutes with minor edits for clarity by physicians and practitioners at 2 writing workshops in Oakland, CA in 2009 and 2010. The workshops explored the use of reflective writing to support and sustain a satisfying medical career. The prompt was simple: recall a meaningful moment in your practice with a patient or colleague; it could be connecting, uplifting, sad, even traumatic, or enlightening, and previously unexpressed in writing.

Why do physicians and practitioners write stories? And why tell them to a group of unfamiliar colleagues? People write to learn from their experiences, to express the meaning of their life’s work. Although we remember our stories, we may not understand them until we write them on paper, and move them out into the world.

Relevance of Story

Underlining the original premise for these workshops—that supporting physician publics and overall well-being has never been more important—numerous studies indicate that approximately one of three physicians experiences burnout at any given time. In addition, growing evidence supports the importance of physician well-being above and beyond the benefits to the medical career, enhancing coping skills, increasing job satisfaction, strengthening the ability to attend empathetically to a patient’s experience of illness, and improving overall general health and well-being. One must first care for oneself before being able to care for others. The agenda for the first workshop focused on the techniques of reflective writing, observational experiences, and experiential exercises using the visual arts to complement and expand our familiar forms of written communication. The second workshop was designed as a train-the-trainer for those interested in advancing the technique of reflective writing and bringing workshops to their respective medical centers in Northern California. Used together, these workshops resulted in new insights, appreciation, and acknowledgment as validated by participant comments, such as: “I was surprised by uncovering the importance of unconscious memories,” “The stories were compelling, and I enjoyed hearing them,” and “Great connection, and great stories.” Of note, as a result of these workshops, an East Bay Writing Group was established and has met several times.

The Permanente Press Workshops

The Permanente Press (TPP) has now led over 1000 physicians and practitioners across the country through a writing workshop where each wrote and shared a story. Many of these have been published in one of several TPP publications: *The Permanente Journal*, *Soul of the Healer: Art & Stories of The Permanente Journal*, a medical literary-arts e-journal, *leaflet*, and previously published stories have been collected together in an anthology, *Narrative Medicine Anthology* (available from The Permanente Journal Web site: www.thelpermanentejournal.org). Comments from participants at these other workshops include: “This workshop affirms the work we do as clinicians.” “Elucidates the value of the story in clarifying issues and meaning of clinical encounters.” “Inspirational. Rediscovering what is human and meaningful in our daily lives and careers is a very good antidote to becoming jaded and cynical.” “This workshop opened up my eyes to how important my stories can be.” “The training-sharing I had today will help change how I view each patient interaction.” “Quite amazing how somewhat emotionally distanced physicians and caregivers can be brought out so quickly and profoundly.” “I know the people around my table better in two hours than I know the colleagues I work with everyday.”

Tribute to Writers

We publish these stories and poems as a tribute to the writers who opened their hearts and became vulnerable in expressing deeply meaningful moments in their clinical practice, and even personal lives, through writing and sharing with others at the workshops, and who now make their stories public for others to learn from. Enjoy these stories and consider writing one of your own to gain insight, understand an experience, or feel a sense of release and fulfillment. The stories will take care of you and others.

References


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One Weekend Day During Internship

One weekend day during my medical internship at Lincoln Hospital in the South Bronx, probably a Saturday, I received an admission. She was a woman in her mid thirties, well known to the medical service, with chronic renal failure. Every few weeks she would come into the emergency room with fluid retention and elevated potassium, and we would hustle around to get her to the ICU where we could initiate peritoneal dialysis.

Our ICU had 7 beds for our indigent population of 350,000 and it was shared by all of the services: Medicine, Peds, Surgery, OB. There was never a free bed, so finding a bed for one patient always required a lot of negotiation and weight-throwing. To make it worse, she came at around shift change when it is always difficult to get anyone moved in or out of a bed.

I have never been very good at weight-throwing and having started my career as an orderly and scrub nurse, I am very uncomfortable about "yelling" at the staff, which was what was required.

Before I could get my patient into the ICU, place the catheter, and start the dialysis, she had a cardiac arrest and died.

I took the full load of her death onto my shoulders. How had I let this woman die leaving children (two, or three as I now remember) motherless? I had failed when my colleagues had succeeded and why couldn’t I have been more forceful and aggressive?

I went home the next day in a dark mood. I felt as if I was a harmful, dangerous person who had no business becoming a doctor. I thought about throwing myself under a bus or at least breaking my leg on a lamppost.

Making Dad Comfortable

Image: Cold winter snowy walk, bare trees, along the Genesee River in Rochester.

My father had been ill with a mystery illness for several years, but still the call that he was admitted to the ICU with pneumonia was unexpected.

My mom had handled things well previously, a woman who always tried to see the bright side of things; now she was terrified.

Oakland to Rochester flew by.

I arrived in the ICU at the University of Rochester Strong Hospital. I felt strangely comfortable, at home, in the ICU, from years of attending on ID. The residents approached the doctor-son of their patient. Almost the first words were to see if we wanted a "full code." Seeing my past, and all the family members I had approached with this question, I stopped to consider, and then said, I needed more information. I needed to see the x-rays, talk to the attending, but until then, he was to remain a "full code." As I reviewed the films, the awareness dawned that this was cancer, not pneumonia, and this was truly the end.

We moved Dad to another floor, used CPAP to keep his O2 up, and called the family. The hospital residents ceded authority to me, as did my family, and we set about making Dad comfortable as we gathered around. The responsibility then and now seemed overwhelming, as I had (in my mind) to decide between life or death.

Outside the hospital was the Genesee River, wintry, cold, barren with a large graveyard across the way. I walked through the snow, processing and crying, letting go and remembering, dealing with my needs and those of my family. We’re five siblings, all very different, and until then had hardly spoken to each other in ten years. Now we came together to bond again, share and agree; connect.

Bare branches overhang swift water and ice. The bridge was empty.

Bill

Big, burly, with tears rolling down his face and into his snowy beard, he tried and failed to say goodbye and instead fell back into a story of his mother, her decline, and her gentle death. He included me in the story and placed me central, rather than peripheral. It is our last clinic visit, Bill and I. Our journey started years before with him driving his frail and elderly mother to her appointments with me. His caregiver role connected us—me the doctor, him the son. As she failed, we explored and discussed the most loving strategy for her ending. In that process, he soon filled the empty spot her dying left in my practice. At first, just to share sadness at her passing, then to learn about and care for him.

Now I was leaving and neither of us had words for goodbye. I am struck by his hugeness and strength. An old-time, railroad man, an engineer who dealt with the hard steel, grimy oil, and pervasive grease; these elements of the man I think I know melt away.

As I walk out of the exam room, my parting image is his sobs, his sorrow.

I know he will never leave me—this paradox of strength and softness who has allowed me such an intimate connection.

Lee Balance, MD – Chief of Alternative Medicine and of Continuing Medical Education, Acupuncturist, and Orthopedist at the Vallejo Medical Center in CA.

Denise Fuson, MD – Medical Director, Medical Weight Management East Bay; Controlled Medication Advisory Panel; Chair, Professional Well Being Committee East Bay; Oakland, CA.
Rico—My Friend

I knocked and then opened the door slowly in case he was playing in front of the mirror. He was dancing in the middle of the room, his head of big brown curls bouncing. He turned and his warm brown eyes caught my eyes; he smiled shyly and ran to mom’s lap without a noise.

“Hello,” I said, “Wonderful to see you today Rico. How are you? And how are you Mom?”

Tina had been my patient too when she was younger and now brought her son to me today for his 18-month check-up.

“How do you like his hair cut?” she asked, beaming.

I complimented her and him and asked what questions she had for me. I watched Rico; Rico watched me, eye-to-eye, while his mom and I exchanged words. He smiled; he looked away. He smiled; he looked away. We were making friends again.

He was silent.

Mom said, “I am worried he is not talking. He says ‘Mama’ and ‘Dada’ and nothing else.”

We talked a bit more about his behavior, his hearing, his health, and a few other things. Rico and I stayed engaged; he looked into my eyes and I into his. I turned on the computer; he came to stand by my side. He looked up and smiled at me.

He was silent.

He sat on Mom’s lap for his exam. He watched my every move, from listening to his heart, feeling his belly, to looking at the ear light with either a smile or interest as he followed along. At the end of his exam, I pushed my rolling stool back away toward the computer.

He began to cry.

Mom said, “He thinks you are leaving now.” I rolled back over, talked to him some more, eye-to-eye, told him how great it was to see him. I would see him again soon. Mom and I had a plan to make sure he was okay.

Rico made a new noise.

I blew him and Mom a kiss.

When I went back into the same room for the next patient there was a photo of Rico they had left for me. On the back it said: “Dr. Glaser, Thanks for looking out for my health. Love, Rico.”

Body of Work

We capture, in waveform what we think is vital.

We replace, in synthesis simply synthetic replacement fluid here, meds there, drugging and dragging humanity, vital vessels for such critical care and worldly work, through our medical mire.

Although we may not always win the battle, all is not in vain, nor merely intravenous.

And even with all advances and eager efforts, and despite disease’s effortless drive to deem a dreaded demise …

The human body, glorious in its minute clockwork coordinated physiology, remains, somehow, a living, breathing, feeling, thinking soulful sculpture of what we, both patients and providers, really are, in mind, heart, and body:

We are flawed perfection.

Matthew J Gracianette, MD – Pediatric Hospital-Based Specialist and Northern California Regional KP HealthConnect Lead for Inpatient Pediatrics, Hayward, CA.

Every Self We Possess Is Always With Us

I reviewed her history before I went into the room. She was 80 years old and on Coumadin for atrial fibrillation and was referred to me for a shoulder replacement consultation.

I walked in, greeted her, shook hands, and then asked about her medications. She rambled on about this and that and in my short time with her, I tried to capture all that was relevant and update the problem list in the electronic chart.

We talked while I examined her. She was a retired secretary, and was eloquent. She had a sweet chubby face, white hair, and used a walker. It soon became apparent that she did not want surgery. During the update of her history she asked me, “How do you stay slim, doctor?” For me that week it was a strange question. I had just had a miscarriage and felt like I carried all the “baby fat,” so I was not feeling particularly slim.

I said something about portion control and avoiding snacks. Then she teared up: “I am so fat, my mother would have thought I was disgusting. She thought fat people were sloppy. My mother died when I was 7. She would not like the way I look today.”

“You are beautiful,” I said, but she was not easily consoled. I looked into the mirror of her eyes and found myself staring back, hypercritical, and incorporating my own parents’ criticism and lack of acceptance of me.

The encounter did not take more than 25 minutes. She seemed happy about having an alternative to surgery and perhaps that I had heard her. The 7 year old who had lost her mother was also in the room that day. She would not like the way I look today.

Yassamin Hazrati, MD – Orthopaedic and Shoulder Surgeon, Vallejo Medical Center, CA.

It Was Amazing

On a commute in India, I hired a driver to take us from Delhi to Agra. It was hot, humid, even the air conditioning in the car was hot. Until the excitement of seeing the Taj prevented us from complaining, everything was beige except the gray road. Beige fields, beige dirt side roads, beige mountains. Suddenly out of nowhere, a truck passed us. It was painted bright red, vivid green, exciting yellow strips with a Christmas decoration garland strung around it.

It honked its horn repeatedly as it passed, greeting us loudly and jolting us out of our trance-like state.

The Taj disappeared as quickly as it appeared. Again beige views. We drove for miles. Every now and then we would see Rajasthani women walking along the highway.

It was always just a sight—dark-skinned women in large, solid fuchsia sari or neon green or sun-bright yellow. We couldn’t see their faces only their silhouettes and bright colors of the saris, all the same shape, same size, same carrying pots on their heads. There were no houses or villages in sight.

It was amazing. Where did they come from? Where are they going? We continued to drive through the beige landscape. Suddenly, we came upon a gathering of people—lots of people, lots of noise, some type of gathering—no, it was a parade with adults, children, music, chanting. We asked the driver what was going on. He told us but we did not understand. There was a doll—they were carrying some type of statue. Perhaps they were celebrating the birthday of a saint. The driver stopped, so we could join their celebration.

