A tool for successful chronic pain management: a controlled substances peer review and advisory group

Brian Arndt, MD, Kimberly Arndt, MD, John Beasley, MD, Jerri Ustby-Cruz Bye, RN

A patient-centered medical home should be well-positioned to support patients on chronic daily opioid therapy. However, there has been significant focus on management of other chronic diseases, and effective management of patients with chronic pain has received less attention. Many practices have part-time clinicians providing team-based care that can make it difficult for a practice to keep prescriber continuity with patients who struggle with chronic pain. This can lead to patient, clinician, and staff frustration regarding the myriad of opinions and approaches to this type of care. Establishing a multidisciplinary controlled substances peer review and advisory group for patients receiving daily opioid therapy guided by a registry of those patients can help facilitate more patient-centered chronic pain care. The goal of the team is to facilitate a practical management process that encourages minimum standards without replacing individual clinician discretion. Highlights of the group's tools developed will be reviewed.

Team-based care that divides clinical work in a manner that utilizes the strengths of various team members to provide accurate, efficient, and timely care of patients is an integral part of delivering care to patients with chronic pain. Developing a protocol that promotes a framework for the opioid prescription process can help clinicians and patients work together to treat chronic pain effectively and safely. Not only do physicians need a way to ensure an individual patient is using their medication safely and appropriately, but this information must be available to other physicians who are involved in the care of the patient. Enhancing coordination of care is especially important in teaching clinics where there are more frequent hand offs in the care process. This needs to occur in a context where clinicians and patients participate collaboratively in a structured way to approach the pain management process.

Trust and Technology Interaction in Primary Care

Onur Asan

Patient trust is an important topic in both health care research and practice, though major gaps exist in our understanding of the influences patients' trust in their provider and the outcomes of patients' trust or distrust. Trust in medical technology was defined generally as a person's belief that electronic or mechanical devices used to replace or augment human labor in medical environments will perform effectively**.** Preliminary studies have found that patient trust in care providers predicts quality variables such as sustained enrollment in health plans, patient satisfaction, utilization of preventive services, adherence to medical advice, malpractice litigation, health status and health service seeking behaviors. Therefore, understanding the factors that contribute to patient-doctor trust or distrust will lead to guidelines that can help doctors more effectively interact with their patients. This study will provide a foundation for the development of new ways to measure trust beyond user self-report, which has the potential to change the way trust in viewed and explored scientifically.

A.1.1.

A.1.2. The purpose of this study is to identify how computer use by clinicians impacts clinician/patient trust during the clinical encounter. This study will identify practical changes that can be made in clinical practice to improve patient-clinician trust during a clinical encounter. In order to accomplish this we will explore nonverbal interpersonal interactions with individuals and technologies and ratings of trust. Multiple questionnaire measures of trust will be used to validate the interaction. There will be questions about patient satisfaction with visit, patient-physician relationship, patient perception of organization, patient attitude to computer and patient perception of medical technology. The conceptual framework for this study is that patient-doctor interactions can be quantified and used as a measure of doctor-patient interpersonal trust. Secondly, technology mediates the relationship between patients and doctors and can also be quantified in the interaction analysis in terms of the how the technology is used by one or more of the human entities in the interaction**.**

A.1.3.

A.1.4. The methodology of the study consist two forms of data which will be collected: observational and questionnaire. Video and audio recordings will be collected to obtain data about interactions during the visit and questionnaires will collect measures of trust and demographics. Video observation will involve a three-channel video system to record, in order to capture the finer interactions between patients and doctors.

The Differential Diagnosis of Pulmonary Blastomycosis in Wisconsin: A Wisconsin Network for Health Research (WiNHR) Study

Dennis J. Baumgardner, MD, Jonathan L. Temte, MD, PhD, Erin Gutowski, MPH, William A. Agger, MD, Howard Bailey, MD, James Burmester, PhD, Indrani Banerjee

Context: Pulmonary blastomycosis is an uncommon but serious fungal infection endemic in Wisconsin. Clinician awareness of the protean presentations of this disease may reduce diagnostic delay.

Objective: To determine the frequency of diagnosis of blastomycosis cases and to develop a differential diagnosis of this disease in Wisconsin such that when clinicians entertain a diagnosis on this list, blastomycosis is also considered.

Design: Mail survey each including two clinical case vignettes, randomly selected from eight actual pulmonary blastomycosis patient vignettes; clinician demographics and their rank list of the three most likely diagnoses for each case. Chi-square tests used for analysis of categorical variables, multivariate analysis by logistic regression.

Subjects: Primary care physicians in the Wisconsin Network for Health Research (WiNHR) sites (N=1064).

Main Outcome: Blastomycosis listed in top three diagnoses.

Results: Blastomycosis was listed as the most likely diagnosis on 37/227 (16%) of case vignettes, and one of the three most likely diagnoses on 43/227 (19%). Vignettes with patient residence or exposure to one of the 20/72 counties with higher incident rates of blastomycosis more commonly included blastomycosis as one of the three most likely diagnoses (46% vs. 9%; $p<0.001$). Physicians with practice locations in the higher incidence counties listed blastomycosis more commonly as a potential top three diagnosis than did those from other counties (44% vs. 15%; $p<0.001$); this remained significant in a multivariate model of practice demographics. Pneumonia, cancer, non-infectious pulmonary diseases and tuberculosis lead the broad differential diagnosis of this disease.

Conclusions: Blastomycosis should be included in the differential diagnosis of Wisconsin patients with a wide variety of pulmonary symptoms suspected to represent infectious or non-infectious pulmonary, cardiac or neoplastic disease, even with exposures limited to counties with low incidence rates.

Qualitative aspects of treatment with prolotherapy for knee osteoarthritis in a multi-method study

Lane Benes, BS, Luke Fortney, MD, Andrew Slattengren, DO, Jessica Grettie, BS, Jeffrey Patterson, DO, David Rabago, MD, University of Wisconsin Department of Family Medicine

CONTEXT: Prolotherapy is an injection-based treatment for chronic musculoskeletal pain consisting of an irritant solution injected on painful ligament and tendon attachments and in adjacent joint space. Objective results in the parent study suggest a 30-40% improvement in overall knee osteoarthritis (OA) related quality of life compared to baseline status. The qualitative response of patients receiving prolotherapy is not known.

OBJECTIVE: To assess the qualitative response of subjects who recently received prolotherapy for knee OA in a clinical trial.

DESