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70 Meta-Analysis of the Use of Narrative Exposure Therapy for the Effects of Trauma Among Refugee Populations
The authors retrospectively evaluated data from 47,346 women ages 50 to 62 years who had undergone mammography. Nondeformingly, extremely crucially small, screening failure if Black, Latino, “other,” or missing data was significantly associated with greater likelihood of undergoing mammography. Increasing screening among women with missing socioculturally data could improve mammography screening rates.

Implementation Study

Breast Cancer Screening in an Insured Population

John E. Kirmeyer, MPH, MDH; Bobbi Canale, BSN, MSN-A; Parsa Bahram, MD; Amanda Stevens, RN, BSN; Andrew Williams

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Implementation Study

The University of New Mexico Health Sciences Center, Office of Continuing Education.

One Operational Challenges in Delivery of a Charity Care Program for Diabetic Retinopathy Screening in a Urban Setting, Eric H. Cheith, MA, RN; Christian Chun; Jack Gutierrez; Misty Johnson; Michael Royce; Spring Robb; Karen Schabert; Paul Scherer; Zdenka Sverdlova; Karen Staley; Karen Stancil; Susan Stegeman; Sharon Stone; Jennifer Truman; Lila Williams; Bobbi Canale, BSN, MSN-A; Parsa Bahram, MD; Amanda Stevens, RN, BSN; Andrew Williams

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The University of New Mexico Health Sciences Center, Office of Continuing Education.
Implementation Study

50 Televisitiation: Virtual Transportation of Family to the Bedside in an Acute Care Setting.
Bonnie Nicholas, RN, CNCC(C), CPTC

Televisitiation is the virtual transportation of a patient’s family to the bedside, regardless of the patient’s location within an acute care setting. In Thunder Bay, Ontario, Canada, the health system embraces patient- and family-centered care. The important relationship between health outcomes and the psychosocial needs of patients and families has been recognized more recently. First Nations renal patients with family in remote communities were some of the earliest users of videoconferencing technology for this purpose.

53 Inpatient Palliative Care Consultation: Describing Patient Satisfaction.
Pashkhar Chand, MD; Teralyn Gabriel, MSW; Cathy L Wallace, RN; Craig M Nelson, PhD, CLS

This study identified and measured common patterns of patients’ positive care experiences during inpatient palliative consultation. The codified responses revealed the perspectives of patients rather than predicting outcomes. Six areas of satisfaction included: treatment with dignity and respect, being better informed, excellent overall experience, treatment plan, respect of cultural beliefs and values, and pain and symptom control addressed.

Special Report

Michael Alberts, MD, PhD

The process of diagnosing temporal arteritis remains controversial. Although temporal artery biopsy has long been the standard evaluation tool, it has poor sensitivity. Implementing a new protocol—and adding specialist clinical evaluation and color duplex ultrasonography to the standard diagnostic workup—resulted in a 38% reduction in biopsies. The percentage of abnormal biopsy results rose from 8.5% at baseline to 24%, and no cases of the disease were missed.

Special Report

Andrei Novac, MD; Robert G Bota, MD, MSC, FAPA

This article proposes transprocessing (as in “transduction” and “processing”) to denote mechanisms by which the brain processes information in psychotherapy and develops solutions that have a lasting, curative effect. Psychotherapeutic changes of the brain reframe complex or multimodal memories, deconstructed and restored through memory mechanisms at the synaptic, cellular level. The authors propose three stages of transprocessing: 1) evaluation, 2) acquisition, and 3) contextualization.

CLINICAL MEDICINE

68 Images in Emergency Medicine: Pheglemia Cerulea Dolens.
Joel T Levis, MD, PhD, FACEP, FAEM; Danny L Sam, MD, FACP

Pheglemia cerulea dolens (PCD) is a rare form of massive venous thrombosis of the lower extremities associated with a high degree of morbidity including venous gangrene, compartment syndrome, and arterial compromise. PCD is characterized by sudden pain, swelling, purple ecchymosis, and arterial ischemia with loss of distal pulses, and tense, firm, tender skin.

69 ECG Diagnosis: Hyperkalemia.
Joel T Levis, MD, PhD, FACEP, FAEM

Diagnosis of hyperkalemia is usually based on laboratory studies. Typical electrocardiogram findings progress from tall, “peaked” T waves and a shortened QT interval to lengthening PR interval and loss of P waves, and then to widening of the QRS complex culminating in a “sine wave” morphology and death if not treated. Calcium can effectively block the effect of extracellular potassium elevation on cardiac myocytes within minutes.

REVIEW ARTICLE

70 Meta-Analysis of the Use of Narrative Exposure Therapy for the Effects of Trauma Among Refugee Populations.
Nicolas Gwozdziwycz, MA; Lewis Mehl-Madrona, MD, PhD

Narrative therapies, used to treat the effects of trauma in refugees and to prevent psychiatric illness, help the person to tell his/her story until it no longer elicits anxiety. The average effect size for studies in which interventions were administered by physicians, graduate students, or both was 0.53, whereas the effect size for studies in which the counselors were themselves refugees was 1.02. Empowering lay counselors to treat their fellow refugees in future studies is warranted.

CASE STUDIES

78 The Renal Palliative Care Program.
Philip Iuso, MD

A 75-year-old man with a 25-year history of type 2 diabetes presents for long-term treatment options. His estimated glomerular filtration rate is 16 mL per minute per 1.73 m² of body-surface area. His history is remarkable for ischemic coronary artery disease, congestive heart failure, peripheral artery disease, mild dementia, and colon cancer. He has been admitted to the hospital 4 times in the last 6 months. How should his care be managed?

COMMENTARY

81 Transforming Care Delivery through Health Information Technology.
Benjamin Wheatley

Electronic health record systems provide a complete patient record at the point of care and can alleviate some of the challenges of a fragmented delivery system, such as drug-drug interactions. Moreover, health IT identifies gaps in recommended treatment and provides clinical decision-support tools. In addition, the data can be used to monitor patient outcomes and identify potential improvements in care protocols.

Online Only

CASE STUDIES

The Treatment of Angiocentric Glioma: Case Report and Literature Review
Daniela Alexandru, MD; Bijan Haghighi, MD; Michael G Muhonen, MD

Recognized since 2007, angiocentric glioma is a recently described tumor. This is the only case at the author’s institution in 15 years. This review of the literature attempts to establish prognostic parameters from only 27 cases in the literature. The most common presenting symptom was seizures. Gross total resection of the lesion was curative, without need for radiation or chemotherapy.

Available at: http://thepermanentejournal.org/issues/2013/winter.html
Neighborhood-Level Hot Spot Maps to Inform Delivery of Primary Care and Allocation of Social Resources

Nancy S Hardt, MD; Shehzad Muhamed; Rajeeb Das, MSPH; Roland Estrella, BSCE; Jeffrey Roth, PhD

Perm J 2013 Winter;17(1):4-9

http://dx.doi.org/10.7812/TPP/12-090

Abstract

Challenges to health care access in the US are forcing local policymakers and service delivery systems to find novel ways to address the shortage of primary care clinicians. The uninsured and underinsured face the greatest obstacles in accessing services. Geographic information systems mapping software was used to illustrate health disparities in Alachua County, FL; galvanize a community response; and direct reallocation of resources.

The University of Florida Family Data Center created "hot spot" density maps of important health and social indicators to highlight the location of disparities at the neighborhood level. Maps were produced for Medicaid births, teen births, low birth weight, domestic violence incidents, child maltreatment reports, unexcused school absences, and juvenile justice referrals. Maps were widely shared with community partners, including local elected officials, law enforcement, educators, child welfare agencies, health care providers, and service organizations. This data sharing resulted in advocacy efforts to bring resources to the greatest-need neighborhoods in the county. Novel public-private partnerships were forged between the local library district, children and family service providers, and university administrators. Two major changes are detailed: a family resource center built in the neighborhood of greatest need and a mobile clinic staffed by physicians, nurses, physician assistants, health educators, and student and faculty volunteers.

Density maps have several advantages. They require minimal explanation. Anyone familiar with local geographic features can quickly identify locations displaying health disparities. Personalizing health disparities by locating them geographically allows a community to translate data to action to improve health care access.

Introduction

Communities around the country are struggling to address the health care needs of residents. Job loss, reductions in employer-sponsored health insurance, and escalating costs of health insurance have left many uninsured. At the same time, safety net health care providers have limited capacity to provide primary care and health promotion and disease prevention services. With the passage of the Patient Protection and Affordable Care Act, demand for nonurgent health care access will rise; therefore, communities will need to address local needs for primary care.

The Institute of Medicine (IOM) convened a committee in 1997 to draft a set of indicators useful for monitoring community health improvement efforts. Supported by the US Department of Health and Human Services and the Robert Wood Johnson Foundation in Princeton, NJ, the committee produced a resource that has proved useful to local policymakers dealing with the rapidly shifting health care landscape. Using monitoring parameters suggested by the IOM, communities can determine current health status of the population, establish goals to improve health outcomes, address observed health disparities, and assess progress toward achieving goals. Since publication of the IOM report, geographic information systems (GIS) mapping software has become widely available, providing a useful adjunct to tabulated population statistics in determining where to invest scarce resources for the greatest improvement in health care access.

Collecting local data and using GIS mapping software to display information in maps is a process that has increasingly been undertaken by communities in partnership with the agencies that supply the information. Maps are being used to depict the health characteristics of neighborhoods and identify specific areas with unmet needs. Barnard and Hu specify a cyclical framework of population identification, population health assessment, and description of existing service utilization and distribution to enable community members and local policymakers to interact with maps to address identified needs.

The use of GIS in decision support is now a mature field. Numerous authors have cited the potential of maps to characterize neighborhoods and engage individuals. However, few articles review the consequences of engaging community members by means of maps. We report here on the process and consequences of creating “hot spot” density maps as a means to engage the community of Alachua County, FL, to address health disparities. Display of maps of Alachua County spurred collaborative action between the University of Florida (UF) Health Science Center in Gainesville, FL, and city and county
Neighborhood-Level Hot Spot Maps to Inform Delivery of Primary Care and Allocation of Social Resources

Methods

Setting

Alachua County is located in North Central Florida, with an estimated population in 2011 of 294,365. Gainesville (2010 population of 124,354) is the county seat and home to the UF, which has an annual enrollment of nearly 50,000 students. The large student population skews the demographic profile of Alachua County toward college-aged young adults, which is particularly relevant in health planning because students have access to high-quality health care on campus. The student population results in lower-than-average county rates of chronic illness and death. Growth in Alachua County has not been evenly distributed; the areas west and northwest of the UF campus have added more students and grown much faster than the rest of the county. Hence, the characteristics of subcounty areas or neighborhoods were important to ensure that local inequities in health outcomes would be detected.

Data Collection and Analysis

Descriptive statistics were gathered from publicly available national, state, and local data systems such as the US Census Bureau; Baltimore, Maryland-based Annie E Casey Foundation’s Kids Count; and the Florida Department of Health’s Community Health Assessment Resource Tool Set (CHARTS). Data were also obtained from a local health-planning agency (WellFlorida Council, Gainesville), on demographics, socioeconomic characteristics, and health outcomes for residents of Alachua County and its subcounty geographic units. The demographic and socioeconomic indicators included total population, percentage of persons 25 years and older without a high school diploma, median household income, percentage of population in poverty, and percentage of families headed by a single parent. The health indicators collected included births to women whose pregnancy and delivery care was paid for by Medicaid, low-birth-weight births, infant mortality, rates of sexually transmitted infection, child maltreatment, and death rates by selected causes (diabetes, heart disease, cancer, stroke, homicide, suicide, motor vehicle crash). Geocoded birth records were obtained from the Florida Department of Health and were linked by the UF Family Data Center to Florida Agency for Health Care Administration records to determine Medicaid status. The Family Data Center linked birth records to data from the Florida Department of Children and Families to ascertain the initial health status of children who were subsequently maltreated.

The Family Data Center used deterministic and probabilistic record linkage methods19 to produce a dataset with only point location coordinates derived from geocoding the mother’s address in the birth certificate. Records were exported into ArcGIS 9.3 software (Esri International; Redlands, CA) and projected onto an Alachua County census block group map using Albers projection.20 A census block group is a compact, contiguous cluster of geographic statistical units used to tabulate population data. To mask point location, the ArcGIS Spatial Analyst Kernel density estimation tool21 was used with a search radius of 1.6 km2 (1 square mile) with natural breaks used for color classification.

Zip codes and census tract block groups were selected as the subcounty geographic unit of interest because they allow neighborhoods to be easily identified by local residents. Health disparity measures, as recommended by the IOM report, were displayed in tabular form for the county as a whole and for 16 zip codes. Zip codes associated with residence halls on the UF campus were excluded because students have access to on-campus student health care. This restriction helps correct for the impact of the student population on countywide outcome measures. Density maps of health indicators were generated for count data using a graded color ramp to indicate degree of prevalence. The density maps by census block group highlighted conditions in neighborhoods that had been hidden in the zip code-level tabular data.

Community Engagement

The maps were brought to bear in this project as part of community engagement. The hot spot density maps were enlarged to poster size and shared widely in the community. Over a 12-month period, they were viewed at more than 20 public venues. At each venue, Family Data Center staff accompanied the maps to provide an overview, highlight major findings, and answer questions. Audiences, totaling more than 1000 individuals, included the county school district leadership, county health department officials, county library branch managers, law enforcement officers, legal aid agencies, the county health care advisory board, Gainesville city mayor, county commissioners, city and county government staff, United Way of North Central Florida, Rotary International and Kiwanis International clubs, service providers, and advocacy organizations in the area.

At the UF, maps were shared with the administrators of the College of Medicine Health Science Center and Shands hospital system, faculty, and student service organizations. The density maps captured the attention of both lay and professional audiences familiar with local geography. Although most community members had a grasp of health care access issues and health disparities in east Gainesville, the hot spot density maps (Figures 1 and 2) revealed areas of need in west Gainesville.

In addition to sharing maps, assessment of services available in west Gainesville revealed that only hospital Emergency Departments were available to uninsured adults after hours, and only pediatric patients had medical homes. When the major pediatric physician in west Gainesville closed his doors, thousands of children were left without a medical home. No churches or stores were located in the largest hot spot, and the single licensed child care center, with a capacity of 50...
children, also closed. For a resident of the hot spot area, a trip to the county health department in east Gainesville entails a 90-minute bus ride each way involving 2 transfers. Home visitation program providers and law enforcement officers expressed awareness and concern for the residents of this isolated neighborhood, but had not realized that other service providers shared this concern.

Results
Numerous actions occurred in the two years following the initial sharing of the density maps and assessment of services. In response to two presentations made to the county commission at which the hot spot maps were displayed, public service provider grantees were directed to pay greater attention to the area. United Way also asked its grantees agencies to consider extending services to the underserved area. The UF Department of Pediatrics relocated and expanded its clinic facility in west Gainesville. United Way and the public library system formed a steering committee with the Partnership for Strong Families, the local agency in Gainesville for Department of Children and Families' child abuse prevention and foster care services. The steering committee also included UF faculty members and neighborhood advocates. The purpose of the committee was to seek solutions to the unmet needs of the hot spot neighborhood. A site for neighborhood-level service provision was sought. Expansion of the existing library space to include social

Figure 1. Medicaid birth density and count by census block group (2007-2009). Blue and purple colors indicate higher concentration of Medicaid-paid births in that geographic area. Numbers in the block groups outlined with solid black lines indicate births to women who qualified for Medicaid during the time period. Red numbers indicate zip codes. Stars indicate location of mobile clinic bus stops.

Figure 2. Density maps of child abuse and neglect (2005-2008) and domestic violence (2009). Left density map displays confirmed cases of child maltreatment, including abuse and neglect. Child abuse may involve physical, sexual, or emotional abuse. Right density map shows calls to law enforcement for domestic violence incidents in the Gainesville, FL, area in 2009. Domestic violence includes “domestic disturbance” and “domestic battery.” Battery can involve any dangerous weapon, including a hand or a fist.
service providers was considered. Both options required local, state, and federal funding, and steering committee members explored potential sites and funding.

Residents of the affluent areas of west Gainesville that surrounded the hot spot became concerned that their neighbors were being overlooked in the distribution of local safety net funds. With assistance from the Alachua County Sheriff’s Department community outreach staff, a grassroots organization, the Southwest Advocacy Group, was formed. This resident-led group drafted action plans to address the challenges of living in southwest Gainesville. The advocacy work of the Southwest Advocacy Group kept the maps at the forefront of public discussion and persuaded the county commission to purchase 2 buildings to serve as a neighborhood resource and health services center. The public-private steering committee strongly supported this action. Since its opening in June 2012, the resource center has offered family support services from more than 40 providers. Services include family literacy, legal aid, recreation, and parent support. The local health department agreed to renovate, staff, and operate the second building with funds made available by the county commission and local Rotary clubs.

Until funding for the health clinic location could be secured, the county Health Department offered a family nurse practitioner to provide well-woman care and primary care if the collaborators could secure a facility. The university donated a “retired” Mobile Outreach Clinic that had been previously used to deliver prenatal care in rural Florida counties. The 11.1-m (37-ft) 1992 Blue Bird bus is equipped with 2 examination rooms, a restroom, a workup/laboratory station, and a counseling area. The UF medical student-run free clinic, Equal Access, solicited donations of equipment from members of the Alachua County Medical Society, and opened a weekly evening clinic in January 2010. In partnership with the nearby public library, students were granted weekly access to the library common space for intake. Medical students recruited local physicians, nurses, legal aid attorneys, law students, and social workers to volunteer. Dental students, pharmacy students, and physical therapy students provided services in the library’s common area.

In February 2010, the local health safety net taxing district (CHOICES in Gainesville) and the UF College of Medicine began aiding efforts of the Mobile Clinic. This support resulted in enlarging the Mobile Clinic’s capacity to deliver roughly 3000 primary care visits per year in hot spots identified by the maps. When the Mobile Clinic opened, undergraduate student organizations began supplying volunteers and the College of Nursing began participating to fulfill its community nursing education requirement. The Mobile Clinic has become a hands-on classroom, educating pre-professional and health professional students on care for the underserved. The mobile clinic delivered 4300 primary care services in Fiscal Year 2010 to 2011, and it is projected to deliver 5000 in 2011 to 2012 (Figure 3).

In addition to operating five days a week, the Mobile Clinic is used for health fairs on weekends. During health fairs, the Mobile Clinic staff and volunteers administer free health screenings and provide health education and referrals to local safety net resources. The Mobile Clinic’s monthly calendar is posted online.

The Mobile Clinic visits 8 locations weekly (see stars in Figure 1). Most of these locations are apartment complexes and neighborhood branch libraries specifically selected to address the health disparities in the hot spots portrayed on the GIS maps. Bringing the Mobile Clinic directly to neighborhoods diminishes the transportation barrier many patients face. At some clinic locations, the percentage of patients who walk to the bus is as high as 75%. These uninsured patients without transportation are no longer isolated from access to health care services.

Figure 3. Medical students staffing the Mobile Outreach Clinic. The Mobile Clinic visits neighborhood health-disparity hot spots weekly. More than 100,000 volunteer hours resulted in 4300 primary care services being delivered in Fiscal Year 2010-2011.
Left to right: Lauren Cooper, Neil Wingkun, Vikram Narayan, Elizabeth Byrne, Zahid Iqbal, Blaine Farmer, Sara Rodriguez, Melanie Adamsky, and Jennifer Goetz
Discussion
The approach that collaborators in Alachua County took is an example of community health profiling; the community is the overarching context in which all health-related variables coexist and interact, revealing the multilayer, ecologic links between people and environments.20 The process began with a commitment by the UF College of Medicine to assess local health disparities. The original health report and maps were created by College of Medicine faculty and staff who, while sharing health information, were, in return, given community-based education, law enforcement, and social service provider data to analyze. What was distinctive about the community health profiling in Alachua County was the extent to which GIS hot spot maps affected the entire process from beginning to end. Maps provided community residents, civic officials, and university faculty, staff, and students with information about locations of greatest need. Community partners contributed their knowledge of long-standing barriers as well as resources needed for improving health care and social services access. The repeated display of health-disparity hot spot maps ensured that multiple audiences could quickly interpret prevalence and trends. These visual representations required almost no narrative or explanation. The maps generated responses to conditions in a way that past tabular display of information did not.

The maps brought disparate groups together, a key achievement since no one organization is capable of solving complex social and health disparities.21 Because viewers could quickly identify the geographic locations depicted, local partners were able to contribute their knowledge about neighborhood assets, bus line access, pockets of poverty, and services needed or currently provided. Maps helped community members maintain attention and engagement of government officials to reallocate resources to specific neighborhoods.

With the opening of the Southwest Advocacy Group resource center and the expansion of the mobile clinic, the partnership of clients and providers will now shift to evaluating and continuously improving these assets to ensure their sustainability. GIS mapping will continue to play a vital role in this process because it can illustrate changes over time in the demographic, socioeconomic, and health indicators of neighborhoods. Maps therefore will play a key role in examining outcomes.

We are already observing high patient satisfaction with the care provided, and within one year, expect to see early indicators of health status improvement such as fewer teen pregnancies and fewer low-birth-weight infants in the neighborhood locations served. The work is far from done, and community partners continue planning for the provision of high-quality child care and employment opportunities for parents. Priorities have been and continue to be set by the community.

Conclusion
This project demonstrated how mapping of health disparities improved the delivery of primary care to residents of neighborhoods lacking access to health care.20-21 Maps provided the evidence for unmet health care and social service needs in Alachua County, FL. Hot spot maps can play a key role in galvanizing action because of their unique capacity through shape, color, and pattern to convey information at a visceral level. Neighborhood-level maps alert stakeholders to the presence of health inequities and can generate the stimulus for addressing areas of greatest need.

Disclosure Statement
This study was funded in part by the Jessie Ball duPont Fund and the University of Florida. The author(s) have no other conflicts of interest to disclose.

Acknowledgment
Kathleen Louden, ELS, of Louden Health Communications provided editorial assistance.

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Neighborhood-Level Hot Spot Maps to Inform Delivery of Primary Care and Allocation of Social Resources


The Most Difficult Problem

Let us hope that when some … student of this confused and disconcerting period in our history comes to tell of it, he will be able to say that at the very time when such progress in their subjects was being made as never before, … the scientists and the engineers of the country temporarily abandoned the investigations dear to their hearts … to concentrate on problems the most difficult of all to solve—those that have to do with the social well-being of the community at large.

— Harvey Cushing, 1869-1939, American neurosurgeon, pioneer of neurosurgery
Mr. Anderson is a Pharmacist in the Home Infusion Pharmacy in Portland, OR. He is a musician and has worked with wood and played music most of his life. This image developed while carving the top of a mandolin he was making, including the tools where they came to rest and the “frame” of the carving box used to secure the top plate as it is being worked.
Ingestion of Magnetic Toys: Report of Serious Complications Requiring Surgical Intervention and a Proposed Management Algorithm

Jerry Tsai, MD; Donald B Shaul, MD; Roman M Sydorak, MD; Stanley T Lau, MD; Yasir Akmal, MD; Karen Rodriguez, RN, MN, CPNP-PC/AC

Abstract

Context: Increasing popularity of strong magnets as toys has led to their ingestion by children, putting them at risk of potentially harmful gastrointestinal tract injuries.

Objectives: To heighten physician awareness of the potential complications of magnetic foreign body ingestion, and to provide an updated algorithm for management of a patient who is suspected to have ingested magnets.

Design: A retrospective review of magnet ingestions treated over a two-year period at our institutions in the Southern California Permanente Medical Group. Data including patient demographics, clinical information, radiologic images, and surgical records were used to propose a management strategy.

Results: Five patients, aged 15 months to 18 years, presented with abdominal symptoms after magnet ingestion. Four of the 5 patients suffered serious complications, including bowel necrosis, perforation, fistula formation, and obstruction. All patients were successfully treated with laparoscopic-assisted exploration with or without endoscopy. Total days in the hospital averaged 5.2 days (range = 3 to 9 days). Average time to discharge following surgery was 4 days (range = 2 to 7 days). Ex vivo experimentation with toy magnetic beads were performed to reveal characteristics of the magnetic toys.

Conclusions: Physicians should have a heightened sense of caution when treating a patient in whom magnetic foreign body ingestion is suspected, because of the potential gastrointestinal complications. An updated management strategy is proposed that both prevents delays in surgical care and avoids unnecessary surgical exploration.

Introduction

It is well known that the curiosity of children often leads to potential harm, especially when it comes to ingestion of foreign bodies. The incidence of foreign body ingestion is estimated to be more than 100,000 patients annually in the US alone. Although it has been reported that less than 1% of ingested foreign bodies require any type of surgical intervention,1 a physician’s and surgeon’s awareness should be heightened especially when the ingested foreign body has a magnetic component to it. Potential gastrointestinal complications from ingestion of multiple magnets include bowel obstruction, perforation, fistula formation, volvulus, necrosis, and even death. Magnetic beads recently popular on the adult toy market is an example of a potentially hazardous product.

The purpose of this report is to draw attention to the dangers of these magnetic toys, and to heighten physician awareness of the potential consequences. Furthermore, an updated algorithm is proposed to guide the management of patients who present with ingestion of magnetic foreign bodies.

Methods

A retrospective review of all magnet ingestions treated over a recent two-year period at our institutions in the Southern California Permanente Medical Group was performed. Institutional review board approval was not required. Patient demographics, clinical information, radiologic images, and surgical data were analyzed. These data were used to propose a management strategy that both prevents delays in surgical care and avoids unnecessary surgical exploration. In this small series, no comparative analyses were performed; however, data were analyzed to determine the means.

Ex vivo experimentation with the magnetic beads was performed to identify magnetic characteristics. The magnetic beads were tested on a calibrated flat surface. Testing involved approximation of separate magnets and documentation of distances at which the magnets would attract and cling to one another. This was performed with one magnet separate from one other magnet, one magnet separate from two adherent magnets, one magnet separate from three adherent magnets, and one magnet separate from a chain of four adherent magnets. Ten trials were performed for each combination.

Results

Table 1 reveals demographic and diagnostic data from each of the 5 patients. Patients’ ages ranged from 15 months to 18 years. Symptoms primarily included nausea and nonbloody, nonbilious emesis associated with abdominal pain. Four of the 5 patients continued to have these symptoms, whereas 1 patient (Patient C) had complete resolution of the symptoms. Each of the radiologic images revealed adherent radiopaque foreign objects consistent with the ingested magnetic beads. Migration of these objects on repeated imaging was identified in only one patient (Patient C), who was found at exploration to have an intact chain of adherent magnetic beads intraluminally without evidence of perforation, fistula, or bowel obstruction.

Abst
Table 1. Patient demographics, symptoms, and imaging results

<table>
<thead>
<tr>
<th>Patient</th>
<th>Age</th>
<th>Sex</th>
<th>Symptoms</th>
<th>Imaging results</th>
<th>Migration of beads</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>15 months</td>
<td>F</td>
<td>6 days of nausea, NBNB emesis, abdominal pain</td>
<td>6 beads adherent in a chain, 1 separate in the pelvis</td>
<td>No</td>
</tr>
<tr>
<td>B</td>
<td>3 years</td>
<td>F</td>
<td>1 day of nausea, NBNB emesis, abdominal pain</td>
<td>3 beads adherent in a chain, separate ring of 13 beads</td>
<td>No</td>
</tr>
<tr>
<td>C</td>
<td>10 years</td>
<td>F</td>
<td>10 minutes of abdominal pain, then asymptomatic</td>
<td>3 beads adherent in a chain</td>
<td>Yes</td>
</tr>
<tr>
<td>D</td>
<td>9 years</td>
<td>F</td>
<td>1 day of nausea, NBNB emesis, abdominal pain</td>
<td>Battery and magnetic bead adherent together</td>
<td>No</td>
</tr>
<tr>
<td>E</td>
<td>18 years</td>
<td>M</td>
<td>5 days of nausea, NBNB emesis, abdominal pain</td>
<td>27 beads in 2 stacked rings</td>
<td>No</td>
</tr>
</tbody>
</table>

NBNB = nonbloody, nonbilious.

Table 2 summarizes the surgical treatment and operative findings. All patients, with the exception of Patient C, had some type of serious complication from the magnetic foreign body ingestion, including pressure necrosis, perforation, fistula formation, and bowel obstruction. All 5 patients recovered postoperatively without significant complications. Total days in the hospital averaged 5.2 days (range = 3 to 9 days). Average time to discharge following surgery was 4 days (range = 2 to 7 days).

Of interest, Patient B was a 3-year-old girl with no past medical history, who presented with a 1-day history of abdominal symptoms. Patient B was witnessed to have been playing with toy magnets. This history led the evaluating physician to obtain an abdominal imaging series. Imaging revealed 3 beads aligned in a linear fashion in the upper aspect of the abdomen as well as a separate ring of 13 beads (Figure 1). Subsequent images failed to show migration, and the patient was brought urgently to the operating suite, where she underwent an esophagogastroduodenoscopy with retrieval of 1 magnetic bead in the stomach. Another bead was embedded in the gastric wall. A laparoscopic-assisted minilaparotomy was performed, with the findings of the proximal jejunal adherent to the greater curvature of the stomach. These tissues were separated, and both beads came loose. One was retrieved from the stomach via repeat upper endoscopy. The other bead was retrieved via enterotomy through an enlarged periumbilical incision. Interestingly, the beads that had formed the ring on imaging were found to be both intraluminal and extraluminal with 2 discrete areas of perforation at the terminal ileum (Figure 2). The ileum was eviscerated through the umbilical incision. The beads were broken up and removed, and repair of the terminal ileum was performed.

Table 3 shows results from the ex vivo experimentation with the magnetic beads. When a single magnet was slowly brought closer to another single magnet, the average distance at which the beads would cling together was 3.5 cm (range = 3.2 to 3.8 cm). When a single bead was tested against a chain of 2 adherent beads, the average distance at which attraction led to adherence was 4.4 cm (range = 3.9 to 5.0 cm). A single bead tested with a chain of 3 adherent beads revealed an average distance of 4.6 cm until adherence (range = 4.0 to 5.2 cm). Finally, a single bead tested with a chain of 4 adherent beads also revealed an average distance until adherence of 4.6 cm (range = 4.2 to 5.0 cm). Additionally, it was noted that a ring large enough to trap the bowel wall could be formed with 5 or more magnetic beads.

**Discussion**

Foreign body ingestion is a common scenario seen in the pediatric population. Less than 1% of ingested foreign bodies require any type of surgical intervention; however, when the foreign body has a magnetic component to it, a physician’s and surgeon’s concern should be heightened if other metal objects are present because of the likelihood that the magnet will attract metal or another magnet, causing pressure necrosis of the intervening intestine. Given the widespread use of magnets, ranging from therapeutic treatments for muscle stiffness in Asia to common household toys in the US, it is no wonder that they are often found in the hands of inquisitive children. When these objects are ingested, spontaneous
Ingestion of Magnetic Toys: Report of Serious Complications Requiring Surgical Intervention and a Proposed Management Algorithm

Injury. It should be noted that this patient was found to have the chain of adherent beads in the terminal ileum. This was likely caused by pressure-induced tissue necrosis and sepsis caused by bowel obstructions, volvulus, intestinal perforation, or intraperitoneal hemorrhage if mesenteric vessels are found between the magnets. In addition, a published report from the Centers for Disease Control and Prevention identified a single magnet being ingested by one death secondary to intestinal volvulus.

Review of the literature reveals several suggested protocols. Wilhahber et al. proposed that observation is an option when a single magnet is ingested, whereas a patient who ingested multiple magnets should be further evaluated with endoscopy or laparotomy if signs of intestinal distress develop. This strategy reflected that of Chung et al. Building on that approach, Anselmi et al. further suggested that surgical intervention would be necessary if the locations of the magnets were unchanged on serial x-rays. Vijaysadan et al., on the other hand, recommended a more aggressive approach and proposed that exploratory laparotomy should be performed if the magnetic beads have passed the pylorus and cannot be retrieved via endoscopy. Of note, Butterworth and Felits cautioned that a single magnet attracted to the gastric wall and duodenum in all cases, the magnetic beads were localized using intraoperative fluoroscopy.

Pressure-induced tissue necrosis is not surprising considering the strength of the magnetic beads. As evident from ex vivo experimentation with magnetic beads, single magnets can be attracted to other single magnets within an average distance of 3.5 cm. If these magnets are found in separate portions of the gastrointestinal tract, tissues between the attracted magnets are at risk from the pressure exerted by the magnets. Additionally, it is shown from ex vivo data that the strength of the magnetic attraction increases if multiple magnets are involved. The beads also orient themselves such that they do not repel one another.

On the basis of the experience in this series and a review of the literature, the following protocol is recommended (Figure 3). When an evaluating physician suspects magnet ingestion, abdominal radiographic imaging of the kidneys, ureter, and bladder (KUB) should be obtained. Additionally, a chest x-ray should be considered if there is concern that the ingested magnet remains in the esophagus. If the patient has persistent abdominal symptoms, such as pain, emesis, or tenderness on physical examination, urgent laparoscopic-assisted exploration and/or endoscopic retrieval should be performed. This is true even if the object appears to be a single magnet. If, on the other hand, the patient remains asymptomatic and a single metallic foreign body is evident on imaging, the patient may be discharged, with a KUB x-ray obtained on Day 1 and Table 3. Ex vivo testing of magnetic beads for distance until adherence (centimeters)

<table>
<thead>
<tr>
<th>Magnetic combinations</th>
<th>Trials</th>
<th>Average</th>
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<tr>
<td>1:1</td>
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<td>3.4</td>
</tr>
<tr>
<td></td>
<td>2</td>
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</tbody>
</table>

Figure 1. Abdominal x-ray revealing chain of 3 beads and separate ring of 13 beads.

Figure 2. Operative finding of extraluminal and intraluminal beads forming a ring at terminal ileum. Appendix is also visible, and a vessel loop occludes the ileum just proximal to the perforations.

Table 3. Ex vivo testing of magnetic beads for distance until adherence (centimeters)
Ingestion of Magnetic Toys: Report of Serious Complications Requiring Surgical Intervention and a Proposed Management Algorithm

ORIGINAL RESEARCH & CONTRIBUTIONS

Ingestion of Magnetic Toys: Report of Serious Complications Requiring Surgical Intervention and a Proposed Management Algorithm

physicians should continue to remain cautious given reports of radiographs falsely revealing single magnetic objects when in fact they are multiple adherent magnets. CXR = chest x-ray; KUB = kidneys, ureter, and bladder x-ray; NPO = nothing by mouth; Q6 = every 6; ± = with or without.

Figure 3. Algorithm for treatment of magnetic foreign body ingestion.


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Figure 3. Algorithm for treatment of magnetic foreign body ingestion.

This photograph was taken on a trip to Namibia, Africa in 2008. Namibia is the home of the Himba tribe. The Himba live a traditional life as nomadic herders. The adult women are quite striking in appearance as they cover their bodies and hair with a combination of ocher and animal fat as a beautification cream/covering. The women wear short goatskin skirts and little other clothing. Copper bracelets, as in this photo, and animal skin hair adornments add to their distinctive appearance.

Dr Hahn is a retired Family Practice Physician and former Clinical Director of the Sacramento Appointment and Advice Call Center.
Effects and Linguistic Analysis of Written Traumatic Emotional Disclosure in an Eating-Disordered Population

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Perm J 2013 Winter;17(1):16-20

http://dx.doi.org/10.7812/TPP/12-056

Abstract

Context: In previous studies, writing about traumatic life events produced positive physical and psychological outcomes in various populations. Specific linguistic trends, such as increasing insight and cognitive words, have paralleled health benefits.

Objective: This study explored the effects of written traumatic emotional disclosure on eating disorder behavior and cognitions as well as linguistic dimensions of the disclosure writings completed by eating-disordered patients.

Design: Twenty-nine female patients, aged 16 to 39 years, from the Penn State Hershey Eating Disorders partial-hospitalization program participated. Twenty-five subjects completed a traumatic disclosure or control writing task, and 21 completed all writings and baseline and follow-up questionnaires to assess eating-disorder symptoms, emotional regulation strategies, self-efficacy, and motivation to change eating-disorder behaviors. The hand-written essays were transcribed into a word-processed document and analyzed on numerous dimensions using the Linguistic Inquiry and Word Count software.

Results: Individuals completing the disclosure writing did not differ from those in the control task group on any of the questionnaires at follow-up. However, the disclosure group did use more negative emotion, insight, cognitive function, and filler words on all writing days along with decrease of tentative words. These changes in word use correlated with previous study findings.

Conclusions: Whereas the expected linguistic trends were evident in the disclosure group writings, no correlating health benefits could be found between the disclosure and control groups. Eating-disordered populations, often alexithymic, may have difficulty engaging with the disclosure task and could potentially benefit from guidance in processing traumatic events and their affective states.

Introduction

Eating disorders include the Diagnostic and Statistical Manual of Mental Disorders (Fourth Edition) diagnoses of anorexia nervosa, bulimia nervosa, and eating disorder not otherwise specified. Eating disorders develop through the interplay of social, genetic, and environmental factors and are characterized by disordered eating behaviors and cognitions. Whereas patients typically struggle with mood disturbances, low self-esteem, inefficacy, and perfectionism, eating disorders also may cause many life-threatening complications such as electrolyte disturbances and arrhythmias.

Many therapies, such as cognitive behavioral therapy, insight-oriented psychotherapy, and psychopharmacologic approaches, are used with varying degrees of success in treating eating disorders. Despite these therapies, patients frequently relapse and are often challenging to treat because of poor motivation, denial of illness, impaired insight, and emotional dysregulation.

The benefits of written disclosure have been demonstrated across various cultures, socioeconomic statuses, and patient populations. In the commonly reproduced protocol introduced by Pennebaker and colleagues, individuals write for 3 to 5 days for 15 to 30 minutes each day about either a traumatic or upsetting event or about a control task devoid of emotional content. Previous studies have revealed that expressive writing significantly improves health, with greater effect on physical than on psychological health outcomes.

Few studies have investigated the linguistics of eating-disordered patients engaging in the written emotional disclosure paradigm. One such study found that undergraduates with moderate to severe bulimia nervosa symptoms who underwent this type of disclosure used more words related to affect and cognitive mechanisms; however, no marked health benefits were elucidated. The present study was devised to investigate the benefits and linguistic trends of written emotional disclosure in patients with eating disorders and to assess whether it is a useful therapeutic modality for this population.

Methods

Twenty-nine patients in a partial-hospitalization program at the Penn State Hershey Eating Disorders Program were matched by age and diagnosis and randomized to the disclosure or control group. Only women were offered the opportunity to participate because of the limited number of men participating in the program. The patient population all had English as their first language. All participants wrote for 15 minutes on 3 consecutive days about 1 of 2 topics. The disclosure group (13 completed all writings) wrote about a traumatic or stressful experience, and members were encouraged to explore their deepest thoughts and emotions about the event, in keeping with the traumatic emotional disclosure paradigm developed by Pennebaker et al. Participants could write about the same trauma or different traumas over the 3 days. Control group participants (12 completed all writings) wrote each day about how they manage their time, as objectively as possible and without any emotional content. All participants were instructed to write continuously for 15 minutes. Throughout the study, unforeseen events required select participants...
to complete timed writings at home so that as few days as possible interrupted the scheduled writing days.

Before the writing, patients completed a series of questionnaires as a baseline measure of eating disorder pathology, psychological well-being, strategies in emotional regulation, and motivation to recover from the eating disorder. The surveys used included the Eating Attitudes Test-26, Difficulties in Emotion Regulation Scale, Eating Disorders Recovery Self-Efficacy Questionnaire, and Motivational Stages of Change for Adolescents Recovering from an Eating Disorder. These questionnaires were also completed at 1-week and 3-week intervals after completing the writing. Each of the surveys used was proved reliable, valid, and appropriate for our study population.

Throughout the study, eating behaviors were observed during program mealtimes, and pathologic eating behaviors were recorded, scored, and averaged each week. Examples of such behaviors include cutting food into tiny pieces, hiding food, and bargaining to exchange lunch items for lower calorie items. Analysis of variance between groups was used to determine whether significant differences existed between the disclosure and control groups on all measures.

Each participant’s three handwritten essays were transcribed and entered into the Linguistic Inquiry and Word Count 2007 application for analysis. The external validity of this application is supported as a linguistic analysis method and is valid for measuring verbal expression of emotion. Given our small sample size, both a two-sample t-test p value and Mann-Whitney test p value were calculated to assess differences between the linguistic dimensions of the essays. Select linguistic dimensions discussed in the traumatic emotional disclosure literature were chosen for analysis in the writings.

Results

The essays were analyzed to determine how the linguistics of the groups’ writings compared on each writing day and across the writing task through parametric and nonparametric analyses (Table 1). On each day, the disclosure group used negative emotion, cognitive, insight, function, and filler words significantly more frequently (p < 0.05). The disclosure group used significantly more positive emotion and causation words on Days 2 and 3, significantly more tentative words on Days 1 and 2, and significantly more death-related words on Days 1 and 3 (p < 0.05). The control group used significantly more words related to eating on Days 1 and 2 and significantly more first-personal plural pronouns on Day 1 (p < 0.05). There were no significant differences on any of the days with the use of first-person singular pronouns.

The changes in the writings from the first to last essay were also analyzed. The use of words related to eating declined significantly in the control group compared with the disclosure group (p < 0.001), and the use of tentative words declined slightly in the disclosure group and increased in the control group (p = 0.02). Although not significant, the use of positive-emotion words increased more in the disclosure group (p = 0.09), negative-emotion words increased in the disclosure group and decreased in the control (p = 0.23), and causation words and death-related words increased more in the disclosure group (p = 0.25 and 0.20, respectively). No significant differences were found between groups on any of the surveys used or in the number of pathologic eating behaviors displayed during mealtimes across the study or at any assessment time.

Discussion

Linguistic studies have been used to gain insight into how written emotional disclosure influences health. Most studies have used the Linguistic Inquiry and Word Count application, which has been consistently validated. This application contains an expansive dictionary and various linguistic dimensions by which words are categorized. Word count strategies provide researchers insight into the hidden psychological meaning of words. These strategies yield an understanding of how word use influences health and the aspects of language that demonstrate reappraisal of traumatic experiences. Content words (such as death, money, or friends) reveal the focus of individuals. Personal pronouns identify one’s area of interest, whether self or others, and verb tense draws attention to time, whether now, the past, or the future. The words we use reflect who we are and our social relationships.

Individuals experiencing depression and suicidal ideation use more first-person singular pronouns (I, me, mine), reflecting increased self-focus. On the other hand, individuals using more references to others with first-person plural pronouns (we, us, our) have been found to be happier and healthier because of increased social integration.

Individuals who vary pronoun use across the writing task evidence greater health benefits (decreased health center

Table 1. Changes in linguistic dimensions of disclosure group (n = 12) and control group (n = 13) writings between days 1 and 3

<table>
<thead>
<tr>
<th>Factor</th>
<th>Group</th>
<th>Mean (SD)</th>
<th>95% CI</th>
<th>p value&lt;sup&gt;a&lt;/sup&gt;</th>
<th>p value&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive emotion</td>
<td>Disclosure</td>
<td>1.53 (2.59)</td>
<td>-3.13, 0.22</td>
<td>0.09</td>
<td>0.09</td>
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<tr>
<td></td>
<td>Control</td>
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<td>-1.91, 0.50</td>
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<td>0.23</td>
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<td>Disclosure</td>
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<td>-1.60, 0.88</td>
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<td>0.08</td>
</tr>
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<td></td>
<td>Control</td>
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<td>-1.55, 0.40</td>
<td>0.23</td>
<td>0.21</td>
</tr>
<tr>
<td>Insight</td>
<td>Disclosure</td>
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<td>-3.13, 0.22</td>
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<td>0.02&lt;sup&gt;c&lt;/sup&gt;</td>
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<tr>
<td></td>
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<td>-0.35 (0.82)</td>
<td>-3.37, -1.45</td>
<td>&lt;0.001&lt;sup&gt;c&lt;/sup&gt;</td>
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<td>Causation</td>
<td>Disclosure</td>
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<tr>
<td></td>
<td>Control</td>
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<td>-2.61, 1.48</td>
<td>&lt;0.001&lt;sup&gt;c&lt;/sup&gt;</td>
<td>&lt;0.001&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Tentative</td>
<td>Disclosure</td>
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<td>-2.61, 1.48</td>
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<td>&lt;0.001&lt;sup&gt;c&lt;/sup&gt;</td>
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<td>&lt;0.001&lt;sup&gt;c&lt;/sup&gt;</td>
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<td>Control</td>
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<td>&lt;0.001&lt;sup&gt;c&lt;/sup&gt;</td>
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</tbody>
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<sup>a</sup> Two-sample t-test p value.
<sup>b</sup> Mann-Whitney p value.
<sup>c</sup> p < 0.05

CI = confidence interval; n = number in group; SD = standard deviation.
Effects and Linguistic Analysis of Written Traumatic Emotional Disclosure in an Eating-Disordered Population

Individuals who ... use causal, insight, and cognitive words across their writings ... are engaging in reappraisal of the trauma, which positively influences health.

Disclosure of events tends to increase certainty about them and result in decreased use of tentative words, which is the trend we observed. This suggests that writing about the traumatic event helped individuals process it more clearly and arrive at a more meaningful understanding of it. Frequent use of emotional words in disclosure indicates “immersion” in the traumatic event. The use of positive-emotion words (eg, love, nice, sweet) is linearly related to health, whereas negative words (eg, hurt, ugly, nasty) are curvilinearly related. This means that individuals who either rarely or frequently use negative words derive little benefit from disclosure. Those using a high number of positive and moderate negative-emotion words derive greatest benefit from emotional disclosure, as measured by frequency of health care visits.

In our study, the disclosure group used significantly more negative-emotion words on all 3 days of writing, suggesting active immersion in the traumatic event. The group also used significantly more positive words on Days 2 and 3, which has been correlated with health in many traumatic emotional disclosure studies. Given the increase in positive word use in the disclosure group, we would have expected some health benefit. However, the concurrent increase in negative words may have interfered with this effect. As previously described, frequent use of negative words has a detrimental relationship to health, indicating potential brooding and/or obsessing.

In the literature, cognitive elaboration, evidenced by use of insight (eg, think or know), cognitive mechanism (eg, cause or ought), and causal words (eg, because or effect), is related to health improvements. Individuals who demonstrate increasing use of causal, insight, and cognitive words across their writings have been shown to derive statistically significant health benefits, particularly in physical symptoms, as measured by health center visits and improved immune functioning. When using words from these categories, individuals are engaging in reappraisal of the trauma, which positively influences health. Although the cognitive and insight words did not increase over the writing task in our disclosure group as expected, cause words, which also suggest cognitive reappraisal of a traumatic event, did.

It appears that the relationship between word use and health benefits of written emotional disclosure is very complex. Whereas increased use of cognitive and insight words typically reflects improvements in health after writing, other studies have also shown this trend but without health benefits at follow-up. One study found that this trend was related to improvements in somatic symptoms but not in subjective distress, suggesting only certain types of benefits are derived. Our study demonstrated increasing use of causation words and significantly greater use of cognitive words in the disclosure group but without reduction in eating-disorder symptoms or cognitions, which is consistent with previous findings.

We also analyzed how common references to food were in the writings. On the first two days, the control group used significantly more words related to food; however, their use of food words declined significantly overall across the writing task. In our study, we noticed that individuals in the control group frequently referenced eating-disorder behaviors such as binging, purging, and calorie counting. Several individuals in the disclosure group also discussed their eating disorder as traumatic or resulting from a trauma. The similarity between groups in writing about eating-disorder themes (in the disclosure group as part of or resulting from trauma and in the control group as part of daily activities) may have evoked strong emotions in all participants and blurred the divide between our disclosure and control groups. Overall, the declining focus on food over the three days in the control group is encouraging and leads us to consider whether both groups derived some therapeutic benefit from the task.

A number of potentially confounding variables may have affected the benefits of writing in this population. Alexithymia, a reduced ability to identify and express emotion, has been observed in both anorexic and bulimic populations and may be linked to disordered-eating behaviors and rituals as well as treatment difficulties. Patients appear to use food rituals to “deaden” their affective experience. There have been mixed results in the literature regarding the utility of written emotional disclosure in alexithymic individuals, with some studies finding increased benefits in those high in visits) than those who maintain the same writing style. Pronoun flexibility signifies that an individual is viewing an event from different viewpoints and reflects a change in thinking patterns, which improves psychological well-being.

The use of first-person singular and plural pronouns—markers of self-focus and social involvement, respectively—was assessed. As the use of first-person singular pronouns is often increased in anxious and depressed individuals, we predicted that “I” statements would be more frequent in individuals discussing traumatic events; however, no significant differences between the groups were found. First-person plural pronouns, which serve as markers of social involvement, were used significantly more often by the control group on Day 1, but not on the remaining 2 days. Our disclosure and control groups may have been similar in levels of depression, associated self-focus, and social involvement, such that the topic of writing did not influence the use of first-person pronouns. There were also no significant changes in pronoun use across days. The lack of flexibility in pronoun and function-word use, signifying a static view of the traumatic event, may suggest that individuals in the disclosure group did not change their understanding of the trauma and therefore did not have reduced eating disorder symptoms.

The use of verb tenses and words signifying uncertainty also relates to how individuals view and process traumatic events. Past tense verbs are used when discussing traumatic events; however, no significant differences between the groups were found. First-person plural pronouns, which serve as markers of social involvement, were used significantly more often than those who maintain the same writing style. Pronoun flexibility signifies that an individual is viewing an event from different viewpoints and reflects a change in thinking patterns, which improves psychological well-being.
alexithymia trait and others reporting the opposite trend.\textsuperscript{13,30} It might be that alexithymic individuals do not derive the same benefits from writing about traumatic experiences as do nonalexithymic individuals because of their difficulty in identifying emotional states and the moderating role of alexithymia in disclosure.\textsuperscript{22} A necessary component of the expressive writing paradigm is identifying not only the sequence of events in a traumatic experience but also the emotions evoked by it.\textsuperscript{7} An inability to identify these emotions, common in eating-disordered and other alexithymic populations, may render the task difficult and possibly even useless without guidance. The utility of written disclosure in alexithymic and eating-disordered populations is currently unclear. Results of some studies have suggested disclosure can modestly reduce cognitive and interpersonal features associated with eating disorders.\textsuperscript{57,58} Another group suggests that emotional arousal from disclosure may be less beneficial for this population.\textsuperscript{11}

Another possible moderating factor of emotional disclosure is the coping style of participants. In patients with breast cancer, writing about the positive aspects of having had cancer is associated with psychological benefit for women high in emotional avoidance, whereas writing about the negative aspects of it was more beneficial for women low in avoidance.\textsuperscript{39} As individuals with eating disorders often struggle with emotional regulation and avoidance, the use of these coping strategies may affect the way they engage with and benefit from particular writing tasks.

Mixed findings have been demonstrated regarding the response of posttraumatic stress disorder (PTSD) populations to written emotional disclosure.\textsuperscript{52,40-43} One group found that individuals with PTSD have more difficulty with disclosure of both traumatic and positive life events. Individuals who have experienced childhood sexual abuse have demonstrated significantly more difficulty disclosing a trauma regardless of the number of times it has been disclosed, and they use less detail in their disclosures.\textsuperscript{45} Because childhood sexual abuse often is associated with avoidant coping, which mediates how individuals experience particular writing tasks, this may also influence the disclosure paradigm.\textsuperscript{40-43} Future studies may want to examine the level of alexithymia in the study participants, their coping styles, and their abuse history.

Other limitations related to our study include a small sample size, which left us with limited statistical power. Also, some individuals, because of their treatment schedule, needed to complete one or more writings at home in order to do so on consecutive days. Although it appears that completing writings at home is at least equally effective as completing them on-site and may actually be preferred, it does introduce a new variable into the study that cannot be accounted for otherwise.\textsuperscript{11,34} It also is possible that the effect of the emotional disclosure writing task may have been insignificant in the setting of active enrollment in a treatment program. We also did not account for medications or comorbid psychiatric diagnoses.

The follow-up period may not have been appropriate to capture the benefits of the writing task. Some health benefits from emotional disclosure are apparent within two weeks after follow-up, such as immunologic shifts, whereas changes in somatic symptoms may not occur until four months after writing.\textsuperscript{6} Given the varying times at which specific benefits appear and the paucity of studies on disclosure in eating-disordered populations, it is unknown whether we were assessing patients at appropriate time periods to capture the possible health benefits of the paradigm.

We offered participants the option to write about the same or different traumas throughout the task. Although studies have shown that individuals are equally likely to benefit whether writing about the same or different events each day, the freedom to write about multiple events may facilitate the use of avoidant coping in addressing the most severe trauma.\textsuperscript{26} If benefits are derived from confrontation of the trauma and extinction of the associated emotional response, writing about the same event may be necessary.\textsuperscript{40}

**Conclusion**

In this study, written traumatic emotional disclosure did not reduce eating disorder behaviors or cognitions. Despite predicted trends in the linguistic dimensions of the disclosure writings such as increased negative emotion, cognitive, and insight words, no health benefits correlating with these trends were found.

It is unclear whether eating-disordered patients simply do not benefit because of the inherent psychopathology of illness, benefit differently than we expect, or do benefit but not with particular comorbid diagnoses or coping styles.

Numerous theories have been proposed to explain the underlying mechanism of written emotional disclosure, including inhibition, exposure/emotional processing, and cognitive adaptation. Additionally, conflicting results are reported in the literature in populations characterized by PTSD, alexithymia, and childhood sexual abuse. It is clear that there are myriad factors affecting each individual’s experience of the writing paradigm in our study that may not exist to the same degree in healthy undergraduate populations in which the benefits of emotional disclosure have been replicated time and time again. With so many confounding factors, it is premature at this point in our young understanding of the paradigm of traumatic emotional disclosure writing to conclude that it has no role in the treatment of patients with eating disorders.

Likely, no one theory can explain the benefits derived from disclosure. Instead, each of the stated mechanisms may contribute to the outcomes. Perhaps each unique individual experiences the paradigm differently and achieves benefits by differing mechanisms depending on his/her physiology, past experiences, and personality. We hope that in future studies we can begin to unravel the fascinating, and as of yet mysterious, way in which individuals engage with and benefit from written traumatic emotional disclosure.

**Disclosure Statement**

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

**Acknowledgment**

Kathleen Louden, ELS, of Louden Health Communications provided editorial assistance.

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Effects and Linguistic Analysis of Written Traumatic Emotional Disclosure in an Eating-Disordered Population


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Introduction

The University of Chicago Medicine (UCM) partners with Chicago Family Health Center (Chicago Family) in the Diabetic Retinopathy Screening Program (DRP), a charity care program to screen uninsured and underinsured patients with type 2 diabetes for diabetic retinopathy, which is a leading cause of preventable vision loss in the US. The DRP faced operational challenges throughout its pilot year: a high number of ungradable retinal images, slow turnaround time for reading retinal images and sending results, incomplete referrals, and a high rate of no-shows for diagnostic appointments.

Approach: Chicago Family recalled patients with ungradable images for repeat imaging, and regular training was provided to staff taking the images. Weekly e-mails were sent to the physician champion reminding him to read images, and image software was installed on his laptop. Patients received reminder cards and preappointment and postappointment phone call reminders, and appointment information was shared with referring physicians. The UCM clinic was double-booked, so patients were seen within four weeks of referral. Discussions were held with UCM/Chicago Family teams to stress the influence of timely referrals on no-show rate; reminders were sent to referring physicians for referrals.

Results: Complete referrals were received within five days; the overall number of ungradable images decreased; image report turnaround time continued to be a challenge because of difficulties related to physician availability and technology; show rates began to increase.

Conclusions: The methods of this intervention will translate well to other programs that provide care for similar patient populations in urban areas.

Abstract

Introduction: The University of Chicago Medicine (UCM) partners with Chicago Family Health Center (Chicago Family) in the Diabetic Retinopathy Screening Program (DRP), a charity care program to screen uninsured and underinsured patients with diabetes for diabetic retinopathy, which is a leading cause of preventable vision loss in the US. The DRP faced operational challenges throughout its pilot year: a high number of ungradable retinal images, slow turnaround time for reading retinal images and sending results, incomplete referrals, and a high rate of no-shows for diagnostic appointments.

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Conclusion

Operational Challenges in Delivery of a Charity Care Program for Diabetic Retinopathy Screening in an Urban Setting

Erica H Chedid, AM; Quin R Golden, MBA; Rama D Jager, MD, MBA, FACS

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simple to perform (it takes approximately 15 to 20 minutes total clinic time), provides clinicians an opportunity to educate patients about their disease onsite, and is affordable. For patients with subsequent diagnosis of proliferative diabetic retinopathy, laser photocoagulation has been shown to decrease vision loss by as much as 52% and for as long as 10 years after treatment.

Chicago Family is a community-based health center located on Chicago’s South Side. Its patients reside in more than 70 zip codes throughout Chicago and its neighboring suburbs. Patients at Chicago Family are 42% Hispanic, 51% African American, and 3% Caucasian. Review of Chicago Family’s 2011 Uniform Data System Report revealed that the payer mix (adult and children) was 30% uninsured, 60% Medicaid and Medicaid HMO, 4% Medicare, and 6% private insurance. In 2011, the income distribution of Chicago Family’s patient population, expressed as percentage of the federal poverty level, was 22,847 patients at 100% or below; 3915 at 101%-150%; 1195 at 151%-200%; 222 over 200%.

Of the 28,179 patients seen at Chicago Family in 2011, 1888 adults between the ages of 18 and 75 years had diabetes as a primary diagnosis.

The Diabetic Retinopathy Screening Program

The DRP provides an opportunity to explore barriers to diabetic eye care access in a disadvantaged urban community and to directly measure the impact of screening. In 2010, UCM set up a digital retina camera at Chicago Family, to be operated by Chicago Family medical assistants screening for retinopathy in patients with diabetes. Images are electronically transmitted to UCM attending retinal physicians, who use isi software © Koninklijke Philips Electronics NV 3.6.114.1; Amsterdam, Netherlands; Date of Manufacture: Wednesday, 2011 June 29) to review them and determine which patients will likely need an urgent referral to a UCM ophthalmologist.

The multidisciplinary team that planned the DRP spanned the medical campus and community health center involved. It included the OVS physician champion, UHI leadership, the UHI project manager, the OVS section chief, the OVS section administrator, the OVS clinic manager, OVS schedulers, UCM Department of Radiology, UCM Outpatient Services, UCM Finance and Billing, the UCM Executive Vice President for Strategic Affiliations and Associate Dean for Community-Based Research, the UCM Legal Department, the Chicago Family physician champion, Chicago Family medical assistants, Chicago Family case managers, the Chicago Family clinic manager, Chicago Family physicians, the Chicago Family Chief Executive Officer, and the Chicago Family Senior Director of Clinical Affairs.

Problems Encountered in Actuating the Program

Many operational challenges occurred throughout the DRP’s pilot year, despite the fact that its operational flow mirrored that of the Illinois Breast and Cervical Cancer Program, a similar program involving Chicago Family that has operated effectively between the two sites since 2009. From the DRP’s beginning in October 2010, the UHI project manager has recorded and monitored basic data as it relates to DRP operational processes. Several operational challenges were observed:

1. a high number of poor-quality retinal images from Chicago Family (Figure 1),
2. long turnaround time for reading retinal images at UCM and sending results to Chicago Family,
3. long turnaround time and incomplete contact information for referrals from Chicago Family to UCM, and
4. a high rate of no-shows for diagnostic appointments at UCM.

In April 2011, OVS clinic staff and UHI staff convened to discuss these challenges. At that time, methods were implemented to address the problems, and the UHI Project Manager began monitoring progress.

Assessment of Problems and Analysis of Causes

Before the project’s October 2010 launch, the physician champion at UCM OVS left the hospital. Upon recruitment of new leadership within OVS, there was a lack of urgency in reading patient retinal images, along with information technology issues (eg, problems with the server and software). Additionally, the new physician champion was only in the clinic three days per month, reducing access to the images and increasing turnaround time to read the images.

There was also a high rate of poor-quality images sent to UCM from Chicago Family. A pilot study at the University of Chicago Endocrinology Clinic had shown that technicians without any prior experience in ophtalmic imaging could obtain high-quality ophtalmic images after completing a two-hour training session; however the Chicago Family medical assistants struggled with retinal image capture even after similar training.

Similar to the physician champion at UCM, the physician champion at Chicago Family left the organization at the onset of the DRP. This led to challenges for clinicians and case managers completing DRP referrals, given large patient caseloads and little time to access charts needed to complete referrals. Also, Chicago Family case managers were initially unaware that DRP referrals required no scheduling on Chicago Family’s part. Case managers were three months behind schedule for referral appointments. DRP referrals accumulated on desks and were sent to UCM incomplete. A secondary result was that UCM was unable to connect with patients and scheduling of appointments in OVS was delayed.
Operational Challenges in Delivery of a Charity Care Program for Diabetic Retinopathy Screening in an Urban Setting

Many of these referred patients provided incorrect or otherwise unreliable contact information, often because they were uninsured or underinsured and afraid of having to pay a large bill. Such patients could not be contacted by Chicago Family or UCM staff, which led to a high rate of no-shows for appointments at UCM. Also, OVS appointments were scheduled three months in advance because of low clinic availability.

Thus, the causes of the challenges in this program included the following:
1. The UCM physician champion left the hospital before launch.
2. Training of medical assistants proved more challenging than expected.
3. The Chicago Family lead physician left the organization early in the program.
4. There were referral glitches.
5. Patients gave incorrect contact information to avoid billing.
6. The wait for appointments in the OVS clinic was three months.

**Methods—The University of Chicago Medicine’s Approach to the Problems**

**Aim**

The aim of this quality-improvement process was to ensure seamless delivery of care for patients with diabetes seeking treatment for retinopathy by
1. decreasing the rate of ungradable images, from 44% to <10%;
2. decreasing the average turnaround time for report generation by UCM, from 21 days to ≤10 days;
3. increasing the show rate of patients at UCM, from 20% to ≥75% in year 2 of the program; and
4. producing complete referrals in a timely manner.

This article seeks to analyze the success and failures of the DRP. Chicago Family has five locations throughout the South Side of Chicago. As mentioned previously, Chicago Family’s patients are mostly uninsured and underinsured. Discussions with Chicago Family’s team revealed that no-shows and incorrect contact information are common in their clinic because patients often cannot afford to pay.

**Outline of Project Strategy for Change**

The following steps were taken to address the high number of ungradable images:
- Chicago Family recalled patients with ungradable images to Chicago Family to take a second image; those with a second ungradable image were referred to UCM for further diagnostic testing.
- UCM began to provide additional training on image capture for Chicago Family medical assistants.
- UCM posted examples of good and poor images at the Chicago Family workstation (Figure 1).

The following steps were taken to address the lengthy turnaround time for image reports sent by the OVS physician champion to Chicago Family:
- The UHI project manager sent weekly e-mails to remind the OVS physician champion to read DRP images.
- UCM Radiology installed iSite software on the champion physician’s laptop so he could access images outside of the clinic (the physician champion was only in clinic at UCM three days per month).

To address the high no-show rate at UCM, the following steps were taken:

- UCM Outpatient Services verified that all patient referrals had complete contact information. If an OVS scheduler encountered incorrect contact information, the UHI Project Manager contacted Chicago Family to verify contact information.
- The UHI project manager mailed appointment reminder cards to patients.
- UHI patient advocates made preappointment and postappointment phone calls.
- OVS rescheduled no-show patients up to three times.
- The UHI Project Manager informed the patient’s primary care physician at Chicago Family of patient appointment information so that the primary care physician could communicate UCM appointment information to the patient as well.
- The OVS physician champion’s clinic schedule was double-booked so that patients could be seen sooner than three months; patients were then seen within three to four weeks of referral receipt. There was no issue with longer than normal wait times on the day of appointment.

To address the slow turnaround time for receiving referrals and to address the issue of incomplete referrals from Chicago Family to UCM, the following steps were taken:
- Discussions were held with UCM/Chicago Family teams to stress the importance of this problem and its influence on no-show rates.
- The UHI Project Manager e-mailed primary care physicians directly to inform them of the needed referrals.

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**Table 1. Results**

<table>
<thead>
<tr>
<th></th>
<th>Average ungradable images, %</th>
<th>Average report TAT, days</th>
<th>Average show rate, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before intervention (month 1)</td>
<td>44</td>
<td>21</td>
<td>20</td>
</tr>
<tr>
<td>After intervention (final month measured)</td>
<td>0</td>
<td>22</td>
<td>71</td>
</tr>
<tr>
<td>Overall average*</td>
<td>26</td>
<td>21.3</td>
<td>37</td>
</tr>
</tbody>
</table>

*Full duration of study. See Figures 2-4 for monthly figures.

TAT = turnaround time.
Operational Challenges in Delivery of a Charity Care Program for Diabetic Retinopathy Screening in an Urban Setting

Evaluation

To assess the success of the interventions, the team set goals in accordance with data from the first 6 months of the program. The following targets were set:

- decrease the number of ungradable images (target < 10%)
- decrease the turnaround time for report generation by UCM (target ≤ 10 days)
- increase the show rate at UCM (target ≥ 75%)
- receive complete referrals for every patient (target = 100%).

The team established quarterly meetings to assess the impact of the interventions by comparing current data with data from the first six months of the DRP.

Analysis

Data from months 6 through 12 were analyzed using annotated run charts to measure improvement. A run chart is a graph where quality is on the vertical axis, time is on the horizontal axis, and data points represent the level of quality at a particular point in time. An annotated run chart has comments with arrows indicating when different interventions were implemented. The team expected to see incremental, monthly improvements.

Results

After careful analysis and review of the data for months 6 through 12, results were reviewed in each area (Table 1). Although not all targets were achieved, progress was made. After discussions with the new Chicago Family physician champion and Senior Director of Clinical Operations, UCM began receiving complete referrals within 5 business days of patient image report generation. The overall number of ungradable images decreased, however fewer images were sent compared with the first few months of the program; additional image capture training was needed (Figure 2). Image report turnaround time by UCM continued to be a struggle, mainly because of the UCM physician champion’s limited availability and heavy patient case load (Figure 3). Also, the iSite software installed on the physician champion’s laptop was much slower than expected, making it difficult to read images remotely. Finally, show rates in OVS began to increase after the implementation of mail reminder cards to patients, preappointment and postappointment calls by UHI patient advocates, and more direct involvement by primary care physicians (Figure 4).

Discussion

Lessons Learned and Application to Similar Projects

Many operational challenges arose at the onset of the DRP and negatively affected the overall patient experience. The high number of ungradable images made it necessary for patients to return to Chicago Family for repeat screening, which may have been a
financial hardship for those of limited means. Poor turnaround time by UCM for reporting image results to primary care physicians at Chicago Family led to additional delays. Members of the UCM-Chicago Family teams thought that if the date of the UCM appointment was three months after imaging, then patients would not have a sense of urgency and would be less likely to show up. The poor turnaround time for referrals of patients in need of an appointment at UCM and the incomplete information for these referrals were causing a delay in scheduling, which also contributed to the high no-show rate. Those with signs of retinopathy in their initial images would then miss the care needed to preserve their vision.

It is apparent that each operational issue was key to a positive overall patient experience. Several important successes resulted from the interventions that were implemented. The lower rate of ungradable images led to fewer repeat screenings. Faster receipt of referrals with complete information led to appointments scheduled in OVS soon after image reporting. Higher show rates led to improved patient care and therefore increased probability that the DRP would reduce blindness among patients with diabetes. Only 1 of 15 patients referred to UCM required laser treatment. This patient’s initial image had signs of moderate to very severe diabetic retinopathy or proliferative diabetic retinopathy. Endolaser photocoagulation was performed in the right eye, which remained stable through follow-up.

Many lessons were learned from this intervention process. Strong physician leadership is key to streamlining processes, and Chicago Family’s new physician champion exercised such leadership in the process of patient follow-up for referrals and UCM appointments. Timely follow-up with patients, via phone and mail, and scheduling appointments soon after screening increased the show rate for appointments because patients remained aware of the importance of being seen by an ophthalmologist. Finally, staff responsible for image capture need periodic training to polish skills and learn new techniques.

Conclusion

Those involved with managing and implementing charity care programs must have a good understanding of the population being served and the importance of maintaining consistency to ensure a positive patient experience. The methods used for this intervention will translate well to other programs that provide care for underserved populations and rely on multidisciplinary teams and several departments and organizations to provide quality care. The UHI Project Manager continues to monitor the monthly data, and the team meets quarterly to ensure that improvements are maintained.

Figure 4. Show rate of Diabetic Retinopathy Screening Program patients in University of Chicago Ophthalmology and Visual Science clinic.  

- No appointments scheduled before February 2011.
- No data for August. No appointments scheduled in August.
- Target 75% - 100%
- Average = 37%, N = 39 scheduled appointments

Annotations
1. Began to reschedule no-shows in Ophthalmology and Visual Science up to 3 times.
2. Altered referral process so that primary care physicians at Chicago Family Health Center would relay patient University of Chicago Medicine appointment information directly to patient.
4. University of Chicago Medicine began mailing appointment reminder cards to patient address provided.
5. Met with Chicago Family Health Center clinicians and physician champion regarding referrals and no-shows.

Disclosure Statement

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

Acknowledgment

Leslie E Parker, ELS, provided editorial assistance.

References

Improving Efficiency and Reducing Administrative Burden through Electronic Communication

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Abstract

Background: The InBox messaging system is an internal, electronic program used at Mayo Clinic, Rochester, MN, to facilitate the sending, receiving, and answering of patient-specific messages and alerts. A standardized InBox was implemented in the Division of General Internal Medicine to decrease the time physicians, physician assistants, and nurse practitioners (clinicians) spend on administrative tasks and to increase efficiency.

Methods: Clinicians completed surveys and a preintervention InBox pilot test to determine inefficiencies related to administrative burdens and defects (message entry errors). Results were analyzed using Pareto diagrams, value stream mapping, and root cause analysis to prioritize administrative-burden inefficiencies to develop a new, standardized InBox. Clinicians and allied health staff were the target of this intervention and received standardized InBox training followed by a postintervention pilot test for clinicians.

Results: Sixteen of 28 individuals (57%) completed the preintervention survey. Twenty-eight clinicians participated in 2 separate 8-day pilot tests (before and after intervention) for the standardized InBox. The number of InBox defects was substantially reduced from 37 (Pilot 1) to 7 (Pilot 2). Frequent InBox defects decreased from 25% to 10%. More than half of clinicians believed the standardized InBox positively affected their work, and 100% of clinicians reported no negative affect on their work.

Conclusions: This project demonstrated the successful implementation of the standardized InBox messaging system. Initial assessments show substantial reduction of InBox entry defects and administrative tasks completed by clinicians. The findings of this project suggest increased clinician and allied health staff efficiency, satisfaction, improved clinician work-life balance, and decreased clinician burden caused by administrative tasks.

Introduction

The development of the electronic medical record (EMR) and other electronic communication systems gave hope to health care administrators and physicians, physician assistants, and nurse practitioners (clinicians) worldwide that with its implementation, clinician documentation time would decrease and, in turn, increase efficiency and improve delivery of quality care.¹⁻³ Recent research, however, describes workflow inefficiencies, reduced satisfaction,⁴⁻⁵ and clinician concerns⁶ in relation to using electronic communication systems.⁷

Mayo Clinic believes in providing quality, patient-centered care and creating a health care workforce of the future to align with its core values. A strategic meeting was held by leadership of the Division of General Internal Medicine at which concern was expressed among clinicians regarding the burden of time-consuming administrative tasks that contribute to substantial inefficiencies. Moreover, the increase in administrative tasks was believed to negatively affect physician satisfaction through work-life balance. From this meeting, Division leadership developed eight strategic priorities, one of which was to reduce physician burden in relation to administrative tasks associated with the internal (InBox) messaging system.

Through this intervention, the Division of General Internal Medicine hoped to learn more about the clinician relationship with the InBox messaging system with the primary objective to decrease the amount of time clinicians spend on administrative tasks and to increase their efficiency. The secondary objective was to decrease clinician administrative task workload by reassigning specific administrative tasks to allied health staff (clinical assistants [medical assistants], medical secretaries, and appointment coordinators) to facilitate performance at their highest capacity and competency levels (see Sidebar: New administrative tasks assigned to allied health staff).

Methods

This project was conducted at Mayo Clinic in Rochester, MN, in the Division of General Internal Medicine and was prompted by clinicians’ responses to the 2009 Annual Staff Satisfaction Survey. A survey was developed using Sirota Survey Intelligence software and consisted of 65 questions. Of these questions, 58 were asked on a 5-point Likert scale ranging from very favorable to very unfavorable, and the remaining 7 questions inquired...

New administrative tasks assigned to allied health staff

- Sort and organize outside medical records
- Call patients with normal results
- Initiate billing process
- Enter orders
- Gather history information such as health maintenance, past medical history, family history, and chief complaint
about respondent characteristics (age, sex, work schedule, etc); there was also a blank comment box. An additional 15 questions (for the Department of Nursing responses) and an additional 11 questions (for clinician response) were asked on a 5-point Likert scale. A total of 79 clinicians received the survey, and 58 (73.42%) responded.

To prioritize the most burdensome and time-consuming clinician tasks, 62 of 79 (78%) clinicians participated in a Division of General Internal Medicine clinician survey consisting of 6 questions to assess the implementation of process changes by allied health staff. The last question required clinicians to rank 12 identified “inefficient” administrative tasks by level of importance (ie, which tasks should be addressed first) using a 12-point Likert scale (1 = most important; 12 = least important), as shown in Figure 1. A Pareto diagram was developed from the results of the ranked tasks and was used to identify and to outline dissatisfiers voted on by clinicians (Figure 2).

The clinician relationship with the InBox messaging system was further quantified and analyzed using surveys, value stream mapping, and root cause analyses. The Division of General Internal Medicine clinician survey was developed on the basis of the results of the root cause analysis, by a multidisciplinary team of 12 individuals who had varying responsibilities with InBox messaging. The survey consisted of

<table>
<thead>
<tr>
<th>Message/notification type</th>
<th>Institution description</th>
<th>New general internal medicine description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appointment</td>
<td>Appointment and/or scheduling questions/messages; getting information for prescheduling tests/consults</td>
<td>Appointment and/or scheduling questions/messages; getting information for prescheduling tests/consults</td>
</tr>
<tr>
<td>Care Review</td>
<td>Patient tests/consults need review by clinician and/or nurse communication about care</td>
<td>Workflow Process Change</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clinical assistants (CA) verify InBox message first to assure item is complete before forwarding to physician</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Review of tests/results/consults; mail-in specimens; request to do test-oriented miscellaneous notes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CAs to use secretaries for episode closure</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>Other patient-related messaging</td>
<td>Episode/Chart completion (eg, sign note, diagnosis, medication list)</td>
</tr>
<tr>
<td>Protocol/triage</td>
<td>Messages relating to specific protocols or triage processes</td>
<td>Used only for development appointments (ARF forms)</td>
</tr>
<tr>
<td>Prescription refill</td>
<td>Messages asking for prescription refills; requires physician review</td>
<td>Prescription or prescription refill requests</td>
</tr>
<tr>
<td>Telephone</td>
<td>Patient has contacted department with information or questions</td>
<td>a. Someone must call the patient back</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. For patient “FYI” calls, list “FYI only” in subject line (no reply necessary)</td>
</tr>
<tr>
<td>Outside</td>
<td>Outside materials or laboratory results have been received and reviewed by clinician is requested</td>
<td>Outside material or laboratory results have been received on patients who have been seen at Mayo Clinic</td>
</tr>
<tr>
<td>Document inquiry</td>
<td>Sent by finance coders for clarification of a diagnosis or procedure that has not been clearly documented</td>
<td>a. Coding/billing issues</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Resident review of dictated letters and clinical notes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. Request to dictate or complete clinical note</td>
</tr>
<tr>
<td>Therapy certification</td>
<td>Therapy plan of care certification or recertification for authentication</td>
<td>Certification/form completion (internal or external)</td>
</tr>
<tr>
<td>Supervisory review</td>
<td>No description listed</td>
<td>a. Review of resident clinical notes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. NP/PA supervisory review</td>
</tr>
</tbody>
</table>

ARF = appointment request form ; FYI = for your information; NP = nurse practitioner; PA = physician assistant.

Figure 1. Clinician tool rank importance of inefficient tasks.

CV/REAIMS = curriculum vitae/Research and Education Academic Information Management Systems; OS = outside; OSM = outside material; Rx = prescription.
5 questions, and the questions were asked on a 5-point Likert scale ranging from very effective to very ineffective. A total of 28 clinicians received the survey, and 16 (57%) completed the survey.

We standardized the current institutional InBox messaging system, an internal, electronic program used at Mayo Clinic Rochester to facilitate the sending, receiving, and answering of patient-specific messages and alerts (Table 1). The implementation of the institutional InBox system in the EMR is a Mayo Clinic Foundation-based initiative, which is used in all departments throughout Mayo Clinic Rochester. We modified the institutional InBox interface to include clearly defined message categories in order to reduce ambiguity of the definitions within the message categories and to streamline user understanding and implementation (Table 1). Clinicians and allied health staff received education and training on the use of the new, standardized InBox.

Twenty-eight clinicians participated in 2 separate pilot tests of the standardized InBox messaging system, each lasting 8 business days. The first pilot test (preintervention) was implemented in March 2011 and collected baseline data on the current state of understanding and usability of the InBox messaging system. Clinicians and allied health staff were educated and trained on appropriate timing and message flow processes, standardized category (message) types (Table 1), use of standard message content and format, and awareness of message volumes. After education and training, 28 clinicians completed the second pilot test (intervention phase) in July 2011. Data obtained during the July 2011 intervention was compared with baseline survey results from March 2011. Defects (eg, incorrect use of message type in InBox) were tracked during each pilot test (Table 2).

After the pilot tests and analyses, results were presented to the leadership of the Division of General Internal Medicine. Templates were created for staff training using standard wording and format to facilitate continuity of terms and clarity of content. Multidisciplinary teams (clinicians and allied health staff) participated in three 45-minute education and training sessions over a 3-week period. Allied health staff were trained on appropriate processes, including timing of message flow, use of standard message content and format, standardized category (message) types, awareness of message volumes, and message prioritization. Allied health staff also acquired administrative tasks (previously completed by clinicians), including verification of completion of tests and consultations before review by clinicians. This transfer of tasks served to relieve clinicians of burdensome administrative tasks.

### Results

The 2009 Mayo Clinic staff satisfaction surveys contained questions specifically for clinicians (total clinicians surveyed = 79; total clinician responses = 58 on 1 question, 57 on another). Responses
revealed a poor work-life balance (41% favorable response), which respondents attributed to their increased administrative tasks (25% favorable response), as displayed in Table 3.

InBox messaging was rated the number 1 most time-consuming and burdensome task in the Division of General Internal Medicine clinician satisfaction survey (Figure 2). Clinicians received, on average, 1157 InBox messages over 8 business days (Table 4).

The number of defects entered into InBox was reduced from 37 in the first pilot test to 7 in the second pilot test (Table 2). The percentage of frequent InBox defects decreased from 25% to 10% (Table 4). Because of the intervention of the standardized InBox, improvement of all 6 tracked defects was identified from Pilot 1 to Pilot 2. Incorrect message type improved by 87.5%, inaccurate priority listing improved by 100%, and messages sent to the incorrect individual improved by 89% (Table 2). In addition, 53% of clinicians believed that the standardized InBox positively affected their work, and a postimplementation survey revealed that 100% of clinicians reported no negative impact on their work (data not shown). No major problems were encountered during or after the process changes.

Discussion

The implementation of the standardized InBox messaging system substantially reduced the number of administrative tasks performed by clinicians by training allied health staff on new processes and by decreasing administrative tasks previously completed by clinicians. This was evaluated through postimplementation observation. Therefore, clinician time spent on administrative tasks decreased, suggesting increased clinician efficiency and improved satisfaction with work-life balance. Although clinician efficiency and satisfaction with work-life balance was not measured, previous research has shown that physicians who spend less time on administrative work are more satisfied.4 Consistent education and training on the management of InBox tasks and prioritizations such as message-type definitions (Table 1), content, and format created a uniform understanding for both clinicians and allied health staff. Emphasis placed on communication expectations was critical to the overall success of the standardized InBox.

The implementation helped create an efficient, cohesive care team, and since its implementation in the Division of General Internal Medicine, other sections within the Division are implementing these process changes. Furthermore, the Department of Medicine has recommended that other divisions implement the new, standardized InBox and training processes. Clinicians who participated in the prototyping of this project provided feedback that stated that they were more satisfied because of the reduction in administrative tasks performed, increased calendar management and flexibility, and a more efficient care team model.

Several factors serve as limitations to our project. First, the results of our analysis represent the findings of a single institution and generalizing these results to other institutions may not be possible. Second, our electronic communication system, InBox, is an authentic, internal Mayo Clinic communication tool. Reproduction of this project may not be possible or may require modification because of different electronic communication tools at other institutions.

Third, during the development of the standardized InBox, we were limited with the amount of “message type” categories we could implement; thus, message type could not be changed after it was sent, and messages could be sent to only one person at a time. Last, these data represent preliminary findings. However, they are representative of the issues faced during daily practice, and thus the InBox process improvement changes were implemented immediately to enhance quality and reduce incorrect messaging rework.

Conclusion

This project demonstrated the successful implementation of the standardized InBox messaging system in the Division.

Table 3. Clinician data from all-staff satisfaction survey

<table>
<thead>
<tr>
<th>Question</th>
<th>Total no. of clinicians surveyed</th>
<th>Total no. of clinician responses</th>
<th>Very favorable/ favorable</th>
<th>Neutral</th>
<th>Very unfavorable/ unfavorable</th>
</tr>
</thead>
<tbody>
<tr>
<td>The amount of time I spend on clerical tasks is reasonable</td>
<td>79</td>
<td>57</td>
<td>25</td>
<td>14</td>
<td>61</td>
</tr>
<tr>
<td>I am satisfied with the balance between my work life and my personal life</td>
<td>79</td>
<td>58</td>
<td>41</td>
<td>19</td>
<td>40</td>
</tr>
</tbody>
</table>

Table 4. Clinician survey results before and after intervention

<table>
<thead>
<tr>
<th>Survey (month)</th>
<th>Response rate, no. (%)</th>
<th>No. of messages received</th>
<th>Rate of InBox defects, %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequently</td>
<td>Occasionally</td>
<td>Never</td>
</tr>
<tr>
<td>Baseline (March 2011)</td>
<td>25</td>
<td>67</td>
<td>6</td>
</tr>
<tr>
<td>Postpilot (July 2011)</td>
<td>10</td>
<td>84</td>
<td>6</td>
</tr>
</tbody>
</table>

* Includes duplicate messages, inaccurate message notification type, inaccurate message timing, and unclear message content.

53% of clinicians believed that the standardized InBox positively affected their work, and a postimplementation survey revealed that 100% of clinicians reported no negative impact on their work...
Improving Efficiency and Reducing Administrative Burden through Electronic Communication

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

Acknowledgments
The authors thank the following Mayo Clinic staff members for their assistance with this research project: Deborah Boelter, RN, Beverly Diepenbrock, Kathryn Heroff, Rebecca Iverson, Denise Kinyon, Cindy LaPlante, and Margaret Roe. Kathleen Louden, ELS, of Louden Health Communications provided editorial assistance.

References

A Good Impression

A full beard is an efficient badge of the doctor’s calling, and is essential in establishing his professional identity among the people . . . .

A physician should never dress flashily, but he should be garbed well.

It creates a good impression.

— Albert V Harmon, MD. Large fees and how to get them. Chicago: WJ Jackman; 1911
Quality and Cost Evaluation of a Medical Financial Assistance Program

Douglas A Conner, PhD; Arne Beck, PhD; Christina Clarke; Leslie Wright, MA; Komal Narwaney, MD, PhD; Neysa W Bermingham

Abstract

Background: Kaiser Permanente Colorado has been responding to the financial challenges of its members by providing a medical financial assistance (MFA) program since 1992. However, there have been no evaluations of the effect of this program on members’ use of health services or their health outcomes.

Methods: A prospective cohort study of 308 MFA program members who were enrolled between May 16, 2008, and May 16, 2009, examined changes in their use of health services, costs, and self-reported physical and mental health after enrollment in the MFA program. Use of services was analyzed with multiple regression, and costs of services with generalized linear models.

Results: MFA increased members’ access to health services. There were no changes in physical or mental health status. For each health care visit before the MFA award, patients used the health care system 0.23 visits less. The MFA amount was not associated with an increase or decrease in use. There was no significant difference in total overall cost. Hospital costs were lower, but costs for clinic visits, pharmacy services, phone calls, and radiology services were significantly higher, resulting in service cost neutrality, possibly because financial barriers before MFA award led to accumulated demand for services.

Conclusions: Use of services decreased after MFA was received. There was no significant change in total service cost. MFA improved members’ ability to pay for medical services and increased their satisfaction with health services.

Introduction

The cost of health care in the US has increased disproportionately to spending on goods and other services. In 1970, total health care spending averaged about $356 per person ($1147 per person when adjusted for inflation). In 2010, health care spending averaged $6697 per person. Much of this expense has been shifted to the patient. For those living below the poverty level, the increase in out-of-pocket expenses is especially burdensome. Health care costs consumed 26% of their income in 1996 and 33% in 2003. Employment is no guarantee of health care coverage. As costs and affordability challenges increase, more individuals are self-restricting treatment for their health conditions. Cost-related underuse, substitution, and discontinuation of medication have resulted in higher rates of Emergency Department (ED) visits, increases in nonelective medical and psychiatric hospitalizations, and decreased overall health status. Those with chronic conditions such as diabetes or hypertension are particularly sensitive to treatment disruption, poor medication adherence, and adverse health outcomes.

Since 1992, Kaiser Permanente Colorado (KPCO) has been responding to the financial challenges of its members by providing a medical financial assistance (MFA) program. As part of KPCO’s larger community benefit investment portfolio, this program provides free or deeply discounted access to the appropriate level of health care for patients with limited financial resources. The right level of health care for these patients often includes greater use of planned, coordinated outpatient services, instead of preventable, fragmented, and often more costly emergency services.

There have been no evaluations of the effectiveness of this program, formerly called KP Helps, on members’ use of health services or their health outcomes. Changes to the structure of the program and its name, now MFA, were implemented in April 2008. These changes included elimination of a cap on assistance. Whereas the previous annual cap totaled $500, KPCO members who qualified for financial assistance from April 2008 to April 2009 received annual coverage of all copayments and deductibles for all medically necessary health-related services (excluding optical services, over-the-counter medications, and nonformulary prescriptions). KPCO members were eligible for MFA if their income was at or below 300% of the federal poverty level ($10,400 in 2008, and $10,830 in 2009).

The lack of data available for capturing the effectiveness of the previous program, in conjunction with the program changes, provided an ideal opportunity to prospectively evaluate the impact of the program on members’ use of health care services, medication adherence, and physical and mental health status. Our specific question regarding MFA was whether the increase in assistance would remove financial barriers to preventive and primary care services and prescription medications, and in turn, decrease use of emergency and other hospital services that might otherwise result from delays in obtaining care. Such a shift from higher to lower intensity care might also result in lower overall costs of care, since emergency and hospital services are more costly than primary care services. An additional question was whether increased access to primary care services and prescriptions might reduce the risk of delays in necessary care and subsequent adverse outcomes, thereby improving members’ functional status in different domains (eg, physical, emotional, and work-related functions).
We hypothesized that increased financial assistance to KP Helps participants would
• reduce hospital admissions and ED visits
• reduce overall cost of care
• improve self-reported physical and mental health status
• reduce work time lost because of illness
• increase medication use
• counteract the self-reported impact of financial limitations on use of health care services.

Methods
We contacted 393 MFA program recipients by mail, and 308 recipients consented to participate in this prospective cohort study between May 16, 2008, and May 16, 2009. The study was approved by KPCO’s institutional review board. Two weeks after each member’s MFA enrollment, the study team mailed them a recruitment letter; a physical and mental health status survey; an opt-out postcard; and a self-addressed, stamped envelope. A second survey was mailed 12 months later to each member who had returned a baseline survey.

The primary outcomes for this study were changes in use of health services, including prescriptions, related costs, and self-reported physical and mental health status 12 months after enrollment in the MFA program.

Physical and Mental Health Status Survey
The survey assessed self-reported physical and mental health status, time missed at work, medication adherence, and impact of financial limitations on use of health care services. The survey consisted of 8 demographic questions and 13 items dealing with physical and mental health status. It included 10 questions about behaviors to save money on health care services or medication. Likert scale responses ranged from “very easy” to “very difficult,” “never” to “always,” “excellent” to “poor,” or “yes” to “no,” depending on the question. The survey was mailed to MFA participants at baseline and 12 months after program enrollment.

Use of Health Care Services
Most health care use and demographic data were obtained from our Virtual Data Warehouse. Use measures comprised several categories: inpatient, ED, primary care (family practice, internal medicine, or primary care), durable medical equipment, mental health, oncology, and the remaining specialty departments. Other measures used as covariates included sex, age, race, Quan score (a measure of comorbidity burden), total prior use, socioeconomic status (SES), MFA for prescriptions, MFA for weight management, MFA for optical services, type of Health Plan coverage, and total amount of MFA awarded.

Costs
Cost data were obtained from KPCO’s Decision Support System, which distributes total costs for all internal KPCO services from each cost center that then populate the General Ledger. These costs in the General Ledger are then allocated among the different cost centers by all encounter procedure codes and their frequencies for each cost center. Costs are based on the fourth edition of Current Procedural Terminology intensity-weighted procedure codes (for a more detailed description, see Ritzwoller et al).4 The Decision Support System provides pre-MFA and post-MFA costs for 12 cost centers for all MFA participants (including ambulatory surgery, ambulance, durable medical equipment, emergency room, home health, hospital inpatient services, hospital outpatient services, clinic visits, laboratory, pharmacy, phone calls to clinical staff, and radiology). Total cost was the sum of costs of individual services.

Socioeconomic Status
Low SES was defined as enrollment in the KPCO MFA program and residence in a neighborhood in which at least 20% of residents were below the federal poverty level or in an area where less than 25% graduated from high school. The designated value of the SES variable was “Yes” when these criteria were met, based on census data in the Virtual Data Warehouse.

Data Analyses
Descriptive statistics included age, sex, race, diagnosis (including behavioral health), Health Plan coverage, comorbidity burden as measured by Quan score,7 and Medicare membership. Differences between responses on pre-MFA and post-MFA surveys were tested using the Wilcoxon signed rank test or McNemar test.

Linear regression was used, with baseline use as a covariate for the 12 months before MFA award, and change in use as the outcome. To adjust for the numerous covariates, two submodels were used: one included demographics and socioeconomic status; and the other included type and amount of MFA award, type of medical coverage, and comorbidities. Initial covariates included sex, age, race, Quan score for comorbidities, total prior use, SES, MFA for prescriptions, MFA for weight management, type of Health Plan coverage, and amount of MFA awarded. The final submodels were then combined, and the final models were created after further backward selection.

Cost data were analyzed using a two-part model to account for zero-inflated data (a lot of zero costs and a long tail representing few but very high costs). The first part of the model addressed members who had costs associated with each cost center in question. Repeated measures SAS Genmod procedures were used to measure differences in pre-MFA and post-MFA costs. A gamma distribution with a log link was used to normalize the skewed data. The second part then addressed whether there were differences in the number of members whose cost for each cost center was zero. Multivariate logistic regression was used for those members with no costs. Unadjusted models for each cost center were run, as well as models with demographic and benefit covariates.

Results
Surveys
Three hundred and ninety-three surveys were mailed to MFA recipients, and 308 recipients consented to study participation (78.5%). One hundred and seventy of the 308 members returned the baseline survey (43.3%). At 12 months, 170 surveys were mailed, of which 107 (40%) were returned. One hundred and seven enrollees completed both surveys. There were few differences between survey responders who returned both surveys and those who completed only the baseline survey. Compared
with those who completed both surveys, those who returned only the baseline survey were significantly younger and the proportion who were married was higher, but the proportion who were widowed or divorced was lower. Significantly more nonresponders were working (results not shown).

Table 1 summarizes demographic, health, and Health Plan data from the baseline surveys. Sixty-four percent were women, and the average age was 61 years. A substantial proportion (28%) had low SES. Additionally, patients had an average Quan score of 4 (range, 0–14), which indicates a relatively high burden of disease.

Table 1. Descriptive measures for 308 participants

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex, n (%)</strong></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>198 (64.3)</td>
</tr>
<tr>
<td>Male</td>
<td>110 (35.7)</td>
</tr>
<tr>
<td><strong>Mean age in years (SD)</strong></td>
<td>61 (14.74)</td>
</tr>
<tr>
<td><strong>Hispanic, n (%)</strong></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>249 (80.8)</td>
</tr>
<tr>
<td>Yes</td>
<td>59 (19.2)</td>
</tr>
<tr>
<td><strong>Race, n (%)</strong></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>200 (64.9)</td>
</tr>
<tr>
<td>Black</td>
<td>24 (7.8)</td>
</tr>
<tr>
<td>Mixed</td>
<td>4 (1.3)</td>
</tr>
<tr>
<td>Other</td>
<td>34 (11)</td>
</tr>
<tr>
<td>Missing/no response</td>
<td>46 (14.9)</td>
</tr>
<tr>
<td><strong>Low socioeconomic status, n (%)</strong></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>219 (71.1)</td>
</tr>
<tr>
<td>Yes</td>
<td>85 (27.6)</td>
</tr>
<tr>
<td>Missing/unknown</td>
<td>4 (1.3)</td>
</tr>
<tr>
<td><strong>Education, n (%)</strong></td>
<td></td>
</tr>
<tr>
<td>8th grade or less</td>
<td>9 (2.9)</td>
</tr>
<tr>
<td>Some high school</td>
<td>13 (4.2)</td>
</tr>
<tr>
<td>High school diploma, GED</td>
<td>44 (14.3)</td>
</tr>
<tr>
<td>Some college, 2-year degree</td>
<td>46 (14.9)</td>
</tr>
<tr>
<td>4-year college degree</td>
<td>16 (5.2)</td>
</tr>
<tr>
<td>More than 4-year college degree</td>
<td>6 (1.9)</td>
</tr>
<tr>
<td>Missing/no response</td>
<td>174 (56.5)</td>
</tr>
<tr>
<td><strong>Income in $, n (%)</strong></td>
<td></td>
</tr>
<tr>
<td>10,000 or less</td>
<td>14 (4.5)</td>
</tr>
<tr>
<td>10,001-15,000</td>
<td>36 (11.7)</td>
</tr>
<tr>
<td>15,001-20,000</td>
<td>26 (8.4)</td>
</tr>
<tr>
<td>20,001-25,000</td>
<td>27 (8.8)</td>
</tr>
<tr>
<td>25,001-30,000</td>
<td>11 (3.6)</td>
</tr>
<tr>
<td>30,001-35,000</td>
<td>6 (1.9)</td>
</tr>
<tr>
<td>35,001-40,000</td>
<td>5 (1.6)</td>
</tr>
<tr>
<td>40,001- higher</td>
<td>5 (1.6)</td>
</tr>
<tr>
<td>Missing/no response</td>
<td>175 (56.8)</td>
</tr>
<tr>
<td><strong>Homeowner, n (%)</strong></td>
<td></td>
</tr>
<tr>
<td>Rent</td>
<td>60 (19.5)</td>
</tr>
<tr>
<td>Own</td>
<td>62 (20.1)</td>
</tr>
<tr>
<td>Other</td>
<td>11 (3.6)</td>
</tr>
<tr>
<td>Missing/no response</td>
<td>175 (56.8)</td>
</tr>
<tr>
<td><strong>Number in household, n (%)</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>54 (17.5)</td>
</tr>
<tr>
<td>2</td>
<td>51 (16.6)</td>
</tr>
<tr>
<td>3</td>
<td>11 (3.6)</td>
</tr>
<tr>
<td>4 or more</td>
<td>13 (4.2)</td>
</tr>
<tr>
<td>Missing/no response</td>
<td>179 (58.1)</td>
</tr>
<tr>
<td><strong>Marital status, n (%)</strong></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>55 (17.9)</td>
</tr>
<tr>
<td>Widowed</td>
<td>23 (7.5)</td>
</tr>
<tr>
<td>Divorced</td>
<td>37 (12)</td>
</tr>
<tr>
<td>Separated</td>
<td>6 (1.9)</td>
</tr>
<tr>
<td>Never married</td>
<td>9 (2.9)</td>
</tr>
<tr>
<td>Other</td>
<td>4 (1.3)</td>
</tr>
<tr>
<td>Missing/no response</td>
<td>174 (56.5)</td>
</tr>
<tr>
<td><strong>Mean MFA benefit in $ (SD)</strong></td>
<td>2223.63 (468)</td>
</tr>
<tr>
<td><strong>MFA for optical, n (%)</strong></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>230 (74.7)</td>
</tr>
<tr>
<td>Yes</td>
<td>78 (25.3)</td>
</tr>
<tr>
<td><strong>MFA for outpatient services, n (%)</strong></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>11 (3.6)</td>
</tr>
<tr>
<td>Yes</td>
<td>297 (96.4)</td>
</tr>
<tr>
<td><strong>MFA for prescriptions, n (%)</strong></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>48 (15.6)</td>
</tr>
<tr>
<td>Yes</td>
<td>260 (84.4)</td>
</tr>
<tr>
<td><strong>MFA for weight management, n (%)</strong></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>303 (98.4)</td>
</tr>
<tr>
<td>Yes</td>
<td>5 (1.6)</td>
</tr>
<tr>
<td><strong>KPCO product, n (%)</strong></td>
<td></td>
</tr>
<tr>
<td>DCO</td>
<td>27 (8.8)</td>
</tr>
<tr>
<td>HDHP</td>
<td>2 (0.6)</td>
</tr>
<tr>
<td>HMO</td>
<td>279 (90.6)</td>
</tr>
<tr>
<td><strong>Medicare, n (%)</strong></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>125 (40.6)</td>
</tr>
<tr>
<td>Yes</td>
<td>183 (59.4)</td>
</tr>
<tr>
<td><strong>Medicaid, n (%)</strong></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>308 (100)</td>
</tr>
<tr>
<td>Yes</td>
<td>0 (0)</td>
</tr>
<tr>
<td><strong>Five most frequent chronic conditions making up the Quan score, n (%)</strong></td>
<td></td>
</tr>
<tr>
<td>Diabetes, complicated and uncomplicated</td>
<td>184 (59.7)</td>
</tr>
<tr>
<td>Hypertension</td>
<td>188 (61.6)</td>
</tr>
<tr>
<td>Chronic pulmonary disease</td>
<td>112 (36.7)</td>
</tr>
<tr>
<td>Depression</td>
<td>102 (33.4)</td>
</tr>
<tr>
<td>Fluid and electrolyte imbalance</td>
<td>71 (23.3)</td>
</tr>
<tr>
<td><strong>Quan score (SD)</strong></td>
<td>4 (3.13)</td>
</tr>
</tbody>
</table>

DCO = deductible coinsurance plan; GED = general equivalency diploma; HDHP = high deductible health plan; HMO = health maintenance organization plan; KPCO = Kaiser Permanente Colorado; MFA = medical financial assistance; SD = standard deviation.
# Table 2. Baseline and follow-up survey responses for those completing both surveys (n = 107)

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
<th>Baseline, %</th>
<th>Follow-up, %</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ease/difficulty of paying for prescriptions in past 12 months? (n = 101)</td>
<td>Very easy/somewhat easy</td>
<td>13.9</td>
<td>35.4</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td></td>
<td>Neither easy nor difficult</td>
<td>22.8</td>
<td>7.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Somewhat difficult/very difficult</td>
<td>63.4</td>
<td>36.6</td>
<td></td>
</tr>
<tr>
<td>Ease/difficulty of paying for other health care in past 12 months? (n = 103)</td>
<td>Very easy/somewhat easy</td>
<td>6.8</td>
<td>51.5</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td></td>
<td>Neither easy nor difficult</td>
<td>7.8</td>
<td>7.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Somewhat difficult/very difficult</td>
<td>85.4</td>
<td>38.8</td>
<td></td>
</tr>
<tr>
<td>What were the changes made to save money in past 12 months? (n varied for each item)</td>
<td>Did not see physician</td>
<td>61.2</td>
<td>33.7</td>
<td>&lt;0.001b</td>
</tr>
<tr>
<td></td>
<td>Did not get other health care services</td>
<td>67.7</td>
<td>37.4</td>
<td>&lt;0.001b</td>
</tr>
<tr>
<td></td>
<td>Used less medication than prescribed</td>
<td>45.8</td>
<td>27.1</td>
<td>0.003b</td>
</tr>
<tr>
<td></td>
<td>Stopped a medication</td>
<td>20.8</td>
<td>17.7</td>
<td>0.54b</td>
</tr>
<tr>
<td></td>
<td>Did not fill prescription for new medication</td>
<td>29.5</td>
<td>11.6</td>
<td>0.001b</td>
</tr>
<tr>
<td></td>
<td>Switched to a different medication</td>
<td>22.9</td>
<td>12.5</td>
<td>0.04b</td>
</tr>
<tr>
<td></td>
<td>Bought medications outside US</td>
<td>4.2</td>
<td>5.2</td>
<td>0.65b</td>
</tr>
<tr>
<td></td>
<td>Took someone else’s medication</td>
<td>8.3</td>
<td>6.2</td>
<td>0.40b</td>
</tr>
<tr>
<td></td>
<td>Got free medication samples</td>
<td>10.9</td>
<td>8.7</td>
<td>0.56b</td>
</tr>
<tr>
<td></td>
<td>Used mail order</td>
<td>54.2</td>
<td>44.8</td>
<td>0.07b</td>
</tr>
<tr>
<td>For those employed in past 4 weeks, hours of work missed because of illness in past 4 weeks (mean, SD)</td>
<td></td>
<td>22.8 (37.7)</td>
<td>24.4 (46.2)</td>
<td>0.38b</td>
</tr>
<tr>
<td>How often did you decide not to do enjoyable activities? (n = 102)</td>
<td>Never</td>
<td>13.7</td>
<td>30.4</td>
<td>0.002*</td>
</tr>
<tr>
<td></td>
<td>Sometimes</td>
<td>31.4</td>
<td>39.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Usually</td>
<td>38.2</td>
<td>14.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Always</td>
<td>16.7</td>
<td>15.7</td>
<td></td>
</tr>
<tr>
<td>How often did you decide not to get other medical care? (n = 100)</td>
<td>Never</td>
<td>37.0</td>
<td>52.0</td>
<td>0.005*</td>
</tr>
<tr>
<td></td>
<td>Sometimes</td>
<td>37.0</td>
<td>35.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Usually</td>
<td>14.0</td>
<td>5.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Always</td>
<td>12.0</td>
<td>8.0</td>
<td></td>
</tr>
<tr>
<td>How often did you borrow money or get help paying for health care? (n = 101)</td>
<td>Never</td>
<td>29.7</td>
<td>41.6</td>
<td>0.17b</td>
</tr>
<tr>
<td></td>
<td>Sometimes</td>
<td>38.6</td>
<td>33.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Usually</td>
<td>20.8</td>
<td>10.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Always</td>
<td>10.9</td>
<td>13.9</td>
<td></td>
</tr>
<tr>
<td>How often did you have difficulty paying rent or other bills? (n = 105)</td>
<td>Never</td>
<td>19.1</td>
<td>42.9</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td></td>
<td>Sometimes</td>
<td>46.7</td>
<td>37.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Usually</td>
<td>12.4</td>
<td>9.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Always</td>
<td>21.9</td>
<td>10.5</td>
<td></td>
</tr>
<tr>
<td>Were you unemployed during the past 12 months? (n = 107)</td>
<td>Yes</td>
<td>68.2</td>
<td>67.3</td>
<td>0.86b</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>31.8</td>
<td>32.7</td>
<td></td>
</tr>
<tr>
<td>Were you unemployed during the past 4 weeks? (n = 107)</td>
<td>Yes</td>
<td>72.9</td>
<td>75.7</td>
<td>0.57b</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>27.1</td>
<td>24.3</td>
<td></td>
</tr>
<tr>
<td>During past 4 weeks, how much did health problems affect productivity at work? (n = 40)</td>
<td>No effect</td>
<td>10.0</td>
<td>20.0</td>
<td>0.48b</td>
</tr>
<tr>
<td></td>
<td>Some effect</td>
<td>17.5</td>
<td>15.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moderate effect</td>
<td>27.5</td>
<td>20.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Significant effect</td>
<td>45.0</td>
<td>45.0</td>
<td></td>
</tr>
<tr>
<td>Rate your physical health (n = 103)</td>
<td>Excellent/very good/good</td>
<td>35.0</td>
<td>39.8</td>
<td>0.31b</td>
</tr>
<tr>
<td></td>
<td>Fair/poor</td>
<td>65.0</td>
<td>60.2</td>
<td></td>
</tr>
<tr>
<td>Rate your mental health (n = 102)</td>
<td>Excellent/very good/good</td>
<td>72.5</td>
<td>73.5</td>
<td>0.82b</td>
</tr>
<tr>
<td></td>
<td>Fair/poor</td>
<td>27.5</td>
<td>26.5</td>
<td></td>
</tr>
<tr>
<td>Average number of workdays missed because of illness in past 12 months (n = 13)</td>
<td></td>
<td>16.5</td>
<td>8.8</td>
<td>0.08b</td>
</tr>
<tr>
<td>Average number of work hours missed because of illness in past 4 weeks (n = 10)</td>
<td></td>
<td>23.7</td>
<td>26.2</td>
<td>0.38b</td>
</tr>
</tbody>
</table>

* Wilcoxon signed rank test was used for items with paired ordinal responses.
* McNemar test was used for items with paired nominal responses.
SD = standard deviation.
Table 2 summarizes responses to each survey item. There was a significant decrease in the percentage of members reporting health-related financial difficulties. Members also reported they were more likely to see a doctor, access other health services, and use medication as prescribed. Members reported greater ability to pay their rent on the follow-up survey. In contrast, there were no differences in self-reported physical or mental health or work days or work hours missed (although the number of respondents for this latter question was only 10, indicating that many respondents were unemployed or retired).

Use of Health Care Services

Three hundred and eight MFA enrollees agreed to examination of their use of health care services. Univariate comparisons between pre-MFA and post-MFA demographic variables and other covariates showed that the median number of health care visits for members reporting low SES increased, as it did for members reporting higher SES following MFA (p = 0.0004, data not shown). The final regression model (Table 3) for total change in use included the following variables: total prior use, SES, MFA for prescriptions, MFA for weight management, Health Plan type, and MFA award amount. Patients who received prescription MFA had 4.23 fewer total visits after enrollment. Patients significantly increased their use after MFA enrollment, after adjustment for all covariates (p < 0.0001). For example, a patient who only had one encounter the year preceding MFA, received $2500 or more in MFA benefits, had low SES, and had the High Deductible Health Plan had approximately 16 more visits the year after MFA enrollment.

The final regression model for pharmacy use (Table 4) included total prior prescription counts; Quan score; SES status; and whether the MFA award was for prescriptions, outpatient services, or weight management. After adjustment for all covariates, the number of prescription fills was significantly higher for the year after MFA enrollment, compared with the preceding year (p = 0.0139). For example, a patient who had 6 prescription fills the year before MFA, had MFA for prescriptions, had low SES, and had a Quan score ≤2, had on average approximately 17 more prescription fills the year after MFA. After adjusting for the other covariates, patients who received an MFA award specifically for prescriptions were dis-

| Variable                  | Parameter estimate | Standard error | t      | Pr > |t| *  | 95% Confidence limits |
|---------------------------|--------------------|----------------|--------|-------|----|-----------------------|
| Intercept                 | 10.38046           | 2.61460        | 3.97   |       |    | 5.23504, 15.52588     |
| Total prior use           | -0.22759           | 0.04547        | -5.01  | <0.0001 |    | -0.31708, -0.13811    |
| MFA ≤ $2000 (ref)         |                    |                |        |       |    |                       |
| MFA $2000-$2500           | 2.79867            | 1.66474        | 1.68   | 0.0938 |    | -0.47747, 6.07481     |
| MFA ≥ $2500               | 5.63883            | 3.46577        | 1.63   | 0.1048 |    | -1.18166, 12.45931    |
| MFA prescription          | 4.22503            | 2.15580        | -1.96  | 0.0509 |    | -8.46756, 0.01750     |
| MFA weight management     | 13.54436           | 6.16621        | 2.20   | 0.0288 |    | 1.40952, 25.67919     |
| DCO                       | -5.80122           | 2.76759        | -2.10  | 0.0369 |    | -11.24771, -0.35472   |
| HDHP Plan                 | 0.82411            | 9.68684        | 0.09   | 0.9323 |    | -18.23917, 19.88740   |
| High SES (ref)            |                    |                |        |       |    |                       |
| Low SES                   | 0.63426            | 1.75559        | 0.36   | 0.7181 |    | -2.82066, 4.08918     |
| Unknown SES               | 28.43189           | 6.93136        | 4.10   | <0.0001 |    | 14.79126, 42.07251    |

* Multivariate regression.
DCO = deductible coinsurance plan; HDHP = high deductible health plan; MFA = medical financial assistance; SES = socioeconomic status.

| Variable                  | Parameter estimate | Standard error | t      | Pr > |t| *  | 95% Confidence limits |
|---------------------------|--------------------|----------------|--------|-------|----|-----------------------|
| Intercept                 | 26.82667           | 8.34576        | 3.21   | 0.0015 |    | 10.40257, 43.25076    |
| Prior pharmacy use        | -0.11364           | 0.04593        | -2.47  | 0.0139 |    | -0.20404, -0.02324    |
| MFA prescription          | 12.24700           | 3.52409        | 3.48   | 0.0006 |    | 5.31175, 19.18225     |
| MFA outpatient            | -8.88379           | 6.79965        | -1.31  | 0.1924 |    | -22.26250, 4.49762    |
| MFA weight management     | 10.93630           | 10.02370       | -1.39  | 0.1655 |    | -33.66250, 5.78990    |
| High SES (ref)            |                    |                |        |       |    |                       |
| Low SES                   | -2.47941           | 2.84860        | -0.87  | 0.3848 |    | -8.08534, 3.12652     |
| Unknown SES               | 22.15071           | 11.12630       | 1.99   | 0.0474 |    | 0.25464, 44.04679     |
| Quan score ≥ 6 (ref)      |                    |                |        |       |    |                       |
| Quan score ≤ 2            | -13.02273          | 3.61941        | -3.60  | 0.0004 |    | -20.14557, -5.89989   |
| Quan score 3-5            | -8.62401           | 3.28729        | -2.62  | 0.0092 |    | -15.09325, -2.15477   |

* Multivariate regression.
MFA = medical financial assistance; SES = socioeconomic status.
prescribed an average of 12.25 more fills after the MFA award than before (p = 0.0006, 95% confidence interval [CI], 3.31 to 19.18). Patients with a Quan score < 2 were dispensed an average of 13.02 fewer fills after the MFA award than those with a Quan score ≥ 6 (p = 0.0092, 95% CI, -15.09 to -2.15). After MFA enrollment, patients with an unknown SES were dispensed 22.15 more fills than those with high SES (p = 0.045, 95% CI, 0.25 to 44.05). Those with low SES did have different levels of prescription use than those who did not have a low SES (p = 0.38, 95% CI, -8.09 to 5.13).

Costs
Univariate comparison of costs before and after MFA enrollment showed that only Quan score was influenced by comorbidity. A higher score, reflecting greater comorbidity, was associated with higher costs during both the pre-MFA period and the post-MFA period (p = 0.001, results not shown).

Table 5 shows the average costs for the pre-MFA and post-MFA periods for each of the 12 types of services, as well as for average total cost. Overall, there was no significant difference in total cost before and after MFA enrollment, and there were no demographic or Health Plan covariates that influenced the cost analyses for any service. There were significant cost differences for some services. Hospital costs were $13,299 less during the postenrollment period. Costs for clinic visits, pharmacy services, phone calls, and radiology services were significantly higher after MFA program enrollment. This suggests appreciable shifts in cost between types of services. There were no significant differences in the unadjusted or covariate models for the presence of costs before and following MFA program enrollment for the second part of the 2-part cost model.

Discussion
Findings from these analyses, adjusted for demographics, Health Plan, and other covariates, demonstrated that MFA enrollees did change their overall use of services after receiving an MFA award. A number of covariates significantly influenced the rates of use, including the type of MFA award (eg, pharmacy versus weight management), SES, type of KPCO Health Plan, prior use, and the amount awarded. Adjusted prescription use was higher for the postenrollment period when MFA award for prescriptions was included in the model. This is not surprising, because the additional funds provided specifically for prescriptions would increase demand for prescriptions that perhaps had not been filled before the MFA. Prescription use also increased for those with the greatest number of comorbidities (Quan score > 6). The tendency for greater prescription use by those with increased comorbidities is well known and suggests an appropriate use of the MFA award.6,9

There were no significant differences in total cost before or following enrollment in the MFA program. There was a significant decrease in hospital costs following enrollment in the program, but it was offset by increases in costs of primary care, pharmacy, and radiology (including mammograms) services, which may suggest an increase in some preventive services. Although the savings in hospitalization costs were considerable, they were outweighed by the combined increases for other services. This pattern of cost shifting from higher to lower intensity services is encouraging in that it reflects the goal of the MFA program to increase access to primary care, pharmacy, and preventive services, and in turn reduce the need for inpatient and emergency services.

These results demonstrate a commonly reported pattern that occurs when members have not been using health services because of limited access or financial resources. Other investigators have

<table>
<thead>
<tr>
<th>Cost Center</th>
<th>Before</th>
<th>After</th>
<th>Cost Differencea</th>
<th>p b</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean ± SD</td>
<td>Median</td>
<td>n</td>
<td>Mean ± SD</td>
</tr>
<tr>
<td>Total Cost</td>
<td>24,209 ± 27,287</td>
<td>13,572</td>
<td>230</td>
<td>26,527 ± 28,391</td>
</tr>
<tr>
<td>Ambulatory surgery</td>
<td>3587 ± 4813</td>
<td>1928</td>
<td>67</td>
<td>4652 ± 6565</td>
</tr>
<tr>
<td>Ambulance</td>
<td>1293 ± 1471</td>
<td>804</td>
<td>62</td>
<td>980 ± 1395</td>
</tr>
<tr>
<td>DME</td>
<td>1023 ± 1880</td>
<td>343</td>
<td>95</td>
<td>881 ± 1251</td>
</tr>
<tr>
<td>Emergency room</td>
<td>3430 ± 5150</td>
<td>360</td>
<td>104</td>
<td>2673 ± 2979</td>
</tr>
<tr>
<td>Home health</td>
<td>2209 ± 2781</td>
<td>1206</td>
<td>38</td>
<td>2710 ± 3922</td>
</tr>
<tr>
<td>Hospital, inpatient</td>
<td>16,532 ± 17,692</td>
<td>10,836</td>
<td>77</td>
<td>3233 ± 4548</td>
</tr>
<tr>
<td>Hospital, outpatient</td>
<td>4203 ± 10,876</td>
<td>515</td>
<td>102</td>
<td>6155 ± 14,873</td>
</tr>
<tr>
<td>Clinic</td>
<td>9182 ± 12,234</td>
<td>5782</td>
<td>228</td>
<td>12,583 ± 18,472</td>
</tr>
<tr>
<td>Laboratory</td>
<td>576 ± 606</td>
<td>379</td>
<td>216</td>
<td>617 ± 805</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>2648 ± 4455</td>
<td>1337</td>
<td>225</td>
<td>3476 ± 5193</td>
</tr>
<tr>
<td>Phone calls</td>
<td>85 ± 136</td>
<td>85</td>
<td>45</td>
<td>217 ± 380</td>
</tr>
<tr>
<td>Radiology</td>
<td>1184 ± 1449</td>
<td>651</td>
<td>182</td>
<td>1724 ± 3347</td>
</tr>
</tbody>
</table>

a Positive cost difference equals cost savings for postenrollment period.

b p values were determined using repeated measures, Genmod models with a gamma distribution and log link. Zero costs were not included.

c Cost differences for all cost centers will not equal the total cost difference because these are average costs based on different numbers of members.

DME = durable medical equipment; SD = standard deviation.
found an increased demand for health care services following enrollment in a health plan compared to those already enrolled in the plan. Martin et al. found an increased demand for outpatient and emergency visits but also found increases in the number of hospitalizations (unlike this study) and hospital stays after members had been uninsured for one year.

Franks et al. found that members new to an insurance plan were more likely to visit a physician and had higher testing expenditures but fewer hospitalizations (as in this study) and a greater risk of not receiving a mammogram after enrolling in an insurance plan. Differences in populations, types of Health Plan, and other factors may account for some of these differences with our results. There are a number of reasons certain costs and use might increase once patients gain access. These include lack of medical care before receiving the MFA award and KPCO’s emphasis on preventive care, which may have led to an initial increase in use of preventive services.

Although our results demonstrate no differences in overall use or cost, there were significant findings regarding attitudes toward costs and access to health care. Most participants found it easier to pay for health care services and prescriptions after enrollment in the MFA program.

The percentage of participants who usually or always avoided getting medical care or paying rent or other bills, or who had to change how they managed money for health care services and prescriptions after enrollment in the MFA program. The percentage of participants who usually or always avoided getting medical care or paying rent or other bills, or who had to change how they managed money for health care services and prescriptions after enrollment in the MFA program. The percentage of participants who usually or always avoided getting medical care or paying rent or other bills, or who had to change how they managed money for health care services and prescriptions after enrollment in the MFA program. The percentage of participants who usually or always avoided getting medical care or paying rent or other bills, or who had to change how they managed money for health care services and prescriptions after enrollment in the MFA program.

Conclusions

An evaluation of an MFA program within a managed care organization demonstrated significant reductions in ED and inpatient hospital costs. However, increased use and costs of primary care, durable medical equipment, and pharmacy services offset these cost reductions. Although the program was cost neutral, the shift toward primary care services and away from inpatient services reflects the goal of the MFA program to increase access to preventive services that may have the potential to reduce use of more intensive services. Moreover, participants reported improved ability to pay for medical services that decreased potentially harmful strategies (eg, not seeing a clinician, and avoiding necessary medication) related to limited access to health care.

Disclosure Statement

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

Acknowledgment

Leslie Parker, ELS, provided editorial assistance.

References


Breast Cancer Screening in an Insured Population: Whom Are We Missing?

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Perm J 2013 Winter;17(1):38-44
http://dx.doi.org/10.7812/TPP/12-068

Abstract

Introduction: Kaiser Permanente Colorado is an integrated health care system that uses automatic reminder programs and reduces barriers to access preventive services, including financial barriers. Breast cancer screening rates have not improved during the last five years, and rates differ between subgroups: for example, black and Latina women have lower rates of mammography screening than other racial groups.

Methods: We retrospectively evaluated data from 47,946 women age 52 to 69 years who had continuous membership for 24 months but had not undergone mammography. Poisson regression models estimated relative risk for the impact of self-identified race/ethnicity, socioeconomic characteristics, health status, and use of health care services on screening completion.

Results: The distribution of race/ethnicity among unscreened women was 55.5% white, 7.0% Latina, and 3.7% black, but race/ethnicity data were missing for 29%. Of these, no record of race/ethnicity was available for 86.7%, and for 5.1%, the data request was recorded but the women declined to identify their race/ethnicity. Nonwhite ethnicity increased risk of screening failure if black, Latina, “other” (eg, American Indian), or missing race/ethnicity. Population-attributable risks were low for minorities compared with the group for whom race/ethnicity data was missing. A greater number of office visits in any setting was associated with greater likelihood of undergoing mammography. Women with missing race/ethnicity data had fewer visits and were less likely to have an identified primary care physician.

Conclusions: Greater improvement in mammography screening rates could be achieved in our population by increasing screening among women with missing race/ethnicity data, rather than by targeting those who are known to be of racial/ethnic minorities. Efforts to address screening disparities have been refocused on inreach and outreach to our “missing women.”

Introduction

Breast cancer remains the most commonly diagnosed cancer and the second-leading cause of cancer deaths for US women, although improved access to screening and advances in treatment strategies have lowered breast cancer mortality.1 The US Preventive Services Task Force has recommended biennial mammography for women between 50 and 74 years of age.2 This grade B recommendation qualified mammography as a prevention benefit of the Patient Protection and Affordability Act3 and will decrease financial barriers to breast cancer screening. The US health system is preparing to expand coverage to currently uninsured women, but we anticipate that the impact of barriers besides lack of access and coverage will continue to undermine preventive screening efforts. Women with low socioeconomic status, uninsured status, and nonwhite race have in the past experienced inequities with respect to lack of awareness of the benefits of screening, access to care, and adverse outcomes.4,5 By better understanding those women who remain unscreened, despite being insured and actively encouraged to undergo screening, we can refocus our strategies for promoting preventive services.

In addition to access and coverage, socioeconomic issues, health status, use of health services, and social/cultural considerations have been identified as barriers to breast cancer screening. Lower breast cancer screening rates have been associated with nonwhite race, low level of education, and low socioeconomic status.4,6–10 Low income can counteract the advantage of otherwise good geographic access because it is associated with difficulties with transportation, child care, and work schedules.11 Women with health conditions such as disability,12 depression,13 and morbid obesity (body mass index [BMI] > 40 kg/m²)14,15 are less likely to complete screening. Although women are more likely to have been screened if they have a family history of breast cancer16,17 or if they have ever had relevant symptoms or abnormal test results,18 screening may be perceived as less important for those without these risks. Not having a usual source of care, not having a primary care physician (PCP), and failing to engage in other health-promoting behaviors also predict unscreened status.19,20 Low socioeconomic status, uninsured status, and nonwhite race have been identified as barriers to breast cancer screening. Lower breast cancer screening rates have been associated with nonwhite race, low level of education, and low socioeconomic status.4,6–10 Low income can counteract the advantage of otherwise good geographic access because it is associated with difficulties with transportation, child care, and work schedules.11 Women with health conditions such as disability,12 depression,13 and morbid obesity (body mass index [BMI] > 40 kg/m²)14,15 are less likely to complete screening. Although women are more likely to have been screened if they have a family history of breast cancer16,17 or if they have ever had relevant symptoms or abnormal test results,18 screening may be perceived as less important for those without these risks. Not having a usual source of care, not having a primary care physician (PCP), and failing to engage in other health-promoting behaviors also predict unscreened status.19,20 In women of color, the decision to forgo screening may reflect distrust because of perceived disrespect of physicians. Among Latinas, cultural barriers such as fear, embarrassment, and a sense of fatalism have been linked to nonadherence to mammography recommendations.21 Health care delivery systems have actively addressed some of these factors with programs that facilitate bonding with a personal physician, educate care teams about diversity, and address common barriers. Despite such efforts, a cadre of women continues to forgo screening.

Kaiser Permanente (KP) Colorado (KPCO) is an integrated health care system that provides continuous access to care,

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Breast Cancer Screening in an Insured Population: Whom Are We Missing?

Of women who should have undergone screening but did not.

During the last 5 years. We focused on the approximately 20% who remained unscreened for breast cancer for more than 2 years. KPCO used outreach and inreach strategies validated in other multimodal programs to address common barriers and achieved mammography screening rates at the 80th percentile. But as Figure 1 indicates, screening rates have reached a plateau during the last 5 years. We focused on the approximately 20% of women who should have undergone screening but did not.

We examined demographic and social characteristics, health status, and use of health care services in our insured population to identify characteristics associated with unscreened status. An internal Equitable Care Report in 2010 addressing disparities in effectiveness of care measures at KPCO showed that the rate of breast cancer screening was lower in black (73.3%) and Latina (73.4%) women compared with whites (78.2%) and all women (77.2%). We were therefore particularly interested in investigating the relationship between screening status and these newly collected data about self-identified race, ethnicity,

### Table 1. Breast cancer screening within 24 months in women age 52 to 59 years

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Screened, n (%)</th>
<th>Unscreened, n (%)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population</td>
<td>47,946</td>
<td>38,443 (80.2)</td>
<td>9503 (19.8)</td>
<td></td>
</tr>
<tr>
<td>Age, years</td>
<td></td>
<td></td>
<td></td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>52-54</td>
<td>9123</td>
<td>6985 (76.6)</td>
<td>2138 (23.4)</td>
<td></td>
</tr>
<tr>
<td>55-59</td>
<td>15,332</td>
<td>12,012 (78.4)</td>
<td>3320 (21.7)</td>
<td></td>
</tr>
<tr>
<td>60-64</td>
<td>13,383</td>
<td>10,854 (81.1)</td>
<td>2529 (18.9)</td>
<td></td>
</tr>
<tr>
<td>≥65</td>
<td>10,108</td>
<td>8592 (85.0)</td>
<td>1516 (15.0)</td>
<td></td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td></td>
<td></td>
<td></td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Asian</td>
<td>869</td>
<td>730 (84.0)</td>
<td>139 (16.0)</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>1776</td>
<td>1433 (80.7)</td>
<td>343 (19.3)</td>
<td></td>
</tr>
<tr>
<td>Latino</td>
<td>3373</td>
<td>2731 (81.0)</td>
<td>642 (19.0)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>1392</td>
<td>1100 (79.0)</td>
<td>292 (21.0)</td>
<td></td>
</tr>
<tr>
<td>Missing data</td>
<td>13,926</td>
<td>9664 (69.4)</td>
<td>4262 (30.6)</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>26,610</td>
<td>22,785 (85.6)</td>
<td>3842 (14.4)</td>
<td></td>
</tr>
<tr>
<td>Language preference</td>
<td></td>
<td></td>
<td></td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>English</td>
<td>40,542</td>
<td>34,096 (84.1)</td>
<td>6446 (15.9)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>523</td>
<td>421 (80.5)</td>
<td>102 (19.5)</td>
<td></td>
</tr>
<tr>
<td>Spanish</td>
<td>447</td>
<td>376 (84.1)</td>
<td>71 (15.9)</td>
<td></td>
</tr>
<tr>
<td>Missing data</td>
<td>6434</td>
<td>3550 (55.2)</td>
<td>2884 (44.8)</td>
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<td>Insurance</td>
<td></td>
<td></td>
<td></td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Commercial</td>
<td>38,221</td>
<td>30,168 (78.9)</td>
<td>8053 (21.1)</td>
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</tr>
<tr>
<td>Medicaid</td>
<td>76</td>
<td>52 (68.4)</td>
<td>24 (31.6)</td>
<td></td>
</tr>
<tr>
<td>Medicare</td>
<td>9649</td>
<td>8223 (85.2)</td>
<td>1426 (14.8)</td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Married/partner</td>
<td>28,638</td>
<td>24,279 (84.8)</td>
<td>4359 (15.2)</td>
<td></td>
</tr>
<tr>
<td>Div/sep/widowed</td>
<td>6106</td>
<td>5017 (82.2)</td>
<td>1089 (17.8)</td>
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</tr>
<tr>
<td>Single</td>
<td>7837</td>
<td>6241 (79.6)</td>
<td>1596 (20.4)</td>
<td></td>
</tr>
<tr>
<td>Missing data</td>
<td>5365</td>
<td>2906 (54.2)</td>
<td>2459 (45.8)</td>
<td></td>
</tr>
<tr>
<td>BMI, kg/m²</td>
<td></td>
<td></td>
<td></td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>&lt;18.5</td>
<td>592</td>
<td>433 (73.1)</td>
<td>159 (26.9)</td>
<td></td>
</tr>
<tr>
<td>18.5-24</td>
<td>14,263</td>
<td>11,959 (83.9)</td>
<td>2304 (16.2)</td>
<td></td>
</tr>
<tr>
<td>25-29.9</td>
<td>14,433</td>
<td>12,011 (83.2)</td>
<td>2422 (16.8)</td>
<td></td>
</tr>
<tr>
<td>30-39.9</td>
<td>13,685</td>
<td>11,125 (81.3)</td>
<td>2560 (18.7)</td>
<td></td>
</tr>
<tr>
<td>≥40</td>
<td>3365</td>
<td>2527 (75.1)</td>
<td>838 (24.9)</td>
<td></td>
</tr>
<tr>
<td>Missing data</td>
<td>1608</td>
<td>388 (24.1)</td>
<td>1220 (75.9)</td>
<td></td>
</tr>
<tr>
<td>Smoking</td>
<td></td>
<td></td>
<td></td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Current smoker</td>
<td>5181</td>
<td>3433 (66.3)</td>
<td>1748 (33.7)</td>
<td></td>
</tr>
<tr>
<td>Former smoker</td>
<td>14,468</td>
<td>12,104 (83.7)</td>
<td>2364 (16.3)</td>
<td></td>
</tr>
<tr>
<td>Nonsmoker</td>
<td>27,164</td>
<td>22,583 (83.1)</td>
<td>4581 (16.9)</td>
<td></td>
</tr>
<tr>
<td>Missing data</td>
<td>1133</td>
<td>323 (28.5)</td>
<td>810 (71.5)</td>
<td></td>
</tr>
</tbody>
</table>

BMI = body mass index; div = divorced; OB/GYN = obstetrics/gynecology; SD = standard deviation; sep = separated.
and language preference (RELP). The purpose of this analysis was to identify opportunities for future quality-improvement initiatives to reach insured women who remain unscreened.

**Methods**

**Population of Interest and Data Sources**

KPCO has more than 530,000 members. We evaluated data from 47,946 insured women age 52 to 69 years with continuous enrollment for the 24 months through July 2010, i.e., women who had 2 years after turning 50 to complete mammography in our system. For this age group, the US Preventive Services Task Force has strongly recommended screening with mammography every 2 years. Women were considered unscreened if there was no report available of a completed mammogram during this time period. Data sources used to assess health status and use of health care services included KPCO’s electronic medical records; population registries tracking routine preventive care, including mammography screening; and chronic disease management programs. RELP data have been collected routinely during phone and office encounters since 2007 and were self-identified for approximately 70% of all members during the study period. Women were considered unscreened if there was no report available of a completed mammogram during this time period. Data sources used to assess health status and use of health care services included KPCO’s electronic medical records; population registries tracking routine preventive care, including mammography screening; and chronic disease management programs. RELP data have been collected routinely during phone and office encounters since 2007 and were self-identified for approximately 70% of all members during the study period. Women were categorized as missing RELP data if their race/ethnicity was unknown to them (e.g., in those who were adopted), if they declined to give this information, or if no RELP code was available for analysis. Demographic information from membership databases provided information about marital status and source of insurance (i.e., commercial, Medicaid, or Medicare). The analysis was done in the context of quality-improvement efforts.

**Breast Cancer Screening Program**

The breast cancer screening program at KPCO included tracking mammography screening rates reported at the regional, office, and clinician levels; prompts to clinicians for members due or overdue for screening through the electronic medical record system; proactive outreach letters; as well as automated reminder calls to members. Intreach reminders at check-in for primary care or mental health services identified women due for screening. Beginning in 2007, personal outreach calls to overdue women were made twice a year through a centralized call center that offered the option of booking a radiology appointment during the call. Educational materials providing information about common fears and barriers and the importance of screening were available online and in offices, in both Spanish and English. Barriers addressed in educational materials included lack of knowledge regarding risk, fear of an abnormal result, pain, potential damage to implants, fear of radiation exposure, and inconvenience.

**Statistical Analysis**

The analysis was performed in mid-2010 with SAS 9.13 (SAS Institute; Cary, NC). We used Poisson regression models with robust error variance with screening as the dependent variable to estimate relative risk. Adjusted models included all the analysis variables. Secondary models looked at predictors of screening within the strata of black and Latina women. Differences in visit history, bonding, insurance status, and age were examined between those who were and were not missing RELP data.

Socioeconomic variables included age, race/ethnicity, language preference, marital status, and insurance type (commercial, Medicaid, or Medicare). Health status variables included smoking status and BMI. BMI was calculated in kg/m² and tracked electronically. Another health status variable was presence of a chronic disease (asthma, coronary disease, kidney disease, depression, diabetes, and heart failure), as indicated by active enrollment in a chronic disease registry. Use of health care services was assessed on the basis of evidence of having selected a PCP and visit history in Primary Care, Obstetrics and Gynecology (OB/GYN), and other specialty departments within the last year. The contribution of individual variables to the screening population as a whole was evaluated by calculating the population-attributable risk as (relative risk [RR] - 1) / RR × proportion exposed population, where RR is the relative risk.
Results

The population was predominately white (55.5%). Race and ethnicity data were missing for 29.0%, and the remaining members identified themselves as Latina (7.0%), black (3.7%), other (2.9%), or Asian (1.8%). Most of the population (59.9%) was between the ages of 55 and 64 years. The majority (79.7%) had commercial insurance, and none had dual eligibility (Medicaid and Medicare). All variables analyzed had significant univariate associations with screening status (p < 0.001), with the exception of chronic disease status; only depression and asthma were significantly associated with screening status (Table 1). Of the 13,926 women with missing race/ethnicity data, 329 (2.4%) had “unknown” race (for example because they had been adopted); 705 (5.1%) responded but listed “other” as their category and the majority, 12,076 women (86.7%), had no RELP code captured.

Adjusted relative risk estimates and results of population-attributable risk calculations are shown in Table 2. Women were more likely to be unscreened if they were younger than the comparison group (ie, younger than 65 years). Women who were not married were also more likely to be unscreened.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Relative risk (95% CI)</th>
<th>Proportion of cases with factor</th>
<th>Population-attributable fraction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age, years</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>52-54</td>
<td>1.26 (1.17, 1.37)</td>
<td>0.225</td>
<td>0.05</td>
</tr>
<tr>
<td>55-59</td>
<td>1.18 (1.09, 1.27)</td>
<td>0.349</td>
<td>0.05</td>
</tr>
<tr>
<td>60-64</td>
<td>1.11 (1.02, 1.20)</td>
<td>0.266</td>
<td>0.03</td>
</tr>
<tr>
<td>≥65</td>
<td>referent</td>
<td>0.16</td>
<td></td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>1.05 (0.90, 1.24)</td>
<td>0.068</td>
<td>0.00</td>
</tr>
<tr>
<td>Black</td>
<td>1.22 (1.11, 1.33)</td>
<td>0.036</td>
<td>0.01</td>
</tr>
<tr>
<td>Latino</td>
<td>1.24 (1.15, 1.33)</td>
<td>0.002</td>
<td>0.00</td>
</tr>
<tr>
<td>Other</td>
<td>1.33 (1.21, 1.47)</td>
<td>0.031</td>
<td>0.01</td>
</tr>
<tr>
<td>Missing data</td>
<td>1.28 (1.22, 1.34)</td>
<td>0.448</td>
<td>0.10</td>
</tr>
<tr>
<td>White</td>
<td>referent</td>
<td>0.403</td>
<td></td>
</tr>
<tr>
<td><strong>Language preference</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spanish</td>
<td>0.77 (0.63, 0.95)</td>
<td>0.068</td>
<td>-0.02</td>
</tr>
<tr>
<td>Other</td>
<td>1.22 (1.03, 1.46)</td>
<td>0.036</td>
<td>0.01</td>
</tr>
<tr>
<td>Missing data</td>
<td>1.17 (1.11, 1.24)</td>
<td>0.031</td>
<td>0.00</td>
</tr>
<tr>
<td>English</td>
<td>referent</td>
<td>0.846</td>
<td></td>
</tr>
<tr>
<td><strong>Smoking</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current smoker</td>
<td>1.53 (1.46, 1.60)</td>
<td>0.184</td>
<td>0.06</td>
</tr>
<tr>
<td>Former smoker</td>
<td>1.05 (1.01, 1.10)</td>
<td>0.249</td>
<td>0.01</td>
</tr>
<tr>
<td>Missing data</td>
<td>1.01 (0.95, 1.07)</td>
<td>0.085</td>
<td>0.00</td>
</tr>
<tr>
<td>Nonsmoker</td>
<td>referent</td>
<td>0.567</td>
<td></td>
</tr>
<tr>
<td><strong>Insurance</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicare</td>
<td>0.99 (0.91, 1.07)</td>
<td>0.002</td>
<td>0.00</td>
</tr>
<tr>
<td>Medicaid</td>
<td>1.36 (0.98, 1.89)</td>
<td>0.200</td>
<td>0.05</td>
</tr>
<tr>
<td>Commercial</td>
<td>referent</td>
<td>0.797</td>
<td></td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Divorced/widowed</td>
<td>1.14 (1.08, 1.21)</td>
<td>0.127</td>
<td>0.02</td>
</tr>
<tr>
<td>Single</td>
<td>1.22 (1.16, 1.28)</td>
<td>0.163</td>
<td>0.03</td>
</tr>
<tr>
<td>Missing data</td>
<td>1.25 (1.20, 1.31)</td>
<td>0.112</td>
<td>0.02</td>
</tr>
<tr>
<td>Married</td>
<td>referent</td>
<td>0.597</td>
<td></td>
</tr>
<tr>
<td><strong>Body mass index, kg/m²</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;18.5</td>
<td>1.42 (1.26, 1.62)</td>
<td>0.012</td>
<td>0.00</td>
</tr>
<tr>
<td>25-29</td>
<td>1.02 (0.97, 1.07)</td>
<td>0.301</td>
<td>0.01</td>
</tr>
<tr>
<td>30-39</td>
<td>1.09 (1.04, 1.15)</td>
<td>0.285</td>
<td>0.02</td>
</tr>
<tr>
<td>≥40</td>
<td>1.40 (1.31, 1.49)</td>
<td>0.070</td>
<td>0.02</td>
</tr>
<tr>
<td>Missing data</td>
<td>1.46 (1.37, 1.56)</td>
<td>0.034</td>
<td>0.01</td>
</tr>
<tr>
<td>18.5-24</td>
<td>referent</td>
<td>0.297</td>
<td></td>
</tr>
</tbody>
</table>

CI = confidence interval; OB/GYN = obstetrics/gynecology.
Women insured through Medicaid were less likely to be screened, compared with members with commercial coverage. A lower screening rate was not evident among women insured through Medicare. With respect to health status, current smokers were more likely to be unscreened than nonsmokers, and women with BMI ≥40 kg/m² or <18.5 kg/m² were more likely to be unscreened. The greatest chronic disease impact was for those with heart disease or heart failure. Evaluation of use of health care services showed that the likelihood of completing screening progressively increased with the number of office visits in Primary Care, OB/GYN, or other specialty departments.

Self-identified nonwhite ethnicity increased risk of being unscreened for black, Latino, and “other” (eg, American Indian) members and for those with missing race/ethnicity data, but not for Asians. Women who identified themselves as Spanish speakers were more likely to have undergone screening than English speakers. Stratified models looking at associations between different variables and screening behavior in black and Latina women did not suggest differences in the impact of health variables such as smoking or BMI in these populations (data not shown). Despite increased relative risks for most nonwhite women (except Asians) compared with whites, population-attributable risks for the nonwhite race categories were relatively low (0.01). Of greater impact than nonwhite race was missing race/ethnicity data, which had a population-attributable risk of 0.10.

Women with missing race/ethnicity data had evidence of some use of the system, but on average they used it less than those whose data were complete. Although nearly all women were bonded with a PCP, those with missing race were more likely to be unbonded (3.17%) compared with those with race data (1.27%) (p < 0.001). Among those with missing race/ethnicity data, 33.2% had had no primary care visits, compared with 17.2% of those whose race data were recorded (p < 0.001). Regarding all office visits (including primary care visits), 18.8% of women with missing race/ethnicity data had had no clinic visits during the study period, compared with 5.9% of women with complete race/ethnicity data. Younger women were more likely to be missing race/ethnicity data, but there was no clear pattern based on insurance status.