We got out of the jeep and the children rushed to us, chanting, singing, laughing and posing for pictures.

Shahnaz Iqbal, MD – Internist, Assistant Chief of Medicine, Chair of Recruitment Committee in Medicine, Chair of Credentials and Privileges, South Sacramento Medical Center, CA.
The Day I Knew I Wasn’t a Doctor

When I caught up to the medical student hospital rounding group, they all ignored me. The attending professor, crisp in his white coat with sewn blue name, positions and titles across the front of his pocket of pens, abruptly stopped, turned only his head toward me, and across his shoulder scowled. Everyone eyed me, like eleven lasers. All now displayed intense dissatisfaction. Distressed because I didn’t expect this, I stood alone, felt shunned.

Professor said, “You, Janisse! Staging your own show?
“The patient wanted …”
“Now we’re behind! This is critical work.”
“I stayed with my patient because your questioning upset him, actually, terrified him.”
“That’s dramatic.”
“He was hurt by your open discussion of his case.”
“This is rounds. You’re wasting more time.”
“He didn’t understand what you said, and misinterpreted most of it.”
“Didn’t you prepare him?” The tip of his finger shot out nearly touching my nose.
“Not for an inquisition,” I gained courage through anger, “disparaging fat comments, and general inhumanity.”
“You’re no doctor, or ever will be. Emotion throws you off. You’re a scientist, not a therapist. And I’m noting your impertinence.”
“He thinks he’s going to die.”
“He’s right. Severe heart failure. He’s got to deal with it, not you. He caused it. Your job is to examine, diagnose, and treat him, not hold his hand like a nurse!” He turned, walked through the middle of the group and led them down the corridor.
Stunned, I thought how could that be good doctoring? How arrogant! Do I need to be like that? Cold and calculating, he wasn’t even fazed. Why can’t I be like that? This objective academic approach was like an intellectual rape of the patient. I must not be the right kind of person to be a doctor. I’m not going to make it.


How Do You Respond to That?

Mary is an artist with white, shining hair, a twinkle in her eye, and a charming mischievous smile. She followed me to Kaiser Permanente (KP) from my private practice on Summit Street. Although I left there only nine years ago, it feels like it was in another life. All I recall from our encounters then was that she had a lot of problems tolerating her cholesterol medications. We tried numerous samples from drug reps before settling on Lescol, a crappy cholesterol medication compared to most, but the only one she could tolerate. I was asked to change it at KP many times but I resisted because of my memory of her experience.

As I have gotten to know her over the years, Mary has revealed more and more of herself to me. She has taken Paxil on and off in homeopathic doses for mild depression with anxiety and a tendency toward panic attacks. I never questioned her self-management and accepted and refilled the prescription when she asked.

On a recent visit, she confided to me that this time she was deeply depressed. Her sister had told her over lunch that she had hated her since she was three. I said, “How do you respond to that?” Mary shrugged. She told her story about how she was sexually abused by a family member and that the denial and cover up of this could cause all sorts of dysfunctional dynamics in her family, and that she was in some ways given special privileges that her siblings resented. Clearly, this was stuff I wasn’t trained or prepared to deal with in my 20-minute return visit. She had a bad start with her LCSW in psychiatry who seemed more intent on filling out forms and questionnaires to comply with work expectations than listening to patients unburden their souls.

I explained my suspicions about why the visit went badly and convinced Mary to give it another go.

When she returned a couple of weeks later with a rash, she had her usual twinkle and smile again. She reported that therapy was going well and her medicine was helping. Mary said the thing that helped the most was when I said, “How do you respond to that?” She had thought about that after leaving me and realized that she wasn’t responsible for her sister’s feelings, and that her sister would have to work on her own rage and maybe she just needed to stay clear of her until she did. Mary felt she was a mentor to the other women in the depression group she attended, as she had been depressed so many times over the years. She was indeed almost enjoying this passage in life. Mary thanked me for my profound question, but I don’t think it was that profound. I was just curious.

Heidi Larsen, MD – Internist, Oakland Medical Center, CA.
I Don’t Know

End of a long week
Dusk is just setting
Where is it from?
I don’t know
My friend and I approach
Is it a cat or is it a dog?
I don’t know
It is a dog
Frantic, searching—where is home?
I don’t know
We call it—it comes
“Safely” in my friend’s arms
Now what?
I don’t know
Two some years have passed—
he is mine
His name is Richmond
What would have become of him that
fateful night if he had not found me?
I don’t know

Betty Lin, MD – Physician Satisfaction and Wellness Chair and Women’s Health Liaison and OB/Gyn at the Richmond Medical Center, CA.

Re-Story Her Life

I brought her in late. I don’t remember why I was late, but she accepted my apology, for this third session. In the first, I’d felt frustrated. She was so focused on complaining about her husband, how he had been pursuing another woman, and the proof she had.

I don’t remember now what helped her shift, something I said. No, I think she said just being able to tell me. But she shifted so much by the second time and then the third, so much stronger, so much more centered.

She was very grateful, and expressed much appreciation. Why was it hard to take it in? I helped her. I helped her re-story her life, to find power, agency, where she had felt none. She took the ideas and ran with them. I remember now telling her that she did more in that moment of time than most people; she used the process well.

How quickly I moved on to the next person I have to “worry” about. That was quite a day. Ending with another amazing session—someone upset with me, disillusioned, realizing I’m not “one of us [Latino].” And I was so there.

In the first session, I was present, except for not taking in her gratitude. I took it in some, maybe more than at other times.

I helped her. I helped her. I helped her. And what an experience for her, and for me, to experience change, to experience empowering her so quickly, even with sessions spread far apart.

The connection of disillusionment was just as rich—maybe even more so. Someone I knew much more, and that felt like “real” energy—therapy that includes talking about the relationship. Just being there with her and her feelings. Just listening, and acknowledging, and asking questions to understand more. Letting her cry, tears that dropped to the floor. Because I’d returned her gift to her. So real. Her complaints, her criticisms, her pain. My mistakes. My responses. So human.

Julie Rogers, PsyD – Clinical Psychologist in the Department of Psychiatry at the Richmond Medical Center in CA.

Mortality, Motherhood, and Milk

Looking at me, she said, “Dr Reyes, I think I know what it is.” I was finishing up a visit with Imogene and her mother, one of several routine well checks I would be doing that day. Imogene was 15 months old, doing very well by my assessment. She was part of a family of 4 daughters, all my patients. As a result, I had gotten to know her mother very well and had lowered my professional guard more than usual; she was one of the few parents with whom I had shared my wedding photos. She was very certain in her belief that having only daughters was much more challenging than all sons with respect to child rearing. On one occasion, she even had the courage to ask me a personal question at the end of a visit. “Do you have kids, Dr Reyes?” Nervous about the implication of the question and its answer, I hesitantly answered that I had no children. She looked at me seriously and deadpanned, “Don’t have too many.”

I learned about Imogene at a visit for her sister. Her mother had volunteered that she was pregnant—with Imogene—and it was clear from her exasperated expression that the pregnancy was not planned. Like many of my patients’ parents, she was strong, focused, and never betrayed this disappointment again.

At her 15-month visit, Imogene displayed only one issue—she was not interested in weaning the bottle. An unsurprising trait, as was her mother’s slowness to expedite the transition. I perfunctorily described the dangers of continuing, the certainty of success with determination, and felt confident a plan was in place. As I returned to the room with paperwork and fully intent to close the visit with all details reviewed and assessed, her mother answered the question I had not asked. “Why? Why are you slow to wean the bottle?”

She said, “Dr Reyes, I think I know what it is. I know I was not happy to be pregnant. I thought I was done having kids, but now I do have her. And I feel like if she leaves the bottle behind, then she’s not my baby any more, and I really will be done.”

Her child-rearing days were far from over, but the impact of this particular transition foretold the end of those days, as well as the end of her days. Mortality, motherhood, and milk all in the same bottle.