**Discussion**

In our population, greater improvement in mammography screening rates could be achieved by increasing screening among those women who have missing race/ethnicity data than by efforts targeted at those known to be racial/ethnic minorities. Women who identified Spanish as their preferred language were more likely to have been screened, suggesting that lack of acculturation itself was not a barrier. Because self-identified race/ethnicity data have been routinely collected during office visits and phone communication since 2007, its absence suggests less use of the care delivery system. Women whose records were missing this information had lower rates of bonding and had fewer office contacts compared with those whose records included this information. Although women can request and undergo mammography screening without an office visit, those with more office visits in any setting were more likely to have undergone screening than English speakers. Stratified models looking at associations between different variables and screening behavior in black and Latina women did not suggest differences in the impact of health variables such as smoking or BMI in these populations (data not shown).

**Table 3: Self-reported and imputed race/ethnicity**

<table>
<thead>
<tr>
<th>Data source</th>
<th>White</th>
<th>Black or African American</th>
<th>Hispanic or Latino</th>
<th>Asian or Pacific Islander</th>
<th>American Indian or Alaskan Native</th>
<th>Multiracial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-reported</td>
<td>74.4</td>
<td>4.9</td>
<td>15.3</td>
<td>3.5</td>
<td>0.3</td>
<td>1.5</td>
</tr>
<tr>
<td>Imputed (if missing self-reported data)</td>
<td>73.2</td>
<td>4.4</td>
<td>16.9</td>
<td>3.2</td>
<td>0.7</td>
<td>1.7</td>
</tr>
<tr>
<td>Combined self-reported and imputed data</td>
<td>74.0</td>
<td>4.8</td>
<td>15.8</td>
<td>3.4</td>
<td>0.4</td>
<td>1.5</td>
</tr>
</tbody>
</table>

*Ethnicity = non-Hispanic.*
are both unscreened and missing race/ethnicity data, there may actually be a higher proportion of minority women who are not identified and are missing data caused by issues related to their minority status; this could be an area of further analysis. Our study cannot demonstrate the reason for the association between missing race/ethnicity data and screening status. Women with missing race/ethnicity data had an even higher probability of being unscreened than women known to be of a minority race and seemed to have relatively less contact with our care delivery system. Our results cannot be generalized to uninsured women, because continuous coverage at least for 2 years was a prerequisite for inclusion in this analysis. The unscreened women who had relatively less contact with our delivery system may include a small number who had secondary insurance and obtained care elsewhere. If women are undergoing screening at KP arranged independent of any office contact, they are likely to be few in number. A qualitative assessment of women very overdue (by at least 4 years, N = 169 respondents) for screening, done by KP Northern California in 2009, found that only 7% of respondents had had a mammogram outside of KP. The most common barriers identified in responses to a survey questionnaire were related to pain (38.5% of respondents), perception of low risk (28.4%), and concern about repeated radiation exposure (26.6%). Further, 37.8% of respondents did not want to get a mammogram, “no matter what.” We do not know the socioeconomic status or level of education of those for whom we are missing data, and we suspect that these variables likely affect their willingness and capacity to obtain preventive services.

Population-based approaches using phone or mail to reach out to those who have already refused preventive services can be resource intensive and ineffective. Our breast cancer screening program includes educational materials to address common barriers and a strategy of outreach calls from a centralized call center. The result was an initial improvement in 2007, but increases in screening rates did not continue (Figure 1). A subset of women have made an informed decision not to undergo screening. The results of the analysis reported here have encouraged us to scale back initiatives targeting racial/ethnic groups and to focus instead on collaborating across outreach programs to build relationships with women with low use of our health services. Our current strategy is to “engage the unengaged” in any setting: mammography outreach occurs during nonprimary care contact, including visits to diabeticians, mental health professionals, and other specialists. Office and call center staff are being trained to assess readiness to dieticians, mental health professionals, and other specialists. Office and call center staff are being trained to assess readiness to change using motivational interviewing. PCPs call women in their panel who are overdue by 3 years for mammography for a personal discussion regarding screening. During these calls, physicians can address individual barriers, and women who make an informed decision against screening are excluded from future outreach. Unscreened women who are not bonded to a PCP receive a personal call from the team dedicated to women’s preventive services to assist them in choosing a PCP and to address gaps in preventive care, including mammography. New members, many of whom may delay making their first appointment, receive personalized guidebooks that link them to Web-based guidelines for screenings, including mammograms.

Although this study has helped us to refocus our efforts to reach unscreened women, it has also raised provocative questions about the meaning of missing race/ethnicity data as well as the potential utility of this lens for examining other aspects of health care inequity. Even as we continue to reach out to those who, although insured, do not fully participate in preventive care, we need to improve our understanding of the causes, which can be subtle and complex, of health care disparities.

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

Acknowledgment
Leslie Parker, ELS, provided editorial assistance.

References


A Palliative Course

Mme de Montigny ... had a cancer the size of a nut in the left breast .... [Houllier] considered the tumor to be cancerous and we decided upon a palliative course, fearing to irritate this Hydra, and cause it to burst in fury from its lair.

He ordered ... certain purgations ... and on the tumor was placed a sheet of lead covered with quick-silver .... A more aggressive treatment ... terminated with ulceration .... The heart failed and death followed.

— Ambroise Paré, c 1510 - 1590, French barber surgeon to Henry II, Francis II, Charles IX, and Henry III, considered one of the fathers of surgery and modern forensic pathology, and a pioneer in battlefield medicine
ORIGINAL RESEARCH & CONTRIBUTIONS

Implementation Study

The Banner Psychiatric Center: A Model for Providing Psychiatric Crisis Care to the Community while Easing Behavioral Health Holds in Emergency Departments

Pat Little-Upah, MA; Chris Carson, MD; Robert Williamson, MD; Tom Williams, MC; Michael Cimino, MBA; Neena Mehta, MSN; Jeff Buehrle, MBA; Steve Kisiel, MSIE

Abstract

Banner Health in the Phoenix, AZ, metropolitan area provides individuals in a behavioral health crisis with an alternative to presenting to an Emergency Department (ED). By implementing a process to quickly move patients out of our ED, our health care system has been able to greatly reduce the hold time for behavioral health patients. Through access to psychiatric clinicians around the clock at the Banner Psychiatric Center, patients now receive the appropriate treatment and needed care in a timely manner. Finally, disposition of patients into appropriate levels of care has freed up acute care Level 1 beds to be available to patients who meet those criteria.

Introduction

Banner Health is one of the largest health care systems in the western US with 23 hospitals and health care facilities in 7 states—Alaska, Arizona, California, Colorado, Nebraska, Nevada, and Wyoming—and more than 30,000 employees. In Arizona, Banner Health has 12 hospitals and 9 Emergency Departments (EDs) in the metropolitan Phoenix area with a combined total of close to 1500 adult patient visits per day. Banner Health is the largest private provider of inpatient mental health services in Arizona. A high percentage of behavioral health patients use the ED to access services in the Phoenix metropolitan area. Even though these patients represent a relatively small percentage of total ED visits, they tend to have a disproportionate impact on ED throughput because they often require additional resources (often 1:1 observation) and have a very long length of stay in the ED.

EDs are one of the cornerstones of America’s health care delivery system. The emergency room model allows the general public to have 24-hour access to trained medical personnel, including physicians and nurses who have the ability not only to assess the patient’s crisis but also to intervene and to stabilize the crisis in most instances.

ED overcrowding has been a national problem for many years. Although the contributory factors are complex, nearly all parties agree that behavioral health patients in the ED contribute to this problem.

Problem Statement

A 2004 survey by the American College of Emergency Physicians, in partnership with mental health organizations including the National Alliance for the Mentally Ill, the National Mental Health Association, and The American Psychiatric Association found that psychiatric patients wait in EDs more than twice as long as other patients while arrangements are made for psychiatric services elsewhere. According to 81% of the 340 survey respondents, the increase in those patients holding for an inpatient psychiatric bed negatively affects the care of other patients, reduces availability of ED staff for other patients, and contributes to longer waits for patients in the waiting room and to patient frustration.

Patients with psychiatric and drug- or alcohol-related complaints may represent a disproportionate number of longer wait times in the ED. Furthermore, a British study found that suicidal and self-harming patients presenting to an ED who did not receive a psychiatric assessment were twice as likely to commit further self-harm in the next year as those who were evaluated. Almost half of the patients who did not receive a timely evaluation left without treatment.

A May 2011 article in Health Leaders Media noted that health care reform would require new ways to think about the delivery of care. The ED can become a U-turn lane that channels patients out of a hospital to a less expensive setting. The same article points out that those patients entering the ED for physical complaints do not mingle well with patients who may have behavioral presentations that are aggressive or bizarre.

In 2009, the average hold time for a behavioral health patient in Banner Health’s EDs was 14 hours to 16 hours per patient vs 3 hours to 5 hours for nonbehavioral health patients. That year, Banner Health experienced 150,000 hold hours for behavioral health patients in its EDs. Each individual ED had to arrange for the disposition of these patients, who...
ended up being admitted as inpatients approximately 75% of the time.

Some of the contributory factors to this long hold time included an imbalance of inpatient and outpatient services, and insufficient capacity because of an outdated and ineffective patient care model. These factors manifested themselves in several ways inside the hospital, including the following:

- Demands for inpatient behavioral health beds exceeded the supply of those beds.
- Appropriate treatment for the patient with behavioral health issues was delayed while that person awaited placement in an inpatient bed, and often the patient’s condition deteriorated. Delays in receiving crisis stabilization services significantly increased the risk of physical injury to the patient and to others around him or her.
- Patients were being admitted to the highest levels of care because on-site assessment by a psychiatric provider was unavailable and there was a lack of community resources. Many of these patients could have been stabilized and treated in an outpatient setting.
- In the ED setting, nonbehavioral health patients and families were often exposed to unsettling verbal and physical outbursts from these patients and witnessed the patients being physically restrained.
- The increased hold hours decreased the ED’s capability and capacity at times to treat and to accept patients in need of acute medical care.
- The reduced bed and staffing capacity in the EDs caused delays in treatment, reduced patient satisfaction, and increased the risk of patients leaving without treatment.

Of all the medical specialties, psychiatry is the only one not to use the ED model of health care delivery. Most EDs have no psychiatric services available. Some EDs have set aside space specifically for patients in psychiatric crisis and, depending on the facility, have some level of provider, usually a therapist or social worker, available to complete an assessment. Many EDs do not have a psychiatric provider available 24 hours per day, 7 days a week (“24/7”) who can intervene and stabilize the crisis. Because of the lack of psychiatric providers available at the time of presentation, these patients invariably are transferred to the first available psychiatric inpatient facility.

**Previous Options**

Before the development of the Banner Psychiatric Center and the centralization of Banner Health’s Regional Patient Placement Office, there were few options for individuals presenting to busy EDs with a psychiatric illness.

In most EDs the protocol was to have the patient assessed by a midlevel behavioral health provider, and if that provider thought the patient met inpatient criteria, the wait for a bed would begin.

Unfortunately, without a psychiatrist or psychiatric nurse practitioner available, crisis intervention with appropriate medication and treatment planning was often lacking. Without a coordinated central placement system, each ED would be trying to find any available bed either inside or outside the hospital system. Because of the lack of coordination, information being sent to the receiving facility was often missing and extensive time was spent in reevaluating the patient for the next level of care. Once again, the receiving facilities—depending on the time of day—might or might not have a psychiatrist present at the facility.

Although many EDs have a psychiatrist on-call, patients requiring behavioral help could languish in an ED for hours or days before transferring to a behavioral health hospital, then wait another 12 to 24 hours to see a psychiatrist face-to-face. The outcome for EDs was that increased use of valuable resources over an extended period was needed to manage these patients. Beds that could have been used to treat patients with medical issues were unavailable. Behavioral health patients, in other words, were not receiving the optimum level of care to address their illness.

**Methods**

**Resources and Partnerships**

To explore solutions, in 2009 Banner Health partnered with the physician group Connections Arizona to explore the possibility of creating a new model of care that would address these issues. Together, a coordinated delivery of care system was developed. Before this time, it was widely accepted that there were not enough inpatient behavioral health beds in Maricopa County, AZ (which includes Phoenix and Scottsdale). This was inaccurate, as the problem was that most patients who presented to EDs or psychiatric hospitals were being admitted into the highest level of care because of the lack of other options. This resulted in an increasing percentage of patients who were admitted and discharged from an acute care inpatient setting within 24 to 48 hours. Involuntarily admitted (“involuntary”) patients were a major issue because the Urgent Psychiatric Center in downtown Phoenix was often on diversion because of capacity issues, as the center treated both the involuntary and voluntary population.

Connections Arizona had successfully developed a model of care that had greatly changed the way mental health was delivered in Dallas, TX. Connections Arizona owns and operates the Urgent Psychiatric Care Center in downtown Phoenix.

As the two organizations worked together, it became clear that the city of Phoenix required a second center similar to the Urgent Psychiatric Care Center, which could provide psychiatric crisis assessment and evaluation in a safe and therapeutic environment. In addition, a comprehensive plan to educate and to standardize behavioral health care in the EDs would need to be developed.

**Solutions**

A new care model was developed with the goal of getting behavioral health patients from the ED to a safe, secure, and appropriate care setting in as timely a manner as possible. An emergency psychiatric center, the Banner Psychiatric Center, was opened in September 2010 and is staffed 24/7 by a psychiatrist or behavioral health nurse practitioner along with other behavioral health support staff.

Additionally, a transfer process was developed using a regional transfer center at Banner Health known as the...
was the development of a Regional Patient Placement Office, which helps in the placement of medical patients. This centralized service is essentially a call center that is staffed 24/7 by registered nurses who match requests for patient transfers to available resources. The office facilitates an average of more than 2000 transfers per month, including more than 400 behavioral health patients transferred from the ED. Behavioral health services were put under this centralized model, which enabled the Regional Patient Placement Office to facilitate the transfers from the EDs to the Banner Psychiatric Center in a timely manner and to know bed availability within Banner Health and the community.

Patients are assessed shortly after arrival at the Banner Psychiatric Center, are stabilized, and are either discharged to the community or admitted to the inpatient setting. The decision was made to accept only adult voluntary patients at the Banner Psychiatric Center, allowing the Urgent Psychiatric Care Center downtown to concentrate on involuntary patients.

Development of the new care model involved the following six-step process:
1. Create a long-range plan and integrate behavioral health services into the Regional Patient Placement Office.
2. Build the physical facility for the Banner Psychiatric Center and devise program goals and services.
3. Educate ED staff and develop a patient-flow process to the center.
4. Standardize ED processes related to behavioral health patients.
5. Implement and use telemedicine services.
6. Address the needs of behavioral health patients with comorbidity.

The steps are described in detail here. **Step 1** was to develop a short-term and long-term plan for the Banner Psychiatric Center. The first act was to integrate behavioral health into Banner Health’s existing Regional Patient Placement Office. This centralized placement system had proved effective in rapid placement of patients with medical issues throughout Banner Health’s network of acute care hospitals in Arizona. Additional staff was added and received training specific to placement of behavioral health patients. Since January 2010, when this system was put in place, the Regional Patient Placement Office has triaged more than 10,000 behavioral health patients.

**Step 2** involved Banner Health building a state-of-the-art assessment and observation unit based on the medical model of a “psychiatric emergency room.” This unit was located on the grounds of the freestanding 96-bed Banner Behavioral Health Hospital in Scottsdale, AZ. The building was renovated and relicensed as the Banner Psychiatric Center. The center is approximately 7000 sq ft and includes a separate entrance; a lobby with a waiting room and interview rooms; a 23-hour observation area with 24 recliners, seclusion and restraint rooms; a medication room, and additional interview rooms. A separate police and ambulance entrance was created, and that area has a restroom, shower, seclusion and restraint room, and interview room.

The hub of the center is the staff observation and communication area, which has direct viewing of the 23-hour observation area and cameras for views of the entire facility. Every aspect of the facility was geared for maximum safety and security for the patients. The center is staffed 24/7 with psychiatrists, psychiatric nurse practitioners, registered nurses, behavioral health technicians, and crisis interventionists. The Banner Psychiatric Center provides behavioral health services to behavioral health patients for a period less than 24 hours.

A model also was established for the EDs that allowed for clinician-to-clinician dialogue and review.

Program goals included the following:
1. Provide person-centered behavioral health services for adults (aged 18 and older) who are experiencing psychiatric symptoms and come to the center voluntarily.
2. Provide services in a safe, secure, recovery-focused setting using the least restrictive and intrusive levels of behavioral health services.
3. Reduce or eliminate psychiatric and behavioral health symptoms.
4. Reduce resource consumption and staffing in the acute care EDs, particularly those associated with sitters, who are assigned to holding behavioral health patients.
5. Defer 70% of behavioral health inpatient admissions to outpatient treatment settings.
6. Positively affect the care delivery model in Maricopa County.
7. Optimize patient throughput and financial performance in Banner Health’s acute care EDs by reducing the hold times and related expenses of behavioral health patients.

Services provided by the Banner Psychiatric Center include emergency intake and assessment, behavioral health crisis intervention, medication services and stabilization, counseling, referral to community resources, and coordination of care with service clinicians.

**Step 3** was the development of a patient-flow process and education for ED staffs to facilitate timely transfer of patients from the ED to the Banner Psychiatric Center.

**Step 4**, which is a work in progress, involves standardization of processes related to behavioral health patients throughout the Banner Health EDs.

At Banner Health, multidisciplinary teams of physicians and other clinicians who examine emerging issues and opportunities for improvement in specific clinical areas help develop both expected and recommended clinical practices for systemwide implementation on the basis of evidence. The Behavioral Health Clinical Consensus Team developed a medical manageability criteria plan. Behavioral health units in medical centers have more resources available to them to address comorbid medical concerns than does a freestanding behavioral health facility. Behavioral health facilities often face additional challenges that the ED staff may not be aware of, such as the danger of taking patients in whom tubes have been inserted.

An additional component of this process is the use of a standardized electronic assessment platform. To add to the safety and efficacy of placing behavioral health patients, Banner Health has contracted with Pasadena, CA–based Hippocrates Gate LLC to use AccessHSI, the company’s Web-based behavioral health patient assessment and level of care tool. AccessHSI will be employed for the initial behavioral health patient assessment and become an integral part of the electronic medical record.
Step 5 involves exploring how to provide more comprehensive behavioral services to the Banner Health EDs using an electronic intensive care unit, or “eICU,” model based at the Banner Psychiatric Center. Banner Health is the first health care provider in the Phoenix metropolitan area to use telecommunications technology to monitor patients from hundreds of miles away. When finalized, the vision is to provide 24/7 telemedicine services from the Banner Psychiatric Center to all Banner Health EDs in Arizona as well as Banner facilities in other western states.

Step 6 is addressing the needs of patients with a comorbid medical problem. A Robert Wood Johnson Foundation report found that more than 68% of adults with a mental disorder had at least one medical condition, and 29% of those with a medical disorder had a comorbid mental health condition, on the basis of the 2003 National Comorbidity Survey Replication. This report indicates that individuals with mental illnesses are more likely than those without mental illness to have physical health ailments.

Results

Since opening in September 2010, the Banner Psychiatric Center has treated more than 6000 patients. There was a daily average of 17 arrivals, 11 of which were transfers from the EDs and 6 of which were walk-ins. Hold times in the EDs decreased by more than 40% for this patient population, from a range of 14 to 16 hours to 8 to 10 hours. Additionally, less than 50% of the patients who presented to the Banner Psychiatric Center were admitted later to an inpatient unit. Before implementation of the center, that rate was 75%.

Alternatives are now available for patients experiencing a mental health crisis other than going to an ED. Of the more than 4000 patients who visited the Banner Psychiatric Center between September 2010 and April 2011, 36% were walk-in patients to the center (Figure 1, top left). The conclusion can be drawn that before this model and level of care became available, those individuals would have gone to a medical center ED to seek treatment. The other 64% of patients at the Banner Psychiatric Center were transferred from EDs (Figure 1, top left).

Opening the Banner Psychiatric Center also resulted in more bed availability at the Urgent Psychiatric Care Center for involuntary patients, leading to more rapid placement from the Banner Health EDs for both involuntary and voluntary patients.

Before the opening of the Banner Psychiatric Center, the percentage of patients assessed, treated, and released from Banner Behavioral Health Hospital within 24 to 48 hours had steadily risen over the past 2 years. These patients generally have presented to the hospital or from an ED between 7 pm and 7 am. The prior unavailability of an onsite evaluation by a psychiatrist or psychiatric nurse practitioner at the ED led to admitting most of these patients to the highest level of care until they could be seen the next day. These patients are now being admitted and discharged from the Banner Psychiatric Center’s observation level of care beds. This has freed up acute inpatient beds in Banner Behavioral Health Hospital to be able to accept those patients who truly require that level of care.

Of the patients arriving at the Banner Psychiatric Center between September 2010 and April 2011, 19% were assessed and discharged without observation. Of the patients who were admitted into the center’s 23-hour observation area, 36% were discharged from that level of care. The remaining 45% of patients were admitted into an acute care inpatient bed at some time during that 23-hour period (Figure 1, top right). Patients who arrived from an ED were more likely to require observation than were walk-in arrivals, and they were more likely to need psychiatric hospitalization (Figure 1, bottom).

Conclusion

Banner Health has provided individuals in a behavioral health crisis with an alternative to presenting to an ED. Through implementation of a process to quickly move patients out of our EDs, we have greatly reduced the hold hours for...
behavioral health patients. Through access to psychiatric clinicians 24/7, patients are now receiving the appropriate treatment and needed care in a timely manner. Through disposition into appropriate levels of care, acute care Level 1 beds have been freed up to provide availability to patients who meet those criteria.

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

Acknowledgments
The Banner Psychiatric Center project was funded, with support of Banner Health senior leadership, through capital funding and charitable giving to Banner Health Foundation. Contractual agreements were made with payers to support patient admissions once operation of the Banner Psychiatric Center began.

Kathleen Louden, ELS, of Louden Health Communications provided editorial assistance.

References

Every Patient Has a Story

In psychiatry, the patient who comes to us has a story that is not told, and which as a rule no one knows of … . Therapy only really begins after the investigation of that wholly personal story. It is the patient’s secret, the rock against which he is shattered. If I know his secret story, I have a key to the treatment. The doctor’s task is to find out how to gain that knowledge … .

The problem is always the whole person, never the symptom alone.

— Memories, Dreams, Reflections. Carl Gustav Jung, 1875-1961, Swiss psychotherapist and psychiatrist who founded analytical psychology
Televisitation: Virtual Transportation of Family to the Bedside in an Acute Care Setting

Bonnie Nicholas, RN, CNCC(C), CPTC

Abstract
Television is the virtual transportation of a patient’s family to the bedside, regardless of the patient’s location within an acute care setting. This innovation in the Telemedicine Program at Thunder Bay Regional Health Sciences Centre (TBRHSC) in Ontario, Canada, embraces the concept of patient- and family-centered care and has been identified as a leading practice by Accreditation Canada. The need to find creative ways to link patients to their family and friends supports hundreds of miles away was identified more than ten years ago. The important relationship between health outcomes and the psychosocial needs of patients and families has been recognized more recently. TBRHSC’s patient- and family-centered model of care focuses on connecting patients with their families. First Nations renal patients with family in remote communities were some of the earliest users of videoconferencing technology for this purpose.

Introduction
Why Televisitation?
The negative consequences of isolation from family and community supports are an added burden to patients coping with illness in Thunder Bay Regional Health Sciences Centre (TBRHSC). Videoconferencing technology can be used to relieve this burden. According to Gerald Corey: “A sense of connectedness allows us to better adapt to life’s many challenges. Loneliness can chip away at our psychological well-being and impact our physical health. Building a support network is a great way to reduce loneliness and its consequences.”

Objectives
The objectives of TBRHSC’s telemedicine program are to reduce the impact of geographic and climate barriers between patients and their families; to reduce the negative psychosocial consequences of patient isolation and loneliness; to achieve optimal and equal access to exceptional care; and to support TBRHSC’s patient- and family-centered care (PFCC) model by bringing together patients, their health care partners, and their families during the patient’s journey within our facility.

TBRHSC is a 375-bed regional facility on the north shore of Lake Superior in Ontario, Canada, and is the major health service provider for Northwestern Ontario. Its catchment area is 523,252 km², close to the size of France (547,030 km²). The population of this region is sparse (<250,000), with 122,000 people within and around the city of Thunder Bay and the remainder in small communities. These include 70 First Nations communities, 24 of which are accessible only by air or winter ice road. Fort Severn, 850 km north of Thunder Bay, is an example of this type of remote First Nations community. Telemedicine is a vital link to family and services outside of this remote community. As one of the largest providers of telemedicine services in Ontario, TBRHSC continues to find creative ways to deliver health care closer to home.

Methods
Technology
TBRHSC uses secure videoconferencing technology, with funding from the provincial and federal governments along with other agencies. It is supported by the Ontario Telemedicine Network and their First Nations counterpart, Keewaytinook Okimakanak Telemedicine. Televisitation is 1 of 33 clinical services delivered by more than 70 clinicians within TBRHSC. Televisits account for a few of the more than 7500 clinical telemedicine conferences at our facility in 2011. Use of a secure network is the only option at this time. Applications like Skype, although available in community settings, are often not supported on hospital networks, for privacy or security reasons.

TBRHSC uses 25 videoconferencing systems to provide televisitation. Additionally, we have installed secure network switch access feeds to allow connectivity in every inpatient unit. By adding laptops and Wi-Fi connections at the bedside, we will provide private-computer video conference connections, a less intrusive technology for individual patient use. Large studios can also be used to accommodate more family members and friends supporting the patient. We have investigated the opportunity for national and international connections and are confident such visits can be accomplished if requested. Multisite, simultaneous connection is also possible. For this reason, televisitation is particularly well-suited to a patient- and family-centered environment.

Patient- and Family-Centered Care
PFCC is not just a slogan to display on a wall. Our definition of PFCC, adopted from the Institute of Medicine, is “the provision of care that is respectful of and responsive to individual patient/family preferences, needs and values, and ensures that these values guide all clinical decisions.” TBRHSC created a blueprint to accomplish real, systemwide change. This organizational transformation was accomplished by engaging everyone in a challenge to enhance the care experience for our patients and their families. Our journey to PFCC began with specific corporate strategies involving our 2500 employees and hundreds of partners.
Tools to support and promote a new culture of caring were needed. A staff handbook and resource teaching guide were created to engage patients and their families, physicians, staff, and volunteers and to explain what PFCC really means and looks like in action. The handbook discusses our philosophy of care, the definition of PFCC, core values of care, actions and attitudes, and guidelines for PFCC practices. The Board of Governors solidified their commitment to this journey by changing the organization's mission, vision, and value statements.

Patient family advisors (PFAs) are at the heart of the PFCC model of care. When PFAs tell health care clinicians their experiences in caring for patients, it generates empathy and a passion for optimizing the experience of every patient. This is the foundation for all of our improvement efforts. PFAs provide valuable insights and give us firsthand knowledge of how our services affect patients.

Results
We have begun to develop a new culture, care, and business model that incorporates PFAs into almost every aspect of our services, including staff hiring, board committee processes, education, program planning, and care teams. Currently, we have more than 85 actively engaged PFAs. Partnering with patients and families in more than 200 teams/committees, we have shifted the way we work and make decisions. Together, we have set out to improve our care, and after one year, our outcomes were astounding! Overall patient satisfaction improved by 12%, as measured with combined scores in all dimensions.

Improvements were evident in all 8 categories, with increases ranging from 6.8% to 21.6%. Scores in all PFCC dimensions were significantly higher than the Ontario averages. Staff and physician satisfaction scores also improved; the 2009 scores were 17.3% higher than the 2007 scores, bringing the rate to 82.2%. Two years later, TBRHSC had achieved improvements exceeding the Ontario Teaching Hospital averages (Figure 1).

Discussion
Televisitation from a videoconferencing studio within our organization was first offered more than 10 years ago to renal dialysis patients who had been relocated in Thunder Bay. Many renal dialysis patients were separated from their families and friends in remote communities; some of which were accessible only by air or winter ice roads. As the daughter of one dialysis patient shared, "My mother is 340 miles [550 km] from home and wanted to go home to die. With televisitation, she has agreed to stay for treatment and visits regularly with family and friends by video." There are numerous studies of the effect of social support on survival rates in dialysis patients. In a study published in the Netherlands in 2006, Thong et al concluded that "social support affects health through behavioral, physiological and psychological mechanisms. … Feeling socially isolated can induce stress and anxiety, which in turn can produce physiological changes [that,] … if prolonged, could lead to higher morbidity and mortality." Dialysis treatments often must continue for life and are usually offered in larger centers. There is a perception among residents of small, isolated communities that loved ones who go to the hospital in the city will never again live within their community and will die in isolation. Patients who have regular visits by video with their families and friends continue to receive support and to engage in community life.

Many patients accessing care from our regional tertiary facility come from very small and isolated First Nations communities. Frequently these patients do not speak English. With the help of a First Nations interpreter and a video connection, physicians and care teams can communicate with family at the patient’s home community and involve them in the plan of care. In a 2009 publication for the California HealthCare Foundation, Rosland noted, “Cultural background also influences how family members interact with patients’ health care providers. Cultural norms may influence who takes the lead in communicating with the provider. When patients are from a cultural background different than that of their provider, family members can assist patients in communicating their needs and values to the provider.”

Expanding the Scope of Televisitation
Teleconsultations are televisitations in which health team members, including physicians, nurses, social workers, dieticians, palliative care teams, and others, participate. Teleconsultation can inform family members of a patient’s progress and provide them an opportunity to give their input regarding the plan of care. These sessions are also useful for planning the safe return of patients to the community following discharge. When the patient is incapable of decision making, designated advocates can participate with the entire care team in end-of-life decisions.

Televisitation was also promoted during the H1N1 pandemic, when visitation restrictions separated families. Virtual visitation was successfully offered to patients in the intensive care unit, allowing multiple communities to interface simultaneously. Bedside televisitation provides members of the patient’s family the opportunity to be virtually present for sentinel events in the patient’s life, from birth to death.

Figure 1. National Research Corporation Picker data.
TBRHSC = Thunder Bay Regional Health Sciences Centre; IP = inpatient; PFCC = patient- and family-centered care.
Removing Barriers: Real-Life Experiences

Televisitation is an example of TBRHSC's PFCC philosophy in action. It recognizes the importance of including family and friends as essential health care partners. A patient can ask any team member to initiate the process for a televisit. The opportunities are limitless, from connecting new mothers and their babies in neonatal intensive care units with family hundreds of miles away, to end-of-life visitation in the adult intensive care unit. Promoting this service for life planning is leading to the Palliative Care Team's recognition of its usefulness. Widespread adoption of this approach is anticipated. Keeping a patient connected to their community support system is vital to health and well-being. Televisitation ensures that a patient's health journey can include family support. PFCC has become the umbrella for all of TBRHSC's care initiatives, integrating best practices related to patient care, flow, quality, and safety. TBRHSC was recently recognized by Accreditation Canada with the first and only PFCC Leading Practice Award, in 2011. Through our commitment to Caring Together, we will continue to be leaders in world-class PFCC.

Disclosure Statement

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

Acknowledgment

Leslie Parker, ELS, provided editorial assistance.

References

Inpatient Palliative Care Consultation: Describing Patient Satisfaction

Pushkar Chand, MD; Teralyn Gabriel, MSW; Cathy L Wallace, RN; Craig M Nelson, PhD, CLS

Abstract

Objective: This study identified and measured common patterns of patients' positive care experiences during inpatient palliative consultation, and helped better understand how the journey of discovery experienced by both patients and life-care consult teams can be used to improve the quality of care.

Methods: We administered questionnaires to a convenience sample of 25 patients who were referred to inpatient palliative care for a goals-of-treatment consult between April 2010 and May 2012.

Results: The modified responses to questionnaires revealed the perspectives of our patients rather than predicting outcomes. Respondents identified six areas of satisfaction: treatment with dignity and respect by the hospital health care team; after life-care planning consultation, patients felt they were better informed of their illness and medical context; 95% of all patients who responded felt their overall experience was excellent; all respondents felt the life-care planning consultation helped them form a treatment plan; all patients who responded believed their cultural beliefs and values were respected; and all responding patients noted that the inpatient palliative care team adequately addressed pain and symptom control.

Conclusion: We were encouraged by our findings: the feedback from patients and families showed us we were effective, from their perspective, in helping them shape their treatment journey. It also emphasized where we could have been even more effective in improving our communication.

Introduction

Inpatient palliative care is an essential component of Kaiser Permanente's (KP's) approach to improving the quality of continuing care service to our patients and their families. Consistently honoring patient-centered decision making is a salient aspect of this approach. Patients and their families are given opportunities to discuss treatment values and nonmedical concerns with an interdisciplinary team that helps them better understand their illness and prognosis.

We used a qualitative approach to the research question, Why do patients find inpatient palliative care consultation helpful? We emphasized a holistic perspective in attempting to understand the social context of our patient population at the KP South Bay Medical Center in Harbor City, CA. Qualitative methods allowed us to reach a new understanding when interpreting the data.

Our study process was based on the following concepts, which are important components of grounded theory: reality is socially constructed and context related; discovery of meaning is an important basis of knowledge; and discovery and analysis will proceed iteratively and not sequentially. Grounded theory emphasizes that reality is rooted in the existential and is always dynamic. This is why we discussed the patients' living, ongoing personal narratives. We were interested in learning how to understand a clinical process or treatment situation from the patient's perspective. We analyzed the categories and phases of their medical course. Detailed exploration and theoretic sensitivity with respect to inpatient palliative consultation shaped the social construction for each patient. We discovered answers to our research question by grounding our analysis in the data.

Honest communication about choices and outcomes was important when helping patients cope more effectively with their illness, and our guidance allowed patients to express their own wishes and priorities during treatment planning.

Our questions focused on ascertaining each patient's experience so as to tailor advance care planning and discussion of treatment to their specific situation.

Objective

The objective of this study was to identify and to measure, by qualitative analysis, common patterns in patients' positive care experiences and to explain how the journeys of discovery experienced by both patients and inpatient palliative care consultation teams can be used to improve the quality of care. We were able to more thoroughly understand how the patient's standpoint guided our focus on quality. We also listened to patients describe their experiences, and an added benefit of our analysis was that we often used the insight gained from these consultations in meetings with other patients and families. Participants were asked 22 questions, and there were 6 identifiable themes of greatest patient satisfaction.

Methods

The inpatient palliative care consult team consisted of a palliative care physician, a
registered nurse, and a medical social worker. A clinical ethicist was available for support when ethical questions arose and advised us regarding implementation of the study design, analysis, and the drafting of the manuscript.