Andre Ramos, MD – Pediatrician, Hayward Medical Center, CA.
Pretend to Listen or Hear Her Words

Such an interesting woman, although she didn't seem like it upon initial view; seemed like any other patient to walk through my door. Asking her about her situation, assuming, thinking I already knew what I needed to know but allowing her the privilege of telling her own story, more as a courtesy than a necessity. For having counseled one after the other, so many times the stories would run together, blend into sameness.

Not today, not this woman. She spoke generally at first of the edema in her legs. She spoke of the many doctors who would pretend to listen but would not hear her story. She looked at me longingly, surely attempting to discover if I would be yet another who would only pretend to listen. Or if on this day she would find a soul willing to hear her words. She began describing her situation, the conclusion she'd come to about the size of her legs. She felt there was a man in her legs. I found myself stunned, caught off guard, confused. Had she seen someone in Mental Health? What is my role here? Eat less salt lady (my brain recalling the key factors in edema), drink more water. She wasn’t listening. She was talking. Interrupt her, call her therapist? Why was she here? Who sent her to me? What is the right action here? What is my role—my scope? My brain was spinning—and then, somewhere amidst the chaos and confusion, my soul opened. My ears perked up. I fully allowed myself to enter her world. I began to ask questions, to engage, to hear her story. I was compelled to ally judgment, to be present, accepting, compassionate. I noticed a tear running down her cheek. I wish I had asked her why. Were they happy tears—someone listening brought a certain level of satisfactory joy or tears of loss, confusion, or fear? So often I find myself making assumptions about my patient's stories. So often I allow myself to believe that their story is the same, the same as others—not unique, not individual—alas unworthy of allowing the time and effort it takes to truly listen for the uniqueness of their story, the individuality of their journey and how it is they have landed here before me today.

Rashel Sanna – Senior Project Manager for The Permanente Medical Group Wellness Coaching in Regional Health Education in Oakland, CA.

The Code

I did my family medicine training at an unopposed county hospital in Salinas—where Spanish was heard just as often as English and underserved and poor was the norm. In this hospital, the residents on call were in charge of it all—the adult medicine ward, pediatrics, labor and delivery, ICU, the psych ward, and Emergency Department (ED) admissions. Three residents every night ran the show. It was terrifying.

The only thought that I had was to keep everyone alive until 6:30 am when the day crew—the other residents and attendings—came in to pick up where I had left off. During those days, I was basically numb—tired, sleep-deprived, lonely, just trying to get by. It took a lot to faze me and to make me feel. One event sticks out in particular for me. It was in my second year of family medicine training. I was the one resident in our ED working with the one lone ED attending. After seeing broken bones, suturing, giving Lasix and breathing treatments, another “code” was about to come in. The charge nurse corralled the troops into order: lab tech, nurses, radiology tech, doctors stood by in our crash room. Seconds and then minutes ticked by. Everyone got their gloves out and stood at the ready. Finally, we heard the siren of the ambulance and our “code” was wheeled in.

I had assisted in these codes before, but I really wasn’t prepared for what I saw that day. The girl lying on the gurney could not have been more than 15. Her long hair was mousy brown. Her fingernails were painted black. Her blue eyes were rolled back and up. They transferred her to the table and we all took a deep breath and sprung into activity—lines, labs, tubes, monitors. She was stripped of her clothing and then I noticed or it was pointed out the markings on her neck.

“She hung herself,” said someone around me. “Her father found her. We did CPR on the way over.”

The young Emergency Medicine doctor told me to do chest compressions while he took care of something else. What a responsibility. He was quiet. In his office because of a cough. His eyes didn’t want to look at my eyes or my face. His nose was red, bulging with alcohol. His hair was oily and ungroomed. He smelled like an ashtray. His voice was uncertain and angry. His vital signs were abnormal—his blood pressure was high. He refused to start the healthy lifestyle, quit smoking, drinking, and eating junk food. He said, “I will die anyway.” Then I told him what was in my heart; what I could see in him, maybe a hard childhood, abandonment, neglect, and discouragement.

I shook him with my sentence, “Yes, you will die someday, but do you want to choose dying with integrity and a smile on your face or do you want to have a miserable death?”