The inpatient palliative care consultation team recruited patients who had a treatment plan that had been reached by consensus. Data collection for our qualitative study continued until saturation. That is, we collected data and identified distinct, recurring themes or patterns until no new themes or patterns emerged. Our sample appears to be small, but it is not uncommon for qualitative studies to enroll fewer than 100 participants, because in grounded theory, n equals the number of themes or categories, not the number of individual participants.

Our sample was made up of patients referred to the inpatient palliative care team for consultation with hospitalists, intensivists, and long-term care physicians about goals of treatment. During the consultation we spent time with patients and their families to learn more about their life experiences: we discussed the patient’s specific context for treatment planning; examined pain control; acknowledged cultural beliefs and values; provided a more thorough explanation of the trajectory of the illness; developed a patient-centered, realistic plan of action; and paid special attention to the complex and multiple aspects of human dignity. All respondents completed a questionnaire within one week following the inpatient palliative care consultation. Consent forms were obtained from all those who participated in the study. Subjects responded to the questionnaires with regard to their consultation as well as their previous experiences, thus the study was retrospective.

We found a distinct sampling pattern in the data from 25 inpatient palliative care consultations. We administered a 22-item questionnaire to patients and their families and analyzed their responses to characterize their previous experiences. This feedback helped us evaluate the quality of our inpatient palliative care consultations. Study participants had been referred to the inpatient palliative care consultation team for a goals-of-treatment consultation. All patients included in the study gave written, informed consent to participate. The questionnaire was approved by the KP Southern California institutional review board (R2010023; IRB# 5644).

Results

We collated the results from our questionnaire and identified patterns of quality associated with inpatient palliative care consultation.

Figure 1 describes 6 patient satisfaction areas. All patients who responded felt they were treated with dignity and respect by the hospital health care team. After the life-care planning consultation, all patients felt they were better informed of their illness and medical context; 95% of all patients who responded felt their overall experience was excellent; all respondents felt the life-care planning consultation helped them form a treatment plan to carry out their wishes; all patients who responded believed their cultural beliefs and values were respected. In addition, all questionnaire respondents noted that the inpatient palliative care team adequately addressed pain and symptom control.

Discussion

Although the importance of inpatient palliative care consultation has been widely reported in the literature, this study showed that it is helpful to characterize satisfaction from the patient’s perspective. Information regarding patient satisfaction must be focused if it is to provide helpful insight into what patients value during palliative care consultation. In the course of our research, the consultation team became more adept at understanding details of the patients’ situations and improved their practice of guiding patients through decision making. Our study fell short in not characterizing patient dissatisfaction. This information would have been helpful and should be included in future studies.

Future investigations might also include a broader and more probing questionnaire, quantitative analysis, and a larger patient pool. We must continue to create more quantitative and qualitative tools of analysis that help us better understand our patients and assist them to succeed in shared decision making for their health care journey.

We were encouraged by our findings: the feedback from patients and families showed us we were effective, from their perspective, in helping them shape their treatment journey. It also emphasized where we could have been even more effective in improving our communication. Six areas of patient satisfaction from the patient’s perspective were identified. We also learned that we must remain vigilant in addressing pain and symptom control and take every opportunity to maintain and improve the excellent patient satisfaction trajectory we have established. This study has inspired us to improve our practice of inpatient palliative care consultation. We are further reminded that it is vital to budget ample time to reflect on patients’ care experience so as to remain effectively patient centered.

Disclosure Statement

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

Acknowledgment

Leslie E Parker, ELS, provided editorial assistance.
Inpatient Palliative Care Consultation: Describing Patient Satisfaction

References

The Physician’s Duty

No other gift is greater than the gift of life! The patient may doubt his relatives, his sons and even his parents, but he has full faith in his physician. He gives himself up in the doctor’s hands and has no misgivings about him.

Therefore, it is the physician’s duty to look after him as his own.

— Charaka, c 300 BC, one of the principal contributors to the ancient art and science of Ayurveda
Temporal Arteritis: Improving Patient Evaluation with a New Protocol

Michael Alberts, MD, PhD

Abstract

Context: The process of diagnosing temporal arteritis remains controversial. Although temporal artery biopsy has long been the standard tool of evaluation, its poor sensitivity has prompted investigation of other methods to aid in diagnosis. Improved clinical evaluation and various imaging techniques have been suggested as ways to establish the diagnosis through noninvasive means and to improve biopsy yield.

Objective: To retrospectively report and evaluate the process and experience of the Kaiser Permanente Northwest Region in implementing a new protocol that includes an enhanced clinical evaluation as well as the incorporation of color duplex ultrasonography in addition to biopsy when appropriate for temporal arteritis evaluation.

Results: A 38% reduction in the number of temporal artery biopsies performed was achieved through the new protocol, which was created by a multidisciplinary process, including stakeholders from all departments involved. The percentage of abnormal biopsy results rose from 8.5% at baseline to 24%. No cases of the disease were missed after careful evaluation of clinical and medical-legal records.

Conclusions: Adding specialist clinical evaluation and color duplex ultrasonography to the standard diagnostic workup for temporal arteritis creates a rapid, noninvasive, resource-sensible means to diagnose giant cell arteritis, to improve temporal artery biopsy yield, and to decrease the total number of biopsies done. The diagnosis can be made in some cases by clinical evaluation and color duplex ultrasonography alone, thereby saving the patient an unnecessary surgical procedure. Protocols such as this can be implemented by multidisciplinary cooperation in a patient-centered, integrated system.

Introduction

Few clinical dilemmas have proved as vexing as the diagnosis of temporal arteritis, also known as giant cell arteritis (GCA). An arterial inflammatory condition most commonly affecting the temporal arteries, GCA is characterized by arterial infiltration of so-called giant cells (Figure 1). Failure to identify the disease in its early state can lead to lack of treatment and ultimately irreversible blindness. GCA is thought to occur in 10 to 20 per 100,000 patients older than age 50 years, more often in elderly patients and in women. The treatment consists of long-term administration of corticosteroids, which nearly immediately arrest the progression of the disease but carry a number of known risks (eg, electrolyte disturbances, hypertension, psychiatric disturbances, diabetes, osteoporosis, and adrenal suppression).

Attempts at standardization of diagnostic protocols have been controversial. Measures such as careful clinical evaluation based on specific criteria, temporal artery biopsy, magnetic resonance imaging, positron emission tomography, and color duplex ultrasonography, alone or in combination, have been proposed. No universally accepted algorithm has been developed, although temporal artery biopsy has remained the traditional cornerstone of diagnosis. Because the arterial inflammation is characterized by “skip lesions” (areas of inflammation intermixed with a normal artery), evaluating the sensitivity of detection by any method, including biopsy, is limited and difficult to determine. The false-negative rate of biopsy is estimated to vary between 10% and 61%. The reference criteria against which this sensitivity is determined is typically clinical suspicion, itself an imprecise measure.

A weakness of any diagnostic modality, whether imaging or biopsy, is that it must clearly identify the actively inflamed artery segment. Clinicians have remained frustrated that even pathologic diagnosis by temporal artery biopsy, which is limited to the surgically accessible part of the artery, demonstrates a limited sensitivity when compared against clinical suspicion because, even in active disease, there remain segments of unaffected artery. For this reason, some authors have recommended trying to obtain longer segments of artery (>2 cm) at biopsy. However, longer artery segments require longer incisions and an increased complexity of the procedure.

In 1990, the American College of Rheumatology, in an attempt to standardize the diagnosis of GCA, created a classification system consisting of 5 specific criteria that predict the presence of temporal arteritis. The group of patients studied was composed of those assumed to have the disease compared with control patients (who had other vascular conditions) on 50 discrete variables. By factor analysis, an abnormal result of a temporal artery biopsy emerged as 1 of 5 equally weighted final criteria that contribute evidence to the diagnosis (Table 1). This guideline recognized that, even with a normal biopsy result, a patient might still have a high likelihood of having GCA, assuming that his/her clinical picture is consistent with the disease. In fact, of the patients studied, even when highly screened to meet clinical criteria for temporal arteritis, 12 of 214 patients had normal biopsy results. The presence of any 3 of the 5 criteria (even if abnormal biopsy result is not one of them) imparted a sensitivity of 93.5% and a specificity of 91.2%.

Regardless of its poor sensitivity, temporal artery biopsy has remained the
Temporal Arteritis: Improving Patient Evaluation with a New Protocol

hallmark of diagnosis because, when the result is abnormal, it defines the disease. It is an outpatient surgical procedure, performed with either sedation and local anesthesia or local anesthesia alone. Although the procedure is generally safe, rare complications such as facial nerve injury can occur. Additionally, it is resource intensive, typically requiring the use of the ambulatory surgical center operating room (OR).

Perhaps most frustrating is the inability of temporal artery biopsy to definitively make the diagnosis in most cases because a normal biopsy result does not rule out GCA. Most clinicians are aware of this. In fact, when retrospective reviews have evaluated whether treatment decisions are altered by biopsy result in the case of a normal biopsy, the findings demonstrate clearly that they are not. Because the consequence to the patient of a missed case of GCA is so high, clinicians will treat on the basis of probability of disease without regard to the biopsy result unless the biopsy result is abnormal, at which point the need for treatment is clear.

As a department we wondered, with the result of so few biopsies yielding abnormal results, should temporal artery biopsy continue to be the initial screening measure for GCA in all patients, or is there a more select group of patients for whom biopsy result would most influence treatment decisions? How could we improve our yield of abnormal biopsy results? Are there some patients for whom biopsy is unnecessary, because the pathologic result would not influence treatment decisions?

**Methods/Results**

**Phase 1: Pilot Protocol**

The investigation was begun by examining our own experience. From June 2000 until September 2003, the department found that 143 unilateral temporal artery biopsies were performed in the Kaiser Permanente Northwest (KPNW) Region. Of these, 8.5% showed an abnormal pathologic result (inflammatory mononuclear cell infiltrates within the vessel wall with presence of giant cells). The regional protocol at that time was to initiate corticosteroid therapy immediately in a patient that the clinician suspected of having GCA and to refer that patient to the General Surgery Department for urgent unilateral temporal artery biopsy on the most symptomatic side. These biopsies were performed at the first surgical opportunity (ideally 1 to 3 days). There were no established criteria for referral other than clinical suspicion. Most referrals came from primary care clinicians. The yield of abnormal biopsy results did not meet published norms reported in the professional literature, prompting a closer look at the process.

**Initial Revisions to the Protocol—Adding Color Duplex Ultrasonography**

In an effort to improve our rate of abnormal biopsy results, we introduced temporal artery color duplex ultrasonography as the first diagnostic measure in the algorithm for GCA workup, judging it to be the most promising of the noninvasive diagnostic modalities being studied. We believed this would help us target our biopsy at the particular segment of artery that was abnormal as well as allow us to evaluate the entire artery on both sides rather than being limited to the surgically accessible portion. At that time, color duplex ultrasonography was emerging as a promising modality for evaluation of arteritis of various types.

The additional objective, by evaluating the correlation between ultrasound result and biopsy result was that, if this technique was successful (had increased sensitivity and specificity compared with clinical suspicion), duplex ultrasonography could eventually replace temporal artery biopsy as the diagnostic modality of choice for suspected cases of GCA. Duplex ultrasonography has the following advantages: it is noninvasive (thereby eliminating the risks associated

**Table 1. American College of Rheumatology classification for giant cell arteritis**

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Definition</th>
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<tbody>
<tr>
<td>1. Age at disease onset ≥50 years</td>
<td>Development of symptoms or findings beginning at age 50 years or older</td>
</tr>
<tr>
<td>2. New headache</td>
<td>New onset of or new type of localized pain in the head</td>
</tr>
<tr>
<td>3. Temporal artery abnormality</td>
<td>Temporal artery tenderness to palpation or decreased pulsation, unrelated to arteriosclerosis of cervical arteries</td>
</tr>
<tr>
<td>4. Elevated erythrocyte sedimentation rate</td>
<td>Erythrocyte sedimentation rate ≥50 mm/hour by the Westergren method</td>
</tr>
<tr>
<td>5. Abnormal artery biopsy</td>
<td>Biopsy specimen with artery showing vasculitis characterized by a predominance of mononuclear cell infiltration or granulomatous inflammation, usually with multinucleated giant cells</td>
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with surgery); it does not require altering the anticoagulation regimen for patients receiving these medications; it is less expensive than biopsy; it is more readily available in KPNW (given the premium on available OR time); and it can be done more expeditiously.

Bringing duplex ultrasonography into the protocol required some technical training of duplex ultrasound technicians. However, their core training in noninvasive vascular imaging made the additional training a natural progression of their scope of practice rather than an entirely new undertaking. Learning the technique did not prove difficult (5- to 15-MHz linear probe depending on the depth of the vessel, bilateral evaluation of the entirety of the temporal arteries). Vascular surgeons already had the expertise to read these noninvasive studies. A commitment was negotiated with the Radiology Department staff to perform the study within 48 hours of referral and with vascular surgeons to read the studies on the same day as they were performed whenever possible, and at most by the end of the following day.

The General Surgery Department agreed to biopsy all patients with any abnormality on the duplex ultrasound image (an inflammatory halo resulting from periarterial edema or arterial stenosis), using the specific site of the finding on the duplex ultrasound image as the physical target for the biopsy. The site on the patient’s temple was marked with permanent marker at the time of duplex ultrasonography and kept in place until the biopsy was performed. Patients with a normal result of duplex ultrasonography were treated clinically by the referring physician on the basis of their pretest suspicion of GCA (Figure 2). This choice was made under the assumption, based on a literature review, that there would be few cases in which the duplex ultrasound result was normal that the subsequent biopsy result would be abnormal.13

All patients with abnormality found on the duplex ultrasound image ultimately received treatment, regardless of the eventual biopsy result. Three questions arose and were addressed:

1. Did a normal duplex ultrasound result have the same impact on treatment decisions as a normal biopsy result had in the past? In other words, since most studies of either type, biopsy or duplex ultrasonography, will be normal, did it make a difference in treatment planning which study had been done?

2. Did an abnormal duplex ultrasound image result correlate with an abnormal biopsy result? If so, perhaps biopsy would not be necessary after an abnormal ultrasound result.

3. Were any cases of GCA missed with the new protocol?

**Results for Pilot Protocol**

Satisfactory answers to all three questions suggested that duplex ultrasound imaging was filling the same role in treatment planning as biopsy and that perhaps duplex ultrasonography could replace biopsy as the diagnostic test of choice for GCA.

In the first year of the protocol, 55 duplex ultrasound imaging studies were ordered, all of which, before the use of color duplex ultrasonography, would likely instead have been biopsies initially. In 6 of the 55 duplex ultrasound images, results were either abnormal (halo present) or equivocal (arterial stenosis or nondiagnostic). The rest had normal findings. Of the 6 biopsies performed because of an abnormal duplex ultrasound image, 3 showed pathologic signs of arteritis and 3 did not. The number of biopsies performed was markedly reduced, and 50% of the small number of biopsies had abnormal results rather than the prior rate of 8.5%.

The impact of normal duplex ultrasound results was reviewed by comparing the first 147 patients who had a normal duplex ultrasound image against a historic control group of 143 patients who had had a normal result of a unilateral temporal artery biopsy but no color duplex ultrasonography in the 3 years before initiating the new protocol.12 It was found that referring clinicians demonstrated no differences in treatment decisions based on whether the normal result came from a biopsy in the historic group or duplex ultrasound image in the experimental group. (Corticosteroid treatment was stopped in 80% of patients after normal biopsy results in the historic group and in 87% of patients after normal duplex ultrasound results in the experimental group.) No cases of GCA were missed, as determined by reviewing both the diagnostic database for this condition and medical-legal files for claims or potentially compensable events.

**Phase 2: New Algorithm**

The department was aware at the time that no protocol such as this (to biopsy only those patients with an abnormal duplex ultrasound result) had been tested in a prospective randomized way. Also, there was no consensus support by the American College of Rheumatology for moving away from temporal artery biopsy as the primary means of evaluation for GCA, although a variety of imaging modalities were being actively discussed in leading rheumatology journals as well as at the national congresses.13 Regardless, it seemed that the prior “biopsy only” protocol had not been optimal.

The task was to determine—using a combination of the Region’s clinical experience, the scientific data, a desire to provide the safest and most effective care for patients, and mindfulness of resource availability—which protocol was best for evaluation of GCA. The goal was to do...
so in a way that was acceptable to all clinical stakeholders who evaluate and treat this disease.

**Working Toward Consensus**

A multidisciplinary group was convened in October 2007, that included representation from the Departments of Rheumatology, Neurology, Ophthalmology, General Surgery, Primary Care, Information Technology, Evidence-Based Medicine, Population Care, and Medical/Legal. There were three explicit goals in designing a final protocol:

1. ensure the rapid and appropriate evaluation of GCA without missing cases
2. reduce the number of temporal artery biopsies from the original baseline
3. increase the rate of abnormal biopsy results (what we called the biopsy “positive” rate) by improving the quality of referrals for temporal artery biopsy.

The department did not limit consideration to only certain modalities or processes. Instead it tried to elicit the specific concerns posed by each stakeholder. The discussion was not without contention. It was unclear whether duplex ultrasonography of the temporal artery could justifiably be considered appropriate screening for GCA given the controversy in the medical literature despite favorable findings. Yet it was also unclear why a rate of abnormal biopsy results far below the rate in the published literature had occurred in the Region’s diagnostic workup before starting the ultrasound protocol. There was general agreement to consider changes that would benefit KPNW’s patients.

**Changes to the Algorithm**

The first point of consensus was that the low rate of abnormal biopsy results was being influenced by the appropriateness of patient selection for GCA workup. It was agreed that the first step would be to add specific clinical expertise to the patient evaluation process before referral for further diagnostic evaluation. This “screen” would likely decrease the number of patients who required any additional diagnostic test. The Department of Rheumatology agreed to provide real-time feedback by telephone to any clinician who was evaluating a patient suspected of having GCA. To facilitate this process, a broad communication was made to all primary care clinicians about the new workflow. A new internal referral in HealthConnect for temporal artery biopsy was made so that any referral option for biopsy, rather than initiating a referral to surgery, led to specific advice to page the rheumatologist on call. The rheumatologist would discuss the case, review the chart, and give guidance regarding any further workup. This clinician-to-clinician communication also allowed a consideration of differential diagnoses for patients who were unlikely to have the disease. The ability to directly order diagnostic studies for GCA was removed from all but the rheumatologists.

Initially there was some trepidation that the influx of advice calls would overwhelm the capacity of the Rheumatology Department to handle these in a timely fashion. Fortunately, this did not occur. In fact, both rheumatologists and primary care physicians found this to be a professionally satisfying exchange of information and a benefit to the patient. It was agreed, therefore, that only the rheumatologist would determine additional workup (either duplex ultrasonography or biopsy, or both) after discussion with the referring physicians. After several months into the protocol, it was agreed that other specialists with experience evaluating patients with GCA (neurologists and ophthalmologists) would also be given access to order duplex ultrasonography or biopsy without rheumatology review. In exchange, the General Surgery Department agreed to biopsy any patient requested by this group of clinicians as expeditiously as possible if that was the choice of the referring specialist.

The second point of consensus proved more difficult. Should temporal artery duplex ultrasonography, or any other imaging modality, remain as part of the diagnostic algorithm, and if so, for which patients, given that it had not been accepted as standard practice by the medical community? Through compromise and literature review, it was agreed that it would be left to the discretion of the referring specialist (rheumatologist, neurologist, or ophthalmologist) to determine the next diagnostic modality. The referring specialist would first stratify patients into low, medium, or high risk of GCA on the basis of chart review and discussion with the referring clinician. Then, on the basis of this determination of risk, the specialist would decide the

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**Diagram:**

![Figure 3: Current algorithm that includes clinical risk stratification.](image)

**Legend:**

- CRP = C-reactive protein; ESR = erythrocyte sedimentation rate; po = orally; PCP = primary care provider; Recs = recommendations; Rheum = rheumatology; US = ultrasound image; w/u = workup; +/- = with or without.
type of evaluation (duplex ultrasonography, biopsy, or both) that would best guide treatment decisions. The new algorithm is shown in Figure 3.

Results of New Algorithm
The results of the new algorithm, which included a specialist’s evaluation and color duplex ultrasonography when thought to be appropriate, and biopsy if requested, demonstrated an impressive reduction in the number of temporal artery biopsies performed (Figure 4). Of perhaps greater importance was that no known cases of temporal arteritis were missed.

With the declining number of biopsies, the rate of abnormal biopsy results rose from the baseline of 8.5% to 24%, more in keeping with the rate reported in the published literature. The rate of congruence between duplex ultrasound and biopsy results, when both were obtained, also was consistent with published expected results. In 42 of 60 cases (70%), when both duplex ultrasonography and biopsy were performed, the ultrasound result agreed with the biopsy result (Table 2). In 5 cases, the ultrasound finding was reported as normal, but the biopsy result was ultimately abnormal; whereas in 6 cases, the ultrasound result was abnormal, but the biopsy was normal. It was concluded that, although not perfect, the addition of 2 measures, careful clinical evaluation and the option of ultrasonography before, or instead of, biopsy, was accomplishing our goals. These two measures continue to be used.

Discussion
The dilemma of temporal arteritis is its diagnosis. If clinicians were able to accurately identify the disease when present, the treatment (corticosteroids) would clearly outweigh the risk of the disease (blindness). However, without a singular diagnostic test of acceptable sensitivity and specificity for GCA, it must ultimately remain a diagnosis made by careful clinical evaluation in conjunction with judicious use of other diagnostic modalities. Temporal artery biopsy, the traditional mainstay of diagnosis, is of value only when the result is abnormal, an occurrence that happens in less than half (often much less than half) of the biopsies under the best of circumstances.36

The primary goal was to improve the diagnostic process for both patients and clinicians. This was accomplished by reducing the total number of invasive procedures (biopsies) performed through limiting them only to the patients for whom the result would be meaningful, and by increasing the use of noninvasive imaging that might accomplish the same goal. It was critical that, in changing the protocol, no patient with treatable disease was missed. It was accepted that the protocol runs counter to the current practice in most institutions, but the department was willing to challenge the widely held pattern of temporal artery biopsy for all patients suspected of having GCA.

Our multidisciplinary discussions resulted in two changes to the patient evaluation protocol, which continues to the present:
1. Direct, real-time assessment by a rheumatologist, by chart review and conversation with the referring clinician (with the exception of ophthalmologists and neurologists), for every patient referred by a primary care physician for GCA evaluation
2. Temporal artery color duplex ultrasonography for patients in whom, in combination with the level of baseline clinical suspicion, GCA could safely be ruled in or out on the basis of duplex ultrasound result (typically high clinical suspicion/abnormal duplex ultrasound result or low clinical suspicion/normal duplex ultrasound result, respectively), and the patient therefore could avoid a biopsy. Biopsy remains available at the specialist’s discretion, typically for duplex ultrasound results that conflict with clinical suspicion.

Which change was most responsible for the reduction in biopsies was not specifically evaluated. It was neither anticipated nor expected that duplex ultrasonography would completely replace temporal artery biopsy or clinical evaluation, only to supplement them and allow biopsy to be used when the result would be useful for treatment decisions.

Our primary use of duplex ultrasonography has been to rule out patients with low clinical suspicion of GCA. Evidence exists to support ruling out “low probability” patients who have a normal duplex ultrasound result.37 For these patients, who would not be subjected to treatment without an abnormal test result, duplex ultrasonography may play a key role. Other institutions have adopted this practice.18

There is increasing evidence, however, that duplex ultrasonography can
be used to rule in the disease. The most recent data show that the ‘halo sign’ on duplex ultrasound image is highly specific for GCA (81% for unilateral halo and 100% for bilateral halo), and therefore biopsy adds nothing to the evaluation in these cases.[12-19] In fact, it would be difficult to imagine the justification not to treat a patient with an abnormal duplex ultrasound result, regardless of biopsy result, given biopsy’s high false-negative rate. With greater limitation of surgical resources, it becomes difficult to defend continuing to perform invasive procedures such as biopsy if the result will not influence the treatment decision. Some European rheumatology centers have preceded this institution in adjusting their algorithm to include duplex ultrasonography as the primary means for evaluation of GCA. It has been less accepted in the US. In fact, the American College of Rheumatology, in its formal information to patients, makes no mention of duplex ultrasonography.

Wolfgang Schmidt, MD, a leading international advocate of duplex ultrasonography for the diagnosis of GCA, practicing in Berlin, has used this modality as the primary diagnostic tool for several years. He communicated the following (WA Schmidt, MD, personal communication, 2012 May 6):

We offer a daily ultrasound clinic. Physicians who are suspecting temporal arteritis/giant cell arteritis can call our Ultrasound Department and patients receive an appointment within 24 hours of a working day (Monday to Friday). Here patients first see an experienced rheumatologist. We do a standardized clinical history and short clinical examination (eg, palpation of temporal arteries). We review previous examinations (eg, for ESR [erythrocyte sedimentation rate] or CRP [C-reactive protein]) and then examine the temporal and axillary arteries with ultrasound. At the end more than 95% receive a clear yes or no with regard to the diagnosis of giant cell arteritis. We send only very few patients with ambivalent findings to biopsy. We have 15 minutes for an appointment. In general, this is enough time to confirm or exclude giant cell arteritis.

This institution has not yet adopted such an aggressive protocol or investigated adding axillary artery ultrasound imaging to its workup. However, there is ample evidence to suggest that temporal artery duplex may be an important and expedient tool which, when coupled with clinical evaluation, could make the diagnosis of GCA a nearly immediate and painless experience for patients. KPNW has a unique opportunity to use its integrated care delivery system and electronic medical record to increase efficiencies and safety for its patients. This may be an excellent example of patient-centered care that challenges the established practice and sets a new community standard. Ultimately, the success of this program relies on the multidisciplinary collaboration that comes from thoughtful discussion, testing new and innovative practices, and a review of available scientific and clinical evidence. Through these methods the prevailing practice to improve the care of patients could change and improve.

Kathleen Louden, ELS, of Louden Health Communications provided editorial assistance.

Table 2. Rate of congruence between duplex ultrasound and biopsy result

<table>
<thead>
<tr>
<th>Month/year</th>
<th>Counts</th>
<th>Fractions of total (%)</th>
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<tbody>
<tr>
<td></td>
<td>Congruent</td>
<td>Equivocal</td>
</tr>
<tr>
<td>August 2008-July 2009</td>
<td>21</td>
<td>2</td>
</tr>
<tr>
<td>August 2009-July 2010</td>
<td>13</td>
<td>1</td>
</tr>
<tr>
<td>August 2010-July 2011</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Total/average</td>
<td>42</td>
<td>7</td>
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References

Acknowledgments
The author acknowledges Ariel K Hill, MS, who provided research assistance for this project.
Red Streaks

The “red streaks” proved, on examination, to be his temporal arteries, which on both sides were found to be inflamed and swollen. The streaks extended from the temporal region almost to the middle of the scalp, and several branches of each artery could be distinctly traced.

— Sir Jonathan Hutchinson, 1828-1913, English surgeon, ophthalmologist, dermatologist, venereologist, and pathologist
Transprocessing: Neurobiologic Mechanisms of Change during Psychotherapy—A Proposal Based on a Case Report

Andrei Novac, MD; Robert G Bota, MD, MSG, FAPA

Abstract
This article proposes transprocessing (as in “transduction” and “processing”) as a term to denote mechanisms by which the brain processes information in psychotherapy and develops solutions that have a lasting, curative effect. The case of a woman with a history of posttraumatic conversions, who recovered after long-term psychotherapy, is presented as the basis for a discussion on psychotherapeutic changes of the brain. Psychological healing and change, in general, is seen here as a result of a large variety of neurobiologic processes that reframe complex or multimodal memories. Through transprocessing, multimodal memories are deconstructed along the different axes of the brain tissue and restored through memory mechanisms at the synaptic, cellular level. Transprocessing requires a sustained interplay between the extended projections of the “language brain” and the repeated, alternating activation and deactivation of the midline structures associated with the self, to form pathways through long-term therapeutic experiences. We propose three separate stages of transprocessing by which new implicit and explicit memories of the therapeutic narrative are internalized as first-person experiences.

Case Report
A woman, age 44 years, was referred by a local internist after progressive speech problems and labile affect developed. Findings of the initial examination revealed a history of postpartum depression at age 34 years. At that time, with medication treatment and a 2-year course of psychoanalytic psychotherapy, the patient showed a full recovery.

On examination, the most striking finding was labile affect in the form of brief attacks of dysphoria, which were immediately relieved after changing the subject of conversation.

The patient’s speech pattern was that of dysfluent aphasia. She was able to name objects and say nouns correctly. She was also speaking in a hoarse voice, which according to her husband, she had never before presented. At home she was irritable and would burst into brief crying spells. She had a recurrence of old nightmares, which we later learned were related to trauma. The rest of the neurologic findings and the results of the magnetic resonance image were normal. Further history revealed that she had been a flight attendant and had been assaulted and raped while walking to her hotel during a layover abroad 15 years previously. She had never received any treatment related to the rape.

She did well until she gave birth to her first daughter ten years before her referral to us, when she developed postpartum depression. During this episode she did not tolerate medications. Working diagnoses of conversion disorder and major depression with a history of posttraumatic stress disorder (PTSD) was made.

The patient was seen in dynamic psychotherapy 3 times per week. During interpretations that were rated as essential to autobiography, labile affect worsened temporarily by triggering a catastrophic reaction: a sudden attack of crying, lasting between 20 seconds and 1 minute. This was followed by a smile. The succession between states was dramatic. After about 12 weeks of treatment consisting of 36 sessions, the affect became more stable. She was able to focus on her emotional state, elaborating on it as her facial expressions became more congruent with her internal state. On numerous occasions, when the orbicularis oris
muscles contracted and pulled her mouth downward into a sad expression, she would be able to connect to emotions of sadness. During the following 50 sessions (approximately 3 months), the patient spent most of the time during her sessions talking about her deep feelings of loss and her belief that she had suffered a stroke. She was experiencing a sense of lack of control over the future. During the same time, she experienced nightmares and severe nocturnal anxiety. She reported nightmares 2 to 3 times per week and exhibited symptoms of PTSD. She had hyperarousal in the form of attacks of anxiety with palpitations and headaches, which were diagnosed as tension headaches. The nightmares were eventually interpreted by her and by her therapist as expressions of fear of failure in life, which was tied to the emphasis her immigrant parents placed on academic performance. “It is easy to fail in America,” her mother used to say. “What if I fail?” had been part of her self-talk since adolescence. During psychotherapy new narratives of self-confidence developed, such as “I was actually privileged … .” It was later that she tied her sense of loss (eg, symptoms of stroke) to a perceived failure to foresee and prevent the rape. She saw herself as paralyzed in front of evil.

During the next six months, the nightmares gradually subsided. What was particular to this patient was a gradual improvement in her speech in parallel with the disappearance of nightmares. She returned to work full time after a year on sick leave.

Her depression lifted gradually, and she returned to old hobbies and interests. She became more involved with her two children and later decided to work half time so as to spend more time with her family. To date, four years since the episode, she has not shown any relapse of symptoms.

**Discussion**

On the basis of this case and the existing vast literature on psychological processing, we propose two areas for future exploration pertinent to the healing mechanisms in psychoanalytical psychotherapy: the neuroanatomical basis of processing and transprocessing and the uploading of implicit healing narratives.

**Neuroanatomical Basis of Processing**

The large amount of literature on the neuroanatomical basis of processing mechanisms (Figure 1) divides it into vertical processing systems, horizontal processing systems, and neuroplasticity and processing.

**Vertical processing systems:** The vertical processing systems include:

1. self-related processing and the subcortical-cortical midline system
2. reentry circuits
3. prefrontal-subcortical circuitry.

Panksepp and Northoff\(^1\) have referred to self-related processing attributed to a set of midline structures that start in the brain stem, in the reticular activating system, and are interconnected with higher brain structures in the subcortical and cortical areas, referred to as the subcortical-cortical midline system. These structures accomplish the integrative bodily functions and the convergence of basic emotional systems to form the proposed “bodily self or proto-self”\(^2-10\) (see Sidebar Self-Related Processing and Subcortical-Cortical Midline System, item 1).

Reentry, or the cortical-subcortical parallel reentrant circuits\(^11-13\) provide the structural basis for an interactive system, between the cortex and the subcortical areas of the basal ganglia and striatum, substantia innominata, and the extended amygdala. This network allows for a bidirectional mirroring between subcortical implicit networks and cortical neural activity.

The prefrontal cortex includes the orbital medial prefrontal cortex and the lateral prefrontal cortex and their connections.
to the striatum and to the thalamic nuclei. These very dense networks provide a major role in mood regulation (see Sidebar Self-Related Processing and Subcortical-Cortical Midline System, item 2).

**Horizontal processing systems:** These systems can be subclassified into the interhemispheric and intrahemispheric systems. The interhemispheric components include the corpus callosum and the anterior commissures. Routine conscious speech-driven activity maintains left-brain dominance. For psychotherapy and personal development, developing meaningful narratives about adverse life events have a healing quality. A large body of literature has further demonstrated that speech, in an interactional context, involves extended bilateral areas, which creates a “beltway of communication and awareness” around the entire brain (see Sidebar Self-Related Processing and Subcortical-Cortical Midline System, item 3).

Intrahemispheric processing occurs by means of the white matter tracts that are the structural basis for ipsilateral coordination between different brain structures. Such white matter structures are the inferior occipitofrontal fasciculus and the inferior longitudinal fasciculus. The role of these structures has been grossly overlooked in the past.

**Neuroplasticity systems:** This is a very extensive subject that involves learning processes and human change. Experiential relearning after brain damage has been shown to result in remapping of brain projections. Three major areas are of particular interest. 1. Dendrite rebranching, which includes the formation of new

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**Self-Related Processing and Subcortical-Cortical Midline System**

1. **Self-Related Processing and Subcortical-Cortical Midline System:** The subcortical-cortical midline system includes the periaqueductal gray, an extremely rich connected brain structure, and the superior colliculi, bed nucleus of the stria terminals, ventral tegmental area, mesencephalic locomotor regions, preoptic areas, hypothalamus, and dorsomedial thalami. Vertical processing also creates an access pathway between cortex, the prefrontal cortex, and brain-stem areas that are believed to generate the basic affective states (Seeking, Fear, Rage, Panic, Nurture, Lust, and Play) that are necessary for survival.

2. **Prefrontal Cortex:** A detailed review of these networks is beyond this presentation but can be found in Price and Drevets. The subdivisions of the lateral and orbital medial prefrontal cortex (dorsal prefrontal, ventral prefrontal, caudal prefrontal, orbital and medial networks) cover, to different degrees, most aspects of human mental activity.

3. **Interhemispheric Components:** Clinical experience suggests it is the hemispheric synchrony that is created through the massive white-matter network essential in processing. A developmental right to left shift in hemispheric control and dominance in learning has been recognized. In the learning process, a dynamic shift in time occurs from task-naive to task-experienced recognition. Individuals with posttraumatic stress disorder activate predominantly the right hemisphere during remembering and reexperience of trauma. This is unlike people who do not have posttraumatic stress disorder, who have left-brain dominance on brain imaging and evoked potentials. The experience of eye movement desensitization and reprocessing has further suggested a particular healing quality of processing that involves bilateral but alternative speech and brain stimulation. Furthermore, patients with a history of chronic trauma and alexithymia are known to have limited awareness of and/or access to their emotional experiences, with a high prevalence of somatization. Alexithymia and a history of early trauma have been associated with functional and anatomical deficits of the interhemispheric white matter. Traumatic memories and posttraumatic stress reconfigure a right-brain dominance due to catecholamine overconsolidation of memories in right hemispheric tracts early, before reaching the perceptive speech brain. Language is described as providing our subjective perception of being able to think. By means of the interhemispheric (transcallosal) transfer, information reaches the speech center, which exerts its role in awareness formation. Speech, through words, designs meaning to objects. It decreases emotional charge by diminishing the “incomprehensible” and unpredictable aspects of the environment. Unlike the earlier understanding of speech assigned to left speech centers only, the large, bilaterally extended notion of the “speech brain” refers to more global (evolutionary) networks of awareness and communication combined.

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**References**

dendritic spines and their participation in new associations.

2. Hippocampal learning and neurogenesis, referring to the formation of neurons in the hippocampus.

3. Synaptic processes, which include a large array of long-term memory-related mechanisms, including protein synthesis, cytoskeletal reorganization, activation of brain-derived neurotrophic factor, and possible epigenetic mechanisms. New multimodal memories are formed both by “new memory acquisition” and by a reworking of old memories at the time of “remembering,” a process referred to as “reconsolidation.”

Transprocessing and Uploading of Implicit Healing Contents

In the acquisition stage or self-reference stage, new views about oneself are being “uploaded” in the form of new narratives, using the same mechanisms that are at play during rearing and early nurturing. 

In the acquisition stage or self-reference stage, new views about oneself are being “uploaded” in the form of new narratives. Long-term memory and reconsolidation are necessary to be activated, as is the reference to one’s older narratives. The alternation between reflection and verbal exchange during psychotherapy creates an alternation of activation of the language brain bilaterally, like a “beltway” of communication and awareness with the deactivation of the default mode of midline structures. Through repetition and alternation of activation of these, major regions (midline vs external frontal temporal occipital brain surface) may connect by new links. Repeated and alternative stimulations create new links through synaptic protein syntheses and long-term potentiation associated with learning. Some of the newly acquired information may become stored as implicit memories in a variety of subcortical areas, linked to the midline structures of the self. By doing so, an experience becomes a “first-person experience” of the self, hence self-reference processing. The uploading of a new narrative uses the same mechanisms that are at play during rearing and early nurturing. Caretakers do provide, through an interactive manner of uploading, an image of the world for the developing child. During development such uploading is both verbal and nonverbal. In humans, speech itself has a privileged learning curve. A large well of research data comes from attachment studies and rating of the coherence of a narrative. Coherent narratives in caretakers have been highly correlated with mature attachment in offspring. By contrast, poorly coherent narratives, as rated on the Adult Attachment Interview, was highly correlated with immature type of attachment and personality pathology in offspring. Hence, healing changes in psychotherapy use preformed long-practiced, developmental pathways, explaining their profound impact on personality.

A stage of contextualization and reconsolidation of one’s autobiographic memory occurs through repetition and transfer worked through in analysis. Reconsolidation as a memory mechanism has a particular role in reworking a person’s identity. Long-term fundamental personality changes may involve epigenetics, but the relationship must be further demonstrated by future research.

Conclusions

Transprocessing is a proposed mechanism by which changes during psychotherapy are internalized and assimilated. The implications of such a multistage mechanism are consistent with long-term clinical experience:

1. All psychotherapies have a common denominator: the restructuring of memories of old dysfunctional patterns of response to the routine social environment.

2. To produce pervasive changes, psychotherapies must include repeated reexposure to newly formed multimodal memories, hence the need for long-term therapies.

3. The emergence of new research that validates a neural model of psychotherapy may also call for public provision to further the availability of psychotherapy as a large-scale preventive and curative intervention. This may lead to further humanization of mental health treatment and to a shift toward a more integrative treatment approach in psychiatry.

Disclosure Statement

The author(s) have no conflicts of interest to disclose.
Images in Emergency Medicine: Phlegmasia Cerulea Dolens

Joel T Levis, MD, PhD, FACEP, FAAEM; Danny L Sam, MD, FACP

Phlegmasia cerulea dolens (PCD) is a rare form of massive venous thrombosis of the lower extremities associated with a high degree of morbidity including venous gangrene, compartment syndrome, and arterial compromise.\(^1\) Risk factors for PCD include malignancy, immobility, heart failure, heparin-induced thrombocytopenia, prothrombin states (eg, antiphospholipid syndrome), pregnancy, surgery and venous instrumentation (eg, placement of central venous catheters and inferior vena cava filters).\(^2\) Clinically, PCD is characterized by sudden pain, swelling, purple ecchymosis, and arterial ischemia with loss of distal pulses.\(^3\) Edema develops rapidly, and the skin of the affected extremity is usually tense, firm, and tender to palpation. Doppler ultrasound of the affected extremity should be used to confirm the diagnosis of PCD, and initial treatment includes bed rest, elevation of the affected limb, and systemic anticoagulation with heparin.\(^2\) Catheter-directed thrombolysis and venous thrombectomy should also be considered as early treatment options for PCD.\(^4\)

References


Figure 1. Lower extremities of a 70-year-old man presenting with a sudden onset of a swollen, violaceous, and painful left leg, consistent with phlegmasia cerulea dolens.

Figure 2. Left lower extremity venous ultrasound image from same patient demonstrating left common femoral vein without compression (left panel, arrow) and with noncompressible clot (right panel, arrow).
Diagnosis of hyperkalemia is usually based on laboratory studies, although the electrocardiogram (ECG) may contain changes suggestive of hyperkalemia. Typical ECG findings in hyperkalemia progress from tall, “peaked” T waves and a shortened QT interval to lengthening PR interval and loss of P waves, and then to widening of the QRS complex culminating in a “sine wave” morphology and death if not treated.1-3 Treatment of life-threatening hyperkalemia focuses on blocking the effects on myocyte transmembrane potential and cardiac conduction, as well as decreasing extracellular potassium levels.3 Calcium (intravenous calcium chloride or gluconate) can effectively block the effect of extracellular potassium elevation on cardiac myocytes within minutes by restoring a more appropriate electrical gradient across the cellular membrane.2 Sodium bicarbonate, beta-2 adrenergic agonists, and the combination of glucose and insulin all drive potassium intracellularly and lower the extracellular serum potassium level.2,3 Finally, excessive body potassium can be removed with sodium polystyrene sulfonate (Kayexalate), whereas hemodialysis represents the definitive method to reduce serum potassium levels.2,3

References

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Meta-Analysis of the Use of Narrative Exposure Therapy for the Effects of Trauma Among Refugee Populations

Nicolas Gwozdziewycz, MA; Lewis Mehl-Madrona, MD, PhD

Abstract

Background: Narrative therapies, especially narrative exposure therapy, are used to treat the effects of trauma in refugees and to prevent psychiatric illness. These methods involve helping the person to tell the story of what happened to them until it no longer elicits anxiety.

Methods: We reviewed all quantitative studies related to narrative exposure methods for treating trauma or posttraumatic stress disorder in refugees. We focused on studies with sufficient information to calculate effect sizes and statistical power.

Results: We found 7 quantitative studies for which effect size and power could be calculated. The total average effect size for all interventions was 0.63 (medium). The average effect size for studies in which interventions were administered by physicians, adequately trained graduate students, or both was 0.53. The effect size for studies in which the counselors were themselves refugees was 1.02. The 95% confidence intervals for the effect sizes of narrative exposure therapy did not reach below 0.

Conclusion: Studies demonstrating the effectiveness of narrative methods have adequate effect sizes and statistical power. Empowering lay counselors to treat their fellow refugees in future studies is warranted.

Introduction

More research has been conducted to investigate the effects of trauma and the factors that contribute to posttraumatic stress disorder (PTSD) in soldiers than in refugees, despite the larger numbers of the latter. In 2004, there were a minimum of 42 wars and/or armed conflicts worldwide, with the majority occurring in developing countries. In 2005, the United Nations High Commissioner for Refugees estimated there were 19.2 million displaced people throughout the world. Almost half were children. Though the numbers vary each year, approximately 1% of the world’s population is currently uprooted because of war and political violence.

“Refugee” is defined as a person who is outside his or her country of origin, with well-founded fears of persecution, and who is unable to receive protection and consequently unable to return to his or her country of origin.

Young refugees are more vulnerable to developing mental health difficulties, with as many as 40% meeting diagnostic criteria, particularly for anxiety disorders, including PTSD. PTSD prevalence rates in refugee populations range from 15% to 50%. Children’s reactions to stress seem to parallel their caretakers’ responses, although children can be “astonishingly resilient” when facing trauma. Female refugees suffer more from resettlement than male refugees. Typical problems pertain to child rearing and violence. Stressors among refugees can be organized into categories of 1) past losses; 2) traumatic experiences (ie, war and torture); and 3) difficulties that arise in the host country, including financial strain, fear of deportation, delays, and changes in accommodation. Estimates of the incidence and prevalence of PTSD vary considerably, depending upon factors such as the population in question, their unique stressful experiences, and the diagnostic methods employed. The presence of PTSD is associated with war trauma and the stresses related to resettling. Declining physical health, and maternal psychiatric difficulties apply. Diagnosing such as PTSD cross-culturally merits consideration. Some argue that Western diagnostic methods should not be applied to other cultures, in part because of the stigma of labeling and because they hinder our understanding of the losses and suffering experienced. Although the tenth revision of the International Classification of Diseases is an internationally recognized classification system used in non-Western cultures, it is derived from and based on Western classification systems and does not encompass non-Western views of health, illness, and disease. Nevertheless, we can imagine that, from any culture’s view of mental health and illness, refugees who have suffered immense trauma would be prone to intense emotional reactions.

Time matters when treating refugees with PTSD. Clinicians and researchers cannot expect that the refugee will remain in one spot for very long. Treatment may not occur until more basic needs, as conceptualized in Maslow’s hierarchy, are met. Any treatments for this population should ideally be suitable for harsh conditions in war-affected refugee camps. Treatment should be in tune with cultural norms, short, and cost effective, and people from the community with little or no mental health care knowledge should be able to administer it. Psychological education is a reputable component of any brief intervention intended for a large number of refugees who have been subjected to trauma.

Research on refugee populations is also difficult. Identifying patients for follow-up and ascertaining reputable information as to their whereabouts can be difficult. Migration is a potential obstacle to any longitudinal study of refugee populations.

The most promising strategies for alleviating health-related issues in developing countries make use of existing resources including natural leaders, caregivers, and established networks for sanitation and food quality and delivery that may already...
exist in the refugee community.\textsuperscript{20} Effectiveness is maximized by shifting control of the interventions from external investigators to people who are within the population that is experiencing mental health issues. Because oral traditions are prevalent in many cultures in developing countries, narrative approaches may be especially suited to these settings.\textsuperscript{1}

A cardinal assumption of narrative therapies is that we are the stories we tell.\textsuperscript{20,22,24} Humans encode individual narratives as memories in the brain.\textsuperscript{5} Psychologically healthy individuals have meaningful, logical, and vibrant self-stories, whereas faulty self-narratives are synonymous with emotional difficulties. Numerous studies indicate that disarranged, unassimilated narratives of traumatic experiences lead to PTSD. Hence, the ability to construct healthy narratives of traumatic experiences corresponds to a healthy recovery process. Stories enable us to change.\textsuperscript{25}

Narrative exposure therapy (NET) appeared in the academic literature in 2002, though it is apparently an ancient technique.\textsuperscript{24} When it is used with children, it is sometimes abbreviated as “KIDNET.”\textsuperscript{25} It has origins within the cognitive behavioral framework but is shorter in duration. This approach was adapted to meet the needs of survivors of trauma, including those affected by war and torture. With this approach, patients talk about the worst part of the trauma and consequently re-experience thoughts and emotions paired with it. While exploring the patient’s narrative of the traumatic event and ultimately reconstructing it, the therapist asks about emotional, physiologic, cognitive, and behavioral reactions. Researchers such as Pennebaker and Hurley\textsuperscript{24,26} suggest that the disclosure of stressful events has the potential to improve PTSD symptoms.

**The Procedure of Narrative Exposure Therapy**

NET has been developed for application in regions experiencing crisis, before and after the conflict. Because relatively few professionals are available in these countries to care for a large number of affected people, the treatment must be short and pragmatic. It should be easy to learn and effective even when provided by trained laypersons or paraprofessionals with no or minimal background in medicine or psychology. It should be applicable across cultures and fit into the social and political background of the setting.

Most researchers who are working with refugees or in disaster and war regions are aware that any psychological intervention needs a firm context. Although PTSD may be the most prevailing mental health disorder in most populations affected by war and disaster, a specific treatment module should be integrated into a sustainable and comprehensive psychosocial or mental health program that includes a variety of interventions and a referral structure for medical conditions.

NET can be a key treatment program within such a structure; however, the therapist should be prepared to encounter common conditions, such as ongoing child abuse, substance dependence, grief, and depression. In addition to their training in trauma therapy, therapists should have learned to identify and understand these problems so as to provide assistance or referral to other sources of help.

For NET, the classical form of trauma exposure therapy was adapted to meet the needs of clinically traumatized survivors of

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**Story of a Refugee**

I was born in Mogadisho, [sic] Somalia. I do not know my exact birthyear; I think it is 1986. I grew up with both my parents. I have a sister who is 2 years younger called Halimo and a 4-years younger brother called Mohamad. We lived in a part of town called ….

My mother had fair brown hair and skin. She was young and I loved her a lot. I was her first-born and her favourite. She even told me so. My father was of darker complexion. He was also a young man in those days. He was hard working. He had a shop close by in the market. He would usually leave in the morning and return home in the evening. Sometimes when he came home, he played with us in the evening. We played football together. Those were good times. I do not know how old I was then; I just remember that I was very young ….

When I remember those days I get sad. All these memories come back and I only know what I have lost. The years went by and I used to live like this until the war broke out. I don’t remember the year, but I was still young …. One day we fled from home in the late afternoon …. We went with a car to a place called Bal’aard, about 30 km out of town ….

Eventually we went back home to Mogadisho. I must have been about 10 years by then. A few months later, the war reached us again. It was early in the morning. A group of about 10 civilian men came to our house. They were armed with guns ….

I stood very near to my parents. I was so scared. Suddenly I heard the sound of bullets. One of the soldiers had started shooting. The moment I saw that he pulled the trigger and heard the first bullet, I panicked. I started running. I felt such great fear. I ran inside the house and tried to hide myself behind a door in one of the rooms. I was shivering, fearing, thinking, they will also come for me, they will come and kill me. I still have a heart beat now, when I recall that moment.

After some time it went quiet outside. I still stood behind the door, silent, not moving. After a while I slowly moved towards the window and peeped out. What I saw was terrible. My mother and my father had been hit by the bullets. They were both lying on the ground. My mother had fallen on top of my father. They both had blood on their clothes. My mother had blood on her face and her stomach. They were not moving anymore, they had died. Until that day, I had never seen a dead person. I felt horror. I was so afraid of them, shocked by what I saw. I only thought of running away, leaving this place. I escaped through the back of the house and jumped over the fence. This was the last time I have seen my parents and also the last time I had been in our home in Mogadisho ….

While fleeing, I joined strangers in the street. So many people were trying to flee. I simply ran with them. When these people reached their destination, they branched off from the road. It was night time by then. I was alone. I hated my life. I followed the road and finally fell asleep under a bush. I had given up about life by then. I felt like I had died as well. I knew about the danger of wild animals and lions, but I did not care ….

This is how I came to Uganda. When we reached Kampala I saw a group of Somalis and went to greet them. They took me in and I lived with them for a few weeks. They also showed me how to register as a refugee with UNHCR [United Nations High Commission for Refugees]. I remember the day I came to Nakivale Refugee Camp. I was so surprised how people can live in a place like this. I stayed with the Somali family that found me in Kampala for about two years in the camp.

Finally, Red Cross helped me to build my own house in 2000. I was about 14 years then. Since then I live alone. I started going to school when I came to Nakivale. I will graduate from P7 at the end of this year. I have learnt how to live by myself; I can do everything by myself. I never ask for help. No one can help me anyway, I have never heard about my brother and sister again. Whether they are still alive and if so, where I could find them. But now I am ready to look for them. ✤

war and torture. The different variants of exposure therapy for PTSD usually target the worst traumatic event, assuming that this approach will lead to the best treatment outcome. Most victims of organized violence, war, and torture have experienced several traumatic events, however, and often it is impossible to identify the worst event before treatment. In addition, the fear networks of different traumatic events overlap, and it can be difficult to sort out the origin of different network items. To overcome this challenge, NET uses the chronicity of testimony therapy. Instead of defining a single event as a target for therapy, the patient constructs a narrative of his or her whole life, from birth to the present, while focusing on the detailed report of the traumatic experiences.

In one approach, the therapist records the patient’s biography throughout NET.

### Table 1. Effect sizes and statistical power of studies investigating narrative exposure therapy for refugees.

<table>
<thead>
<tr>
<th>Intervention (n)</th>
<th>Effect Size (95% CI)</th>
<th>Power</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Catani</strong>&lt;sup&gt;16&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KIDNET (16)</td>
<td>post 1.76 (1.33, 2.19)</td>
<td>1.00</td>
<td>Effect sizes and statistical power look promising; however, the sample is small.</td>
</tr>
<tr>
<td></td>
<td>6-month follow-up 1.96 (1.44, 2.48)</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Meditation-relaxation (15)</td>
<td>post 1.83 (1.10, 2.56)</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6-month follow-up 2.20 (1.20, 3.20)</td>
<td>1.00</td>
<td></td>
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<tr>
<td><strong>Neuner</strong>&lt;sup&gt;2&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>NET (111)</td>
<td>pre to post 1.4 (1.09, 1.71)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pre to post 0.1 (0.04, 0.16)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.55</td>
<td></td>
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<tr>
<td></td>
<td>pre to follow-up 1.4 (0.84, 1.96)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>1.00</td>
<td></td>
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<tr>
<td></td>
<td>pre to follow-up 0.9 (0.31, 1.49)&lt;sup&gt;d&lt;/sup&gt;</td>
<td>1.00</td>
<td></td>
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<tr>
<td>TC (111)</td>
<td>pre to post 1.5 (0.98, 2.02)&lt;sup&gt;e&lt;/sup&gt;</td>
<td>1.00</td>
<td></td>
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<tr>
<td></td>
<td>pre to post 0.2 (0.15, 0.25)&lt;sup&gt;f&lt;/sup&gt;</td>
<td>0.99</td>
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<tr>
<td></td>
<td>pre to follow-up 1.5 (1.00, 2.00)&lt;sup&gt;g&lt;/sup&gt;</td>
<td>1.00</td>
<td></td>
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<tr>
<td></td>
<td>pre to follow-up 0.5 (0.44, 0.56)&lt;sup&gt;h&lt;/sup&gt;</td>
<td>1.00</td>
<td></td>
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<tr>
<td>MG (55)</td>
<td>pre to follow-up 0.8 (0.39, 1.21)&lt;sup&gt;i&lt;/sup&gt;</td>
<td>1.00</td>
<td></td>
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<tr>
<td></td>
<td>pre to follow-up 0.2 (0.11, 0.29)&lt;sup&gt;j&lt;/sup&gt;</td>
<td>0.05</td>
<td></td>
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<tr>
<td><strong>Neuner</strong>&lt;sup&gt;3&lt;/sup&gt;</td>
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<td></td>
<td></td>
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<tr>
<td>NET (17)</td>
<td>pre to post 0.6 (0.1, 1.1)&lt;sup&gt;k&lt;/sup&gt;</td>
<td>0.99</td>
<td>Results look promising given the larger sample size. “Pre- to post-” effect sizes are low on Physical Symptom Score but “pre- to follow-up” effect sizes are better. It would be interesting to compare Symptom scores across RCTs.</td>
</tr>
<tr>
<td></td>
<td>pre to post 0.6 (0.53, 0.67)&lt;sup&gt;l&lt;/sup&gt;</td>
<td>0.99</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pre to post 0.6 (0.50, 0.70)&lt;sup&gt;m&lt;/sup&gt;</td>
<td>0.50</td>
<td></td>
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<tr>
<td></td>
<td>pre to 1-year follow-up 1.6 (0.85, 2.35)&lt;sup&gt;n&lt;/sup&gt;</td>
<td>1.00</td>
<td></td>
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<tr>
<td></td>
<td>pre to 1-year follow-up 1.9 (1.59, 2.21)&lt;sup;o&lt;/sup&gt;</td>
<td>1.00</td>
<td></td>
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<tr>
<td></td>
<td>pre to 1-year follow-up 1.1 (0.30, 1.90)&lt;sup&gt;p&lt;/sup&gt;</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pre to 1-year follow-up 1.1 (0.00, 1.20)&lt;sup&gt;q&lt;/sup&gt;</td>
<td>0.50</td>
<td></td>
</tr>
<tr>
<td>SC (14)</td>
<td>pre to post 0.2 (0.13, 0.27)&lt;sup&gt;q&lt;/sup&gt;</td>
<td>0.28</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pre to post 0.5 (0.24, 0.76)&lt;sup&gt;r&lt;/sup&gt;</td>
<td>0.93</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pre to post 0.1 (0.0, 0.2)&lt;sup&gt;s&lt;/sup&gt;</td>
<td>0.11</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pre to 1-year follow-up 0.1 (0.05, 0.15)&lt;sup&gt;t&lt;/sup&gt;</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pre to 1-year follow-up 0.4 (0.18, 0.66)&lt;sup&gt;u&lt;/sup&gt;</td>
<td>0.79</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pre to 1-year follow-up 1.0 (0.48, 1.52)&lt;sup&gt;v&lt;/sup&gt;</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pre to 1-year follow-up 0.8 (0.51, 1.09)&lt;sup&gt;w&lt;/sup&gt;</td>
<td>0.50</td>
<td></td>
</tr>
<tr>
<td>PE (12)</td>
<td>pre to post 0.5 (0.28, 0.72)&lt;sup&gt;x&lt;/sup&gt;</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pre to post 1.2 (0.79, 1.61)&lt;sup&gt;y&lt;/sup&gt;</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pre to post -0.7 (0.49, 0.91)&lt;sup&gt;z&lt;/sup&gt;</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pre to 1-year follow-up 0.9 (0.6, 1.2)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pre to 1-year follow-up 0.3 (0.22, 0.38)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.47</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pre to 1-year follow-up 1.3 (0.83, 1.77)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pre to 1-year follow-up -0.8 (0.51, 1.09)&lt;sup&gt;d&lt;/sup&gt;</td>
<td>0.50</td>
<td></td>
</tr>
<tr>
<td><strong>Onyut</strong>&lt;sup&gt;24&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIDI pretest (6)</td>
<td>0.89 (0.78, 1.00)</td>
<td>0.09</td>
<td>Sample is too small to have any statistical meaning. Nevertheless, narrative therapy looks promising for this population.</td>
</tr>
<tr>
<td>CIDI posttest (4)</td>
<td>0.85 (0.61, 1.09)</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9-month follow-up 0.91 (0.71, 1.21)</td>
<td>0.09</td>
<td></td>
</tr>
</tbody>
</table>

(Continued on next page)
The Permanente Journal/ Winter 2013/ Volume 17 No. 1

Meta-Analysis of the Use of Narrative Exposure Therapy for the Effects of Trauma Among Refugee Populations

(Continued from previous page)

Ruf\(^{29}\)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Effect Sizes</th>
<th>Overall Sx</th>
<th>95% CI</th>
<th>ndf</th>
<th>Mean Effect Size</th>
<th>All (\approx 0.90)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KIDNET (13)</td>
<td>Overall Sx 1.9 (0.97, 2.83)</td>
<td>1.9 (0.9, 2.9)</td>
<td>1.9 (0.7, 2.2)</td>
<td>1.5 (0.66, 2.34)</td>
<td>1.9 (1.05, 2.75)</td>
<td>1.0 (0.56, 1.44)</td>
</tr>
<tr>
<td></td>
<td>Waiting list (13)</td>
<td>Overall Sx 0.31 (0.20, 0.42)</td>
<td>0.3 (0.0, 0.6)</td>
<td>0.8 (0.69, 0.91)</td>
<td>0.0 (-0.1, 0.1)</td>
<td>0.1 (0.0, 0.2)</td>
</tr>
</tbody>
</table>

Schaal\(^{30}\)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Effect Sizes</th>
<th>Overall Sx</th>
<th>95% CI</th>
<th>ndf</th>
<th>Mean Effect Size</th>
<th>All (\approx 0.90)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NET (12)</td>
<td>pre to post 0.39 (0.3, 0.48)</td>
<td>pre to post 0.12 (0.04, 0.20)</td>
<td>pre to post 0.75 (0.43, 1.07)</td>
<td>pre to post 0.40 (0.31, 0.49)</td>
<td>pre to follow-up 0.71 (0.56, 0.86)</td>
<td>pre to follow-up 0.52 (0.44, 0.60)</td>
</tr>
<tr>
<td>IPT (14)</td>
<td>pre to post 0.23 (-0.09, 0.55)</td>
<td>pre to post 0.28 (-0.01, 0.57)</td>
<td>pre to post 0.35 (-0.07, 0.77)</td>
<td>pre to post 0.02 (0.01, 0.03)</td>
<td>pre to follow-up 0 (0.64, 0.36)</td>
<td>pre to follow-up 0.41 (0.29, 0.53)</td>
</tr>
<tr>
<td>Neuner(^{30})</td>
<td>pre to post 1.6 (1.34, 1.86)</td>
<td>pre to post 0.8 (0.38, 1.22)</td>
<td>pre to post 0.3 (0.27, 0.33)</td>
<td>pre to post 0.4 (-0.2, 1.0)</td>
<td>pre to post 0.2 (-0.97, 0.46)</td>
<td>pre to post 0.7 (0.58, 0.82)</td>
</tr>
<tr>
<td>Total</td>
<td>N = 443</td>
<td>0.63 (0.29, 1.07)</td>
<td>0.97</td>
<td>Sample size of individual studies limits generalization. A longitudinal RCT would be interesting.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Doctors or graduate students (N = 237) | 0.53 (-0.03, 1.09) | 0.95 |
Refugee counselors (N = 206) | 1.02 (0.83, 1.21) | 0.99 |

\(^{1}\) PTSD Diagnostic Scale; \(^{2}\) Physical Symptom Score; \(^{3}\) International Diagnostic Interview (PTSD part); \(^{4}\) Self-Reporting Questionnaire; \(^{5}\) Psychological Health Subscale; \(^{6}\) University of California Los Angeles PTSD Index for Diagnostic and Statistical Manual of Mental Disorders, 4th edition; \(^{7}\) PTSD Symptom Severity; \(^{8}\) Intrusion; \(^{9}\) Avoidance—All Symptoms; \(^{10}\) Active Avoidance; \(^{11}\) Passive Avoidance; \(^{12}\) Hyperarousal; \(^{13}\) Functional Impairment; \(^{14}\) CAPS Severity Score; \(^{15}\) MINI Depression Score; \(^{16}\) suicide attempt; \(^{17}\) Hamilton Score; \(^{18}\) Guilt Score; \(^{19}\) Hopkins Symptoms Checklist; \(^{20}\) Composite International Diagnostic Interview.

CAPS = clinician-administered PTSD Scale; CI = confidence interval; CIDI = composite international diagnostic interview; Hamilton = Hamilton Depression Rating Scale; IPT = interpersonal psychotherapy; KIDNET = narrative exposure therapy for children; MG = monitoring group; MINI = Mini-International Neuropsychiatric Interview; NET = narrative exposure therapy; PE = psychoeducation; post = posttest; PTSD = posttraumatic stress disorder; RCT = randomized control trial; pre = pretest; SC = supportive counseling; TAU = treatment as usual; TC = trauma counseling.

KIDNET looks the most promising. All effect sizes besides Overall Symptoms are for pretreatment to 6-month follow-up.

Waiting list (13) all \(\approx 0.90\)
interpreter, and therapist review the document and sign it. Often the client chooses to advocate for others by sending a copy of the biography to human rights organizations as evidence of trauma. NET is not used for a single traumatic event; rather, patients are encouraged to construct a narrative of their life up to and including the present. They are encouraged to elaborate on details surrounding traumatic experiences. A consistent narrative is necessary, because memories and emotional processing are not always accurate, particularly when PTSD symptoms are involved. NET maintains a narrative of the traumatic experience(s) and habituates the patient to the emotional responses associated with the memory.

In KIDNET, the therapist may use role-play or visual aids such as a rope, string, rocks, flowers, and drawings to enable the child to reconstruct the traumatic events. For instance, a rope may signify the child’s lifespan, whereas rocks and flowers placed on the rope mark when the traumatic event(s) occurred. Often, children are encouraged to extend the narrative into the future, using flowers used to signify hopes and dreams.

KIDNET has been presented in an eight-session format, ideally for children who have already received a structured psychological assessment that includes diagnosis, construction of a comprehensive list of traumatic events, enumeration of their contextual conditions (family background, current threats, and violence), and any exclusion criteria (sometimes substance addiction or psychosis). The first session consists of psychological education of the child and caretaker, informed consent, and development of a lifeline, a visual representation of important events of one’s life on a timeline. The second session consists of revisiting the timeline and starting the life narrative at birth. During the third through the seventh sessions, the patient continues to revisit the lifeline, rereads and corrects the narrative from previous sessions, and continues to narrate, focusing on traumatic events. In the eighth session, the lifeline is revisited and symbols are added for future hopes. The whole narration is reviewed, signed, and handed over. Follow-up examination occurs about three months after treatment. An example of a healing narrative is presented in excerpts in the Sidebar: Story of a Refugee.

Methods

We conducted a meta-analysis to explore the effectiveness of short-term NET methods to treat refugees. We were especially interested in the potential to use lay counselors as opposed to professionals. Therefore, we compared effect sizes and statistical power of studies using lay and trained counselors. Surprisingly, we found only seven articles that met our inclusion criteria, providing enough information to calculate effect size and statistical power. All seven studies appeared to be validly designed and executed. We found them by searching the ProQuest, Medline, Google Scholar, and Psycinfo databases for the keywords narrative, narrative therapy, narrative exposure, narrative exposure therapy, narrative psychology, narrative psychotherapy, PTSD, NET, KIDNET, war, trauma, and refugee. Effect size and statistical power were determined with the GPower 3.0.10 software program. (This free version is available at www.psycho.uni-duesseldorf.de/aap/projects/gpower; Heinrich-Heine-University; 40225 Düsseldorf; Germany) Reference librarians at our institution assisted us in choosing search terms and searching all relevant databases. Effect size was calculated as Cohen’s d. We relied upon the methods and insights of Nobel regarding how to conduct meta-analyses.

Results

Table 1 summarizes the results of our meta-analysis. All 7 NET studies had a 95% confidence interval greater than zero, so it was not necessary to plot the data.

Study Descriptions

Catani et al. conducted a randomized study of 2 short-term PTSD interventions in an area of Sri Lanka that was hit by the 2004 tsunami and that has been subjected to years of civil war. In total, 31 children were randomly assigned to either KIDNET or meditation-relaxation treatment. The researchers conducted treatment, which consisted of 6 sessions lasting between 60 and 90 minutes. All women counselors were former schoolteachers who had received additional training in therapeutic methods. The outcome measures look promising; however, the sample was small. It is worth noting that the researchers could not control for spontaneous remission. Spontaneous remission is defined as resolution of a clinical problem unrelated to external treatment of any kind. For example, few meaningful differences exist between those in whom spontaneous remission has occurred and persons who either continue misusing substances or go into remission because of prior treatment for drug misuse. Health concerns, pressure from friends and family, and extraordinary events were important factors in quitting substance abuse, whereas social support, friendships with nondrug users, willpower, and identity transformation were pivotal to maintaining change.

Neuner et al’s randomized trial examined whether or not lay counselors could be trained to effectively treat PTSD in a refugee camp. The researchers trained lay counselors for six weeks. Challenges included illiteracy and the need for interpreters. Interpreters who are refugees themselves may be psychologically vulnerable. Nevertheless, they state that any added stress is usually short-lived. Results reveal that lay counselors can treat their fellow refugees.

In Neuner et al’s randomized, controlled study, doctoral and other graduate school level therapists treated Sudanese refugees with PTSD living in a Ugandan refugee settlement. They employed local research assistants from the refugee community as interpreters. Acceptance rates were high, although the researchers postulated that the opportunity to talk with Westerners might have been a motivating factor for participating. Results from this study indicated that NET had the most promise for treating this population. Well-trained European psychologists and their graduate students conducted the study, which was a possible limitation. To compensate, the authors suggested that future treatment focus on interventions implemented by local individuals with therapeutic training. Another reason for empowering locally trained counselors to treat their peers is to reduce expenses. The authors noted that this study was expensive; consequently, in addition to empowering refugees to treat themselves, training local counselors has the practical advantage of reducing costs.
Onyut et al\textsuperscript{11} evaluated the effectiveness of short-term narrative methods in treating six Somali children with PTSD in a refugee camp. Expert clinicians used KIDNET for six sessions to treat the children. After nine months, four of the children no longer met the diagnostic criteria for PTSD. Results were promising and demonstrated that short-term treatment of refugees is possible. The obvious shortcoming was the small size of this pilot study. In addition, the researchers have no way of controlling for spontaneous remission of PTSD symptoms. The researchers advocated future studies focusing on local, nonprofessional counselors, which would include short-term training and supervision.

Ruf et al\textsuperscript{23} studied 26 refugee children diagnosed with PTSD. The children, aged 7 to 16 years, were randomly assigned to either KIDNET (n = 13) or a waiting-list control group (n = 13). Both groups were similar in demographic makeup, although an interesting caveat was that participants were from 7 different countries/regions of origin (Turkey, the Balkans, Syria, Chechnya, Russia, Georgia, and Germany). Doctoral-level clinical psychologists, researchers, and PhD students ran the study. The KIDNET group had a clinically significant decrease in PTSD symptoms. The wait-listed control group did not. Interestingly, at a 6-month follow-up, 70% of participants in the waiting-list group presented with PTSD, compared to 17% in the KIDNET group. The researchers noted the small sample size and lack of an active control group as limitations of the study.

Schaal et al\textsuperscript{30} treated Rwandan genocide orphans who met criteria for PTSD with NET and interpersonal psychotherapy. Doctoral-level psychologists and their graduate students carried out all procedures. At 6-month follow-up, 75% of NET participants (n = 12) no longer met PTSD criteria, compared to 29% of interpersonal psychotherapy participants (n = 14). The researchers did not report any dropouts. Limitations included a modest sample size, lack of a no-treatment group, and no assessment of inter-rater reliability.