He decided to take meds and reduce his self-abusing lifestyle. Many months passed. I called a patient in, his last name started with P. He sat in my exam room, a smile on his face, well-groomed hair, still smelled like cigarettes but not the ashtray. He looked in my eyes and smiled.

His blood pressure was NL, his PSA was way down, then at the end he told me how he felt, which is now engraved in my heart. “I was never loved and cared for. I see you in my dreams; you made my life.”

He doesn’t believe I feel appreciation toward him. He said, “Goodbye—see you again,” smiling and walking away.

He helped me to believe in my intuition, my love for patients, and my bold and creative approach. His image and words open a smile on my face.

Farah Toulou, RN — Extended role RN, PHN, Drumming Facilitator in the Family Medicine Department at the Richmond Medical Center, CA.

You Made My Life

His last name started with P. He came to my office because of a cough. His eyes didn’t want to look at my eyes or my face. His nose was red, bulging with alcohol. His hair was oily and ungroomed. He smelled like an ashtray. His voice was uncertain and angry. His vital signs were abnormal—his blood pressure was high. He refused to start the healthy lifestyle, quit smoking, drinking, and eating junk food. He said, “I will die anyway.” Then I told him what was in my heart; what I could see in him, maybe a hard childhood, abandonment, neglect, and discouragement.

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Farah Toulou, RN — Extended role RN, PHN, Drumming Facilitator in the Family Medicine Department at the Richmond Medical Center, CA.

His Eyes Said It All

What struck me were his fading blue eyes and gold-rimmed spectacles. He was quiet. In fact, he did not say anything the whole time. He was a good-looking man about 30 years old. I was asked to do a liver biopsy on him. His abdomen was swollen with an enlarged liver and ascites. Even without a word, I knew he understood that he was a hopeless case. His eyes said it all. Later, after I made the deadly diagnosis of high-grade lymphoma, I found out that he died the previous evening.

Gloria Yu, MD – Pathologist, Fremont Medical Center, CA.

Rena Tacdol, MD – Family Medicine, Pinole Medical Offices, CA.
**Article 1.** (page 4) Are There Differences in Access to Care, Treatment, and Outcomes for Children with Appendicitis Treated at County versus Private Hospitals?

In this study, which statement best describes the patients and care received at county (or safety-net) versus private hospitals?

- a. a higher percentage of ethnic minorities were cared for at the safety-net hospital
- b. there was less access to advanced technology at the safety-net hospital
- c. there was a higher rate of postoperative abscess drainage at the safety-net hospital
- d. length of hospitalization was longer at the safety-net hospital
- e. there was a higher negative appendectomy rate at the safety-net hospital

A Hispanic boy, age five years, has right lower quadrant pain and an elevated white blood cell count and presented to the Emergency Department at a safety-net hospital. Which statement best describes his care?

- a. he is less likely to receive advanced imaging compared to private hospitals
- b. his outcomes will be worse compared to white children cared for at the same hospital
- c. his risk of appendiceal perforation is higher compared to children at private hospitals
- d. he is at risk of higher morbidity compared to children cared for at private hospitals
- e. the cost of his care will be higher because of a lower rate of laparoscopic appendectomy

**Article 2.** (page 28) Pharmacist Glycemic Control Team Improves Quality of Glycemic Control in Surgical Patients with Perioperative Dysglycemia

Which of the following statements is INCORRECT regarding perioperative hyperglycemia?

- a. it is associated with increased risk of deep sternal wound infection in open heart surgery
- b. it is associated with an increased risk of surgical site infections in non-cardiac surgery operations
- c. controlling it with basal-bolus (physiologic) insulin regimens has been demonstrated to reduce postoperative complications in general surgery patients, including wound infection, pneumonia, bacteremia, respiratory failure, and acute renal failure
- d. sliding scale insulin, dosed according to a patient’s current blood glucose, is the most appropriate management strategy for most surgical patients with diabetes

After implementation of a Pharmacist Glycemic Control Team at the Kaiser Sunnyside Medical Center, in 2009:

- a. glycemic control improved, but at the cost of increased hypoglycemia events
- b. after controlling for patient-level factors such as illness severity, age, sex, and poverty status, there were no measurable differences in glycemic outcomes
- c. the odds of a patient having good glycemic control (blood glucose of 70-180 mg/dL) on day 1 postoperatively improved by a factor of about 3
- d. there were no other quality improvement activities at the hospital that could partially explain the improvement in glycemic control over time

**Article 3.** (page 39) The Power of the National Surgical Quality Improvement Program—Achieving A Zero Pneumonia Rate in General Surgery Patients

You are the National Surgical Quality Improvement Program (NSQIP) surgeon champion in your facility and you have identified a performance improvement project. What is the best method to use to implement a performance improvement project in your facility?

- a. talk to your department chief and ask him to implement the new process
- b. develop a randomized trial around the improvement issue
- c. ask your hospital administration to assemble a team to address the improvement issue
- d. develop a Plan, Do, Study, Act small test of change project around the improvement issue

The NSQIP data set allows comparison between different hospitals because of adjustment of:

- a. number of beds and subspecialties per hospital
- b. level of accredited trauma care in the emergency room
- c. mean age of patient population treated
- d. risk adjustment using validated variables

**Article 4.** (page 55) Transparency Matters: Kaiser Permanente’s National Guidelines Program Methodological Processes

Kaiser Permanente uses the internationally recognized Grading of Recommendations Assessment, Development, and Evaluation (GRADE) Methodology to critically appraise the quality of a body of evidence that will provide the foundation for developing clinical recommendations. All of the following represent steps involved in this framework except:

- a. identifying critical or important clinical outcomes
- b. assessing the quality of evidence for each important outcome and across outcomes
- c. formulating recommendations based equally on quality of evidence and cost implications
- d. formulating recommendations based on quality of evidence, balance of benefits and harms, patient values and preferences, and resource and cost implications

Kaiser Permanente’s Clinical Practice Guideline (CPG) Methodology is well aligned with all of the following Institute of Medicine standards for developing trustworthy CPG’s except:

- a. establishing transparency
- b. management of conflict of interest
- c. multidisciplinary and balanced guideline development group composition
- d. primary reliance on expert opinion in the presence of a sound evidence basis
- e. assessing evidence foundations and assigning strength of recommendations

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**CME Evaluation Program**

**Objectives**

1. to include the use of evidence-based medicine as part of the science of medicine
2. to stress the art of medicine via enhanced patient-physician communication, improved care experience for patients, and more satisfying caregiving experience for physicians and staff through better teamwork
3. to review appropriate updates on the diagnosis and treatment of clinical conditions
4. to describe infrastructure and systems improvements that lead to improvements in outcomes and patient care experiences

The Kaiser Permanente National Continuing Medical Education Program (KPNCMEP) is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians. The KPNCMEP designates this educational activity for 4 AMA PRA Category 1 credits. Each physician should claim only those hours of credit that he/she actually spent in the educational activity. All editors, reviewers, and authors have no conflicts of interest to disclose; where any possible conflict is indicated, it has been reviewed and found not to have any impact on the article content.

**Section B.** Referring to the CME articles and the stated objectives, please choose your level of agreement next to each statement as appropriate.

<table>
<thead>
<tr>
<th>Article</th>
<th>strongly agree</th>
<th>strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>Article 4</td>
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The article covered the stated objectives.

<table>
<thead>
<tr>
<th>I learned something new that was important.</th>
<th>agree</th>
<th>strongly agree</th>
<th>strongly disagree</th>
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<tr>
<td>I plan to use this information as appropriate.</td>
<td>agree</td>
<td>strongly agree</td>
<td>strongly disagree</td>
</tr>
<tr>
<td>I plan to seek more information on this topic.</td>
<td>agree</td>
<td>strongly agree</td>
<td>strongly disagree</td>
</tr>
<tr>
<td>I understood what the author was trying to say.</td>
<td>agree</td>
<td>strongly agree</td>
<td>strongly disagree</td>
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</tbody>
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**Section C.** What change(s) (if any) do you plan to make in your practice as a result of reading these articles?

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