Neuner et al\textsuperscript{15} compared NET to “treatment as usual” (TAU) in a sample of asylum-seekers with PTSD diagnoses in Germany. TAU included a focus on psychotropic medication and stabilizing patients. Both the NET and TAU groups included 16 participants, although 2 from the former group discontinued the intervention. Clinical psychologists and their graduate students carried out all procedures. On the basis of past research, they expected an effect size (Cohen’s d) of approximately 0.80 and a power level of approximately 0.80. Results revealed a better 6-month outcome, including PTSD and pain symptoms, for patients treated with NET. The researchers observed no difference between NET and TAU in terms of depression symptoms.

Our meta-analysis is small and used statistics from the few other research articles found in the literature. We found a total average effect size of 0.63 (medium) for all interventions. Surprisingly, we found that the average effect size for studies using physicians, adequately trained graduate students, or both was 0.53. Most astonishing was the 1.02 effect size found in articles using refugees as counselors. Also noteworthy is that the studies we reviewed used different scales to measure outcomes. The number of outcome measures varied from study to study. Future researchers could use the results of our study to advocate for funding for locally trained refugee counselors so as to empower them to treat others in their community. We advocate additional research about empowering refugee counselors to treat their fellow refugees.

If planning to collect follow-up measurements, future researchers should be mindful of migration issues and plan accordingly. Furthermore, spontaneous remission of symptoms was difficult to control for in the articles we reviewed. One final word of caution: Schauer et al\textsuperscript{29} state that when treating adults for PTSD, “as we already know, inadequate treatment can do more harm than good. Exposing the patient too briefly to traumatic memories, not allowing complete habituation to aroused emotional reactions (ie, learning that these memories are not frightful) and insufficient reconstruction of the major traumatic events will not end the suffering, and may even increase anxiety and lead to even greater disappointment and depression.”

**Conclusion**

Given that sufficient university-educated counselors living and working in every refugee camp the world over is unlikely, exploring alternative solutions is warranted. Few studies investigating narrative methods to treat PTSD are found in the literature. Narrative treatment methods have the potential to be effective because they make use of a person’s own life story and are short-term and cost efficient. Most importantly, locally trained refugee counselors can learn to facilitate treatment. Our results look promising because they demonstrate that local refugees can, when given the right tools, treat themselves. It is humbling that, at least according to our study, they do this better than university-educated professionals.

NET appears to compare favorably with treatment as usual, interpersonal therapy, and other techniques. NET is especially useful because it requires less professional training than other therapies. It revolves around the ability to listen well to stories, an ability that many people in developing countries possess. The client does the bulk of the work by telling their story over and over, until it no longer induces anxiety.

**Disclosure Statement**

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

**Acknowledgment**

Leslie E Parker, ELS, provided editorial assistance.

**References**


The Period of Greatest Psychological Vulnerability

Combat and rape, the public and private forms of organized social violence, are primarily experiences of adolescent and early adult life. The United States Army enlists young men at 17; the average age of the Vietnam combat soldier was 19. In many other countries boys are conscripted for military service while barely in their teens. Similarly, the period of highest risk for rape is in late adolescence. Half of all victims are aged 20 or younger at the time they are raped; three-quarters are between the ages of 13 and 26. The period of greatest psychological vulnerability is also in reality the period of greatest traumatic exposure, for both young men and young women.

Rape and combat might thus be considered complementary social rites of initiation — into the coercive violence at the foundation of adult society.

They are the paradigmatic forms of trauma for women and men.

— Judith Lewis Herman, b 1942, Professor of Clinical Psychiatry and Director of Training at the Victims of Violence Program at Cambridge Health Alliance
“Thrive with Five”
quilt
48” x 61”

Karen L Goodlett, MD

This quilt represents 12 different fruits and vegetables, each surrounded by its own unique collection of fabrics to complement the color and texture of that specific fruit or vegetable. The golden-brown border surrounding each square represents the earth.

Dr Goodlett is a Primary Care Physician and Physician Reviewer in the Quality Resource Management Department of The Southeast Permanente Medical Group in Atlanta, GA. She is a member of The Kaiser Crafty Crew, which meets weekly to knit and crochet scarves for the homeless and baby hats for premature babies at Grady Hospital.
The field of nephrology is shifting from an exclusive focus on increasing survival to one that provides greater attention to quality of life. There is an opportunity to integrate many of the advances of palliative medicine into the comprehensive treatment of these patients. - Journal of Palliative Medicine, 2006

A 75-year-old man with a 25-year history of type 2 diabetes presents for long-term treatment options. His estimated glomerular filtration rate is 16 mL per minute per 1.73 m² of body-surface area. His history is remarkable for ischemic coronary artery disease, congestive heart failure, peripheral artery disease, mild dementia, and colon cancer. He has been admitted to the hospital 4 times in the last 6 months. How should his case be managed?

In 2000, the Renal Physicians Association and American Society of Nephrology concluded that withholding or withdrawing dialysis in cases of end-stage renal disease may be appropriate if the patient gives informed consent and chooses nondialysis therapy. In addition, the American Board of Internal Medicine recently launched Choosing Wisely, an initiative for medical specialties, including nephrology. The goal of the initiative is to encourage conversations between physicians and patients about the overuse or misuse of tests and procedures that offer little benefit and may, in some cases, inflict harm. One of the recommendations for nephrology was to not initiate dialysis without shared decision making with patients and their families and physicians. Nephrologists should take up the responsibility of helping their patients through an end-of-life decision-making process, which needs to be individualized for each patient. An interview guide and process have been created for advanced care planning to facilitate decision making and maintain satisfaction with the entire end-of-life experience. Physicians should recognize that functional status and expectations about future quality of life are more important to many patients than the chronological age they reach.

In the past, nephrologists believed that most patients with renal failure required dialysis to survive. Unfortunately, once a patient started dialysis s/he would continue it until days before they qualified for hospice therapy—no matter what the cost. During shared decision making, we are now trying to identify chronic kidney disease patients for whom the disadvantages of therapy (eg, multiple access surgeries, rigors of home dialysis or in-center dialysis, and more than two weeks of hospitalization per year) may outweigh its benefits (ie, prolonged survival). The landmark comparative study of survival in elderly patients, by Murtagh et al, showed that the survival advantage offered by dialysis was no longer apparent in patients with ischemic heart disease and many comorbidities.

In the US, there are currently very few renal palliative care programs, because most nephrologists are not trained in palliative care and most palliative care physicians are not trained in nephrology. In addition, a patient may live for more than one year after declining dialysis. Most palliative care programs will only accept a patient and pay for their renal care if the patient started dialysis s/he would continue it until days before they qualified for hospice therapy—no matter what the cost. For some patients, the right care may not always be aggressive and expensive.

Nephrologists’ nonacceptance will also be an obstacle to success. Most physicians entered the medical field to prolong, not shorten, life. Another challenge is developing a level of comfort when discussing palliative care issues with patients and their families. This involves 1) understanding the risks of declining dialysis and 2) understanding how to develop end-of-life care plans for these patients. For most nephrologists, this is uncharted territory.

Two important articles about survival rates were recently published. The first, by Cohen et al, describes a tool (http://touchcalc.com/calculators/sq) that allows health care teams the ability to predict 6-, 12-, and 18-month end-stage renal disease survival, on the basis of 5 criteria (age, albumin level, dementia, peripheral vascular disease, and 6-month risk of death). When this mortality calculator is used for a 75-year-old man currently on hemodialysis with low serum albumin, dementia, and peripheral vascular disease, it predicts that the probability of 6-, 12-, and 18-month survival is 51%, 19%, and 5%, respectively. Cohen’s mortality prediction calculator has several important methodologic
limitations and has not been replicated externally. In addition, the prediction score was performed in patients already on dialysis, so its applicability to those who have advanced kidney disease is unclear.

In 2004, a 5-year follow-up study of patients with chronic kidney disease was published.11 This study reported that the 5-year survival rate for patients with chronic kidney disease, stage 4 (eGFR 15–30 mL/min), was 45.7%.11 Another study in 2002 reported median survival for patients at low, medium, and high risk (based on number of comorbidities) of 8.75, 4.3, and 2.4 years, respectively.12

At this time we do not have a good predictive tool for patients who are choosing between no dialysis therapy and renal replacement therapy. However, we can share with our patients some of the literature that shows that survival may be affected by the number of comorbidities and that in some cases there may not be a survival benefit with renal replacement therapy.

Finally, there is no easy way for nephrologists to learn how to have end-of-life discussions with patients and their families. This requires cross-training with our colleagues in palliative care. In addition, as renal palliative care programs grow, this training will need to be incorporated into renal fellowship core curricula.

We predict a surge in the number of patients choosing palliative care over the next five years. Our work in this field is just beginning. It will take time to change our culture from one that extends life at all costs to one that seeks the best comfort and quality of life for our patients. The patient presented in this paper would benefit from shared decision making during a team conference with the renal palliative care team. Because of his risk profile, dialysis may not offer a satisfactory quality of life or a survival benefit. He could be followed up by the renal team until he becomes homebound, at which time he may benefit from a referral to the home palliative care program or a local hospice program (Table 1).

**Disclosure Statement**

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

**Acknowledgment**

Leslie E Parker, ELS, provided editorial assistance.

**References**


**Table 1. Proposed model of conservative therapy for patients with chronic kidney disease**

<table>
<thead>
<tr>
<th>eGFR, mL/min</th>
<th>Survival, years</th>
<th>Teams</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-30</td>
<td>0-5</td>
<td>RPCT</td>
</tr>
<tr>
<td>&lt;15 but &gt;5</td>
<td>0-2</td>
<td>RPCT, CPCT</td>
</tr>
<tr>
<td>&lt;5</td>
<td>0-0.25</td>
<td>RPCT, CPCT, hospice</td>
</tr>
</tbody>
</table>

CPCT = community palliative care team; eGFR = estimated glomerular filtration rate; RPCT = renal palliative care team.

**CASE STUDY**

**Should the Kidneys Fail**

Bones can break, muscles can atrophy, glands can loaf, even the brain can go to sleep, without immediately endangering our survival; but should the kidneys fail …

neither bone, muscle, gland, nor brain could carry on.

— Homer W Smith, PhD, 1895-1962, American physiologist and advocate for science, Professor of Physiology, and author
These images are from a series of wildflowers that grow in the redwood forests of the San Mateo County Coast.

“Trillium”

“Skunk Cabbage”

“Trillium” and “Skunk Cabbage” photographs

Stephen Henry, MD

Dr Henry is retired from The Permanente Medical Group as Chief of Urology at the San Jose Medical Center. He has been a photographer for over 30 years, with his work in local galleries and published in various venues.
COMMENTARY

Transforming Care Delivery through Health Information Technology

Benjamin Wheatley

Abstract

The slow but progressive adoption of health information technology (IT) nationwide promises to usher in a new era in health care. Electronic health record systems provide a complete patient record at the point of care and can help to alleviate some of the challenges of a fragmented delivery system, such as drug-drug interactions. Moreover, health IT promotes evidence-based practice by identifying gaps in recommended treatment and providing clinical decision-support tools. In addition, the data collected through digital records can be used to monitor patient outcomes and identify potential improvements in care protocols. Kaiser Permanente continues to advance its capability in each of these areas.

Introduction

As one of the nation’s earliest adopters of electronic health records (EHRs), Kaiser Permanente (KP) has achieved systemwide use and meaningful integration of health information technology (IT). HealthConnect, the organization’s EHR system, was fully completed in 2010 and is now the largest nongovernmental EHR system in the world.1 KP sees the transition from paper to electronic records as an opportunity for the US health care system overall to become smarter and less fragmented.2

KP HealthConnect is a comprehensive EHR system that includes both hospital and medical office data, as well as “circle of support” systems, including pharmacy, laboratory, and digital radiology. In addition, KP offers an online patient portal, My HealthManager (at kp.org), that allows members to e-mail their clinicians via secure messaging, to schedule appointments, to view test results, to refill prescriptions, and to access health education information.3

With membership nearing 9 million people, KP’s transition to EHRs required a major organizational commitment, hard work and teamwork, and a substantial investment of resources. KP leaders believed strongly that moving to EHRs would result in major improvements in care quality and efficiency. Specifically, the organization anticipated that use of the EHR system would result in improved clinical decision making, better care coordination, reduced medication errors, and new levels of patient engagement, including online communications. In this article, we explore several aspects of care transformation that are possible through electronic data systems, including more reliable delivery of high-quality evidence-based care, and ongoing care improvements enabled by systematic tracking of patient outcomes.

KP’s successful launch of HealthConnect was aided by its structure as an integrated delivery and financing system. The integrated model was instrumental in promoting internal dialogue, achieving alignment of incentives, and eventually adopting a comprehensive health IT system. As we move forward, the shared goals of the Kaiser Foundation Health Plan, Kaiser Foundation Hospitals, and the Permanente Medical Groups will continue to promote improvements in care delivery across the organization.

Historical Overview

For most of US history, medical care has been carried out by physicians in solo practice relying on paper-based record keeping. As medical care evolved to include more specialists and alternate care sites, gaps in data sharing and communication grew. The often-illegible prescriptions written by physicians were emblematic of the problem. Another outgrowth was wasteful and duplicative patient testing, reflecting the fact that test results from one care location were often not available in another.4

In inpatient hospitals across the country, the lack of systematized information sharing and care coordination became evident each time a patient or family member was required to repeat the same information for new caregivers.5 Meanwhile, Emergency Department personnel in the US have worked in a relative data vacuum, often treating emergent cases without having information about the patient’s medical history.6

Within medical research, the volume of literature escalated dramatically over the latter part of the 20th century.7 From 1978 to 1985, the number of published randomized controlled trials (RCTs) added to the MEDLINE database of medical literature averaged 5000 per year; by 2001, that number had reached 25,000 per year. The new studies shed light on treatment efficacy but also challenged physicians in trying to keep pace with a rapidly expanding, often conflicting, base of knowledge. The Institute of Medicine has asserted that “clinicians increasingly are barraged with a vast volume of evidence of uncertain value.”8

Research syntheses have become more ubiquitous over time. Organizations conduct systematic reviews of the literature in particular clinical areas, and professional associations and other groups translate the findings into clinical guidelines. These efforts have helped to guide practice but have also added to the flood of information. For example, the National Guideline Clearinghouse now lists 527 guidelines under the category of “hypertension.”9

The Quality Chasm

Perhaps not surprisingly, a central criticism of the US health care system for many decades has been its high variability and inconsistency.10,11 In the late 1990s, the President’s Advisory Commission on Consumer Protection and Quality in the Health Care Industry found that “in America there is no guarantee that any individual will receive high-quality care for any particular health problem. The health care industry is plagued with overutilization of services, underutilization of services, and errors in health care practice.”12

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The Institute of Medicine’s Quality Chasm report stated in 2001 that: “Americans should be able to count on receiving care that meets their needs and is based on the best scientific knowledge. Yet there is strong evidence that this frequently is not the case.” In 2003, McGlynn et al quantified many of the quality deficiencies in the health care delivery system. Evaluating quality measures for 30 acute and chronic conditions, the authors found that patients received recommended care only 54.9% of the time.

**Advancing Health Information Technology**

In addition to providing a complete patient record at the point of care, health IT provides a mechanism for promoting greater reliability in care quality. For example, health IT has a role in identifying and communicating gaps in care—treatments that are recommended for the patient but not yet provided. Health IT can also advance our understanding of effective care by facilitating the aggregation of patient outcomes data.

In 2004, as deployment of IT in various sectors of the US economy was advancing, the Bush administration signed two Executive Orders that launched an effort to promote the adoption of EHRs nationwide. In a strategy document titled Transforming Health Care: The President’s Health Information Technology Plan, the administration observed “our doctors and nurses have to manage 21st century medical technology and complex medical information with 19th century tools.” The plan sought to ensure that most Americans would have EHRs within 10 years, although it did not allocate federal funding to reach that goal.

The Congressional Budget Office (CBO) concluded in 2008 that health IT “has the potential to significantly increase the efficiency of the health sector by helping providers manage information.” The CBO said, the technology can “improve the quality of health care and, ultimately, the outcomes of that care for patients.”

**Meaningful Use**

As part of the American Recovery and Reinvestment Act of 2009, the Obama Administration’s economic stimulus package, the federal government allocated $27 billion over 10 years to promote the adoption and use of EHRs by the nation’s providers. Financial incentives were made available to eligible providers meeting a set of specific criteria for the “meaningful use” of such technology. The law included 5 years of financial incentives, up to a maximum of $44,000 per Medicare-eligible professional and $63,750 per Medicaid-eligible professional, plus 4 years of incentives for eligible hospitals. However, beginning in 2015, the carrot becomes a stick for Medicare providers: Medicare reimbursements will be adjusted downwards for those who do not demonstrate meaningful use of certified EHR technology.

In 2010, the US Department of Health and Human Services released the EHR Incentive Program and Certification Standards governing Stage 1 of the meaningful use program. The final regulations governing Stage 2 meaningful use were published in September 2012.

The Stage 1 regulations included some of the basic requirements essential for creating any medical record—for example, the ability to record patient demographic information and vital signs, up-to-date problem lists (current and active diagnoses), current medications and allergies, and smoking status. According to the National Coordinator for Health IT at that time, other components of the regulation did “begin to realize the true potential of EHRs to improve the safety, quality, and efficiency of care. These features help clinicians to make better clinical decisions—and avoid preventable errors. To qualify for incentive payments, clinicians must start employing such clinical decision-support tools.”

The Stage 2 regulations relating to quality of care seek to align the incentives for using EHRs with the key priorities of the National Quality Strategy (a component of the 2010 federal health reform law). Specifically, Stage 2 meaningful use criteria encourage the use of health IT for continuous quality improvement at the point of care.

Linking to previous efforts to increase the consistency of US health care, the National Quality Strategy states: “Over time, our goal is to ensure that all patients receive the right care, at the right time, in the right setting, every time.” Health IT is viewed as an enabler in this transformation.

The Stage 3 meaningful use regulations, which are scheduled for release in mid-2013, are expected to emphasize improved clinical decision support.

**Three Steps in Care Transformation**

A central aim of the federal government in promoting EHRs nationwide is to establish greater connectivity across care providers. Health care systems such as KP have achieved greater levels of functional cohesion by integrating the components of care—physicians and other care personnel, hospitals and other care sites, and the insurance function—all within the same organization. Even within that integrated structure, however, the transition from paper to EHRs offered a tremendous opportunity to improve communication, data sharing, and clinical decision making.

Health IT can contribute to care transformation in three important ways:

1. **Accessible patient information.** Health IT makes accurate, complete, and up-to-date patient information more accessible to clinicians at the point of care. Additionally, electronic data systems have the potential to improve provider communication, establish better care coordination, and ensure more successful patient transitions.

2. **Better clinical guidance.** In areas where there is consensus regarding optimally effective care, health IT can aid in disseminating known best practices. Through the use of clinical decision-support tools, alerts, or other communication devices, health IT can enhance efforts to reduce gaps in care. This guidance helps ensure reliability in delivering high-quality evidence-based care and can reduce unwarranted variation in practice.

3. **Continuous learning and improvement.** In areas where there are gaps in the knowledge base, or a lack of consensus regarding appropriate treatment protocols, health IT has the potential to support continuous learning and care improvement. Electronic data systems can link treatment selection with observed patient outcomes, providing feedback for clinicians. These results can promote greater consensus about appropriate care standards. The first transformation centers on knowing the patient’s clinical situation, both past and present. The second and
third transformations involve the patient’s future: supplying clinicians with information on the most effective treatment options available to that patient, to the best of our current knowledge. As indicated above, “meaningful use” policies are increasingly incorporating this larger set of objectives.

**Accessible Patient Information**

EHRs support clinical quality in the US by helping to ensure that all the information that is known about a patient is available at the time of the clinical encounter. Digitized records, if implemented nationwide, can help make patient data accessible at all times of day at all locations—hospitals, Emergency Departments, primary care facilities, and specialty ambulatory care centers—enabling clinicians to make more informed treatment decisions. EHRs can also alleviate many of the complications that arise from poor provider communication, such as reducing drug-drug interactions.

**Better Clinical Guidance**

Through clinical decision supports and other communication strategies, health IT systems such as KP’s can update physicians on how patients’ care is tracking with current treatment recommendations. As Robert Pearl, MD, Medical Director of The Permanente Medical Group, noted in a highly personal example involving his father, computerized systems can notify clinicians that a potentially life-saving diagnosis—and implemented—throughout the system. For example, KP applied these techniques to substantially increase the rate of hypertension control among its members. In KP’s Northern California Region, hypertension control rates rose from 44% to 80% over the course of the past decade. To achieve these gains, EHRs were used in several ways. Members who had not had a recent check-up were identified and encouraged to make an appointment; electronic prescription systems were reviewed to identify patients who might benefit from a medication change; and evidence-based clinical practice was supported through electronic support tools.

**Healthy Bones Program**

During the 1990s, KP’s Southern California Region established the Healthy Bones program, a comprehensive initiative for fragility fracture prevention. Electronic data systems have been used to track medications, use of scanning, and rates of fracture.

The program established large multidisciplinary teams led by orthopedic surgeons. (The fact that surgeons led an effort to reduce fractures is indicative of what an organized system with appropriate financial incentives can achieve.) The teams took proactive steps to prevent fracture, including more frequent bone density scanning, use of fracture risk assessment tools, increased prescribing of bisphosphonates (alendronate), and patient education and encouragement for lifestyle change.

In the largest study of its kind, KP researchers tracked the effectiveness of the Healthy Bones program. The research examined the experience of more than 625,000 patients older than age 50 years who had specific risk factors for osteoporosis and/or hip fracture. These patients were treated under a standardized care protocol. The study found that proactive measures reduced hip fracture rates by an average of 37%. In 2007, a total of 1574 hip fractures were observed, compared with the 2544 that were predicted—meaning that an estimated 970 hip fractures were prevented that year. As millions of baby boomers move into retirement age, these findings become increasingly significant.

KP Southern California now operates a sophisticated data registry that draws clinical information from the EHRs in HealthConnect. The registry data are presented to clinicians through a Web-based tool, enabling them to identify gaps in care across a broad population. Although some variation remains, the organization has become much more consistent in its treatment of osteoporosis and fracture prevention in recent years.

**ALL/PHASE Initiative**

In 2003, KP launched its A-L-L initiative to improve cardiovascular and diabetes outcomes by increasing the use of aspirin, lisinopril (an angiotensin-converting enzyme inhibitor), and a lipid-lowering medication. The program was later expanded to include a β blocker and lifestyle changes, and it was renamed ALL/PHASE. As part of the initial A-L-L effort, the organization sought to increase adherence with the three drug regimens and measure the effects of that change.

Numerous clinical trials had demonstrated the cardioprotective benefits of these drugs. In addition, a detailed computer simulation had shown that the bundled use of these medications by high-risk populations could reduce their risk of heart attack and stroke by as much as 71%. Within KP, clinical decision supports encouraged the delivery of A-L-L medications for the eligible populations.

In addition, KP researchers tracked a study population of more than 170,000 members, assessing their adherence to the drug protocol during 2004 and 2005, and then monitoring adverse cardiovascular events in 2006. To increase appropriate drug use, KP physicians and pharmacists developed a simplified regimen involving fixed doses of generic medication that minimized outpatient visits, follow-up laboratory testing, and dosage titration. HealthConnect provided clinical support by flagging eligible patients, those not already receiving both an angiotensin-converting enzyme inhibitor and a lipid-lowering medication (aspirin use could not be consistently measured).

The study confirmed the value of the drug bundle and concluded that 1271 heart attacks and strokes had been averted because of the protocol. Those patients categorized as having high exposure to the drugs saw their risk of hospitalization from heart attack and stroke decline by 26 events per 1000 person years. Those with low exposure saw their risk reduced by 15 events per 1000 person years. The authors predicted that with even higher rates of drug compliance, up to 32,000 heart attacks and strokes could be prevented in a single calendar year.

**Panel Support Tools**

Whereas clinical decision-support tools provide alerts to physicians on a case-by-case basis, panel support tools (PSTs) give
primary care physicians an opportunity to review their patients' care gaps at a single glance. Drawing information from the EHR, Web-based PSTs provide physicians with feedback on gaps in patient care relative to evidence-based guidelines. Some KP Regions are also using PSTs to conduct population-level outreach, such as mailings to encourage use of preventive care services.

A recent KP study examined the impact of PSTs on care delivery in the Northwest Region. Focusing on patients with diabetes and cardiovascular disease, and using color-coded visual displays, the PST provided physicians with information on their patients' screening, monitoring, medication use, risk factor control, and immunizations, relative to treatment recommendations.  

Researchers concluded that delivery of recommended care for patients with diabetes and cardiovascular disease did in fact increase following implementation of the PST. Measuring physician performance as the mean percentage of recommended care that each patient received (per month), the researchers found that provision of recommended diabetes care increased from 65.5% to 70.6%, and recommended care for cardiovascular disease improved from 67.9% to 72.6%.  

The total joint registry provides physicians with feedback on patient outcomes that has informed, and in some cases, altered their views about clinical best practice.  

Continuous Learning and Improvement

In other clinical areas, there may be much less consensus about appropriate care protocols. In these cases, EHRs have the potential to support the generation of new knowledge as a normal part of each clinical encounter. In tracking patient outcomes, electronic data can help form the basis for new understandings about optimal care.

The following examples illustrate how KP has used electronic data from patient registries and observational studies to develop new insight into clinical effectiveness and appropriate practice.  

Tracking Surgical Outcomes

For many years KP has employed registries to assist in tracking groups of patients who have specific conditions, or who have undergone specific procedures. As detailed by the federal Agency for Healthcare Research and Quality, a patient registry is an organized system that uses observational study methods to collect uniform data to evaluate specified outcomes for a predefined population.

One of KP’s most sophisticated registries is the Total Joint Replacement Registry. Beginning in 2001, a team of KP orthopedic surgeons, operating room staff, clinical staff, administrators, and infection control officers established what is now the largest total joint replacement database in the country. Across 43 Medical Centers, 350 surgeons voluntarily contribute to the registry with a participation rate of 90%, and more than 140,000 total joint procedures (hip and knee) have been recorded.

The total joint registry provides physicians with insight into the impact of PSTs on care delivery and the use of minimally invasive surgical procedures. Tracking surgical outcomes through the registry has also enabled clinicians to identify the types of patients who are at greatest risk of postoperative infections, second surgeries, hospital readmissions, and other complications.  

Assessing Treatment Alternatives

In a study appearing in the journal *Ophthalmology* in 2010, KP researchers were able to demonstrate that two drugs used to treat age-related macular degeneration (AMD) were equally effective in halting and reversing vision loss. This was an important finding in the ophthalmology community, first because AMD is the leading cause of vision loss and blindness in older Americans, and second because there had been uncertainty regarding the relative effectiveness of the treatment alternatives—ranibizumab (Lucentis) and bevacizumab (Avastin). These medications had a substantial cost differential ($2000 per dose vs $50 per dose).

Using KP EHR data and a retrospective, real-world study design, the KP researchers were able to inform the effectiveness debate in a timely way. The study findings were later supported by a larger National Institutes of Health-funded trial, Comparison of AMD Treatments Trials (CATT), which also concluded that the two drugs were equally effective.

Developing Treatment Protocols

In the current environment, deriving clear evidence-based treatment recommendations from the literature can be a complex undertaking. Individual research studies are generally not designed for future aggregation and often do not lend themselves to easy synthesis. For example, the authors of a systematic review of 137 studies examining treatments for rotator cuff injury make the following observations:

The lack of consistency and precision of results across the studies was primarily due to varied comparisons … relatively few studies compared the same interventions. In addition, variation in the pathologic presentation of rotator cuff disease contributed to inconsistency among the studies. Although most patients had full-thickness tears, the size and configuration of the tears, degree of fatty infiltration, and number and type of comorbid conditions varied widely across the included studies. Both outcome measures and timing of measurements varied considerably across studies, which made comparisons difficult.
The science of medicine is enhanced when data becomes a regular tool of both medical practice and medical research. We are just now getting access to some very powerful information—learnings that can only be acquired with longitudinal data and data about entire populations of people. [No more] small sample sizes . . . In the new world we are headed into, basic [research] studies can be done electronically for much larger populations with a lot more data for a lot less money—and then updated weekly or even hourly. The new database involves years of longitudinal tracking that can turn a research snapshot into a moving picture.\

The use of health IT has the potential to promote more highly informed and more rapidly informed clinical practice.

Conclusion
Health IT has been called a necessary but insufficient step in care transformation. EHRs assist in the collection and storage of patient encounter data, but capitalizing on that information requires additional steps to inform treatment decisions.

Buntin et al\(^5\) have argued that the adoption of health IT, if aligned with payment incentives, provides an opportunity to encourage translation of research into broader practice. However, they note that the “human element” is critical. Strong physician leadership and participation are essential in bringing about this change. It is notable that one of the critical components of KP’s successful launch of HealthConnect was the effective physician leadership and engagement of clinicians throughout the entire process.\(^6\)

Health IT can support the practice of high-quality evidence-based medicine, as well as continuous learnings and improvement based on ongoing experience. Information and data strategies such as those developed by KP through its patient registries, research, and Web-based tools can aid in efforts to transform care delivery nationwide.\

\(^{46}\) Consequentially, the literature review did not result in greater consensus regarding optimal treatment and further research was recommended.

In documenting widespread regional variation in physician practice in the 1980s, Jack Wennberg wrote that the root cause of variability in health care is a lack of consensus on the correct way to practice medicine.\(^7\) He observed that “all physicians agree on the need for . . . hospitalization for virtually all patients with hip fractures and myocardial infarction.” He said, “Not surprisingly studies consistently demonstrate minimal variations in hospitalization for these diagnoses.” Nevertheless, variability was prevalent in many other areas. Wennberg\(^8\) argued that the nation’s growing demand for improved quality, efficiency, and equity is “hostage to unresolved theories about correct practice.” It is of “extraordinary importance,” he said, that we “evaluate reasonably held but inadequately tested theories of treatment . . . to ascertain: What are the outcomes of alternative approaches?\(^9\) Wennberg’s work may have added to the impetus for increased clinical research that occurred over the latter part of the 20th century, as detailed above.

In describing the digital transformation of the 21st century, George Halvorson, Chief Executive Officer of Kaiser Foundation Health Plan and Hospitals, has predicted: “computers will revolutionize health care.”\(^10\) In Connected for Health: Using Electronic Health Records to Transform Care Delivery, he wrote:

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

Acknowledgments
The author would like to thank the many people who reviewed and provided thoughtful comments on earlier drafts of this article, including Raymond Baxter; Laird Burnett; Ted Eytan, MD; Terhilda Carrido; Elizabeth McGlynn; Lori Potter; Beth Roemer; Murray Ross; Ruth Shaber, MD; and Jed Weissberg, MD.

Kathleen Louden, ELS, of Louden Health Communications provided editorial assistance.

References


45. HealthAffairs. A digital transformation of care delivery through Health Information Technology


Karen Ann Quinlan, Nancy Cruzan, and Terri Marie Schiavo didn’t know one another and lived miles apart, yet their names will remain permanently joined. Each of these young women became a *cause célèbre* and shared in a similar series of unimaginable events. Massive brain damage left each of these young women persistently vegetative, hovering in that netherworld of rousable unconsciousness. Meticulous medical and nursing care, feeding tubes, antibiotics, ventilators, and protracted legal wrangling bequeathed many additional birthdays to these young women before they were permitted to complete their dying. None ever imagined the awful fate they shared. None had documented the kind of care they would want in such circumstances.

Dan Morhaim, MD, internist and emergency physician, is a member of Maryland’s House of Delegates. He wrote *The Better End* as a physician, policymaker, and bedside witness to the terrible distress that can result when people have not expressed their preferences for the care they would choose when very ill or closing in on life’s end. He wants his readers to avoid the uncertainty and struggles the Quinlan, Cruzan, and Schiavo families faced. He writes to empower, advising us to talk about the kind of care we would want with those whom we trust, to appoint a surrogate or proxy decision maker to speak for us when we cannot, to document these discussions and decisions, and to provide after-death instructions for organ transplantation, body disposition, and funeral arrangements. Taking these steps does not guarantee but does increase the odds of having our voices heard and getting the kind of care we would want. They also relieve others from the burden of making complex decisions without our participation. In an era when chronic conditions and technology make the timing of death more foreseeable, preparing an advance directive is increasingly more critical.

Throughout the book, Morhaim underscores the consequences of not completing an advance directive and thereby appointing someone to act on our behalf if and when we are unable to make our own treatment choices. He informs us by telling stories, including those of Quinlan, Cruzan, and Schiavo, to convince his readers that there is a *better way*. He reminds us that Quinlan’s family wanted to discontinue the ventilator moving air into her lungs. They eventually won the right to stop her medical treatment, discontinued only the ventilator, and chose to leave in place the tube that delivered fluids and nourishment. She lived for almost a decade longer. Cruzan’s family wanted to remove her feeding tube but was not permitted to do so. It was a long and very winding road before the US Supreme Court finally defined the constitutional right to refuse medical care including feedings. The ruling left some discretion to states allowing them to deny this right, *if an individual had not exercised it in clear and convincing terms*. Eventually after hearing new testimony, a Kansas court concluded that Cruzan had exercised her right and had expressed her desire never to be left in the condition in which she was suspended. The feeding tube was removed and she quickly died. Schiavo’s case followed the others.

Her parents and husband had differing opinions, leading to a dispute over who had the right to make treatment decisions, followed by trials, multiple appeals in state and federal courts, removals and reinsertions of the feeding tube, and even special Federal and State legislation. Fifteen years after her collapse, and after a final legal ruling that upheld the decision to remove her feeding tube, she finally died.

Contemplating our own deaths and thinking of a world without us is disquieting for most Americans. In some cultures even talking about death remains taboo or at a minimum believed to be very unlucky. For some, any sign of life is preferred to death’s finality. Others never want to be burdens or to be kept alive when quality of life evaporates or physical and cognitive functions fail. Morhaim recognizes the great diversity in people’s values, preferences, and beliefs. He points out that regardless of our preferences the critical act is to guide and to inform decision makers by documenting our choices in one of the many tools or formats the book lists in its resource section. He emphasizes the importance of appointing a trusted proxy decision maker, pointing out that even no decision is a decision.

This book focuses on the importance of advance directives and provides valuable guidance. Deeper discussion and more illustrative stories about the challenges families and proxy decision makers may face when attempting to be true to documented preferences would strengthen the book. Proxies need to be well informed about this possible eventuality and be prepared to confront it. Medicine’s authority, culture, and traditions are very strong and proxy decision makers may face strong headwinds as they attempt to honor advance directives. Clinicians must be aware of their own values, preferences, and conscious and unconscious biases and guard against inappropriately superimposing them on others. Medicine’s own culture has a bias toward continuing to treat and “do one more thing” especially when a patient is younger. When people are very old and wizened, the bias can be toward less treatment.

Finally, it is important to remember that Morhaim’s “better end” is one in which individuals control treatment choices through an advance directive and proxy decision maker when they no longer are able to do so themselves. It does not mean choosing palliative care or hospice over full treatment or vice versa. Labeling the former as a *good death* and the latter as a *bad death* misses the point.
**Objective**

1. to inculcate 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

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**Section B.**

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

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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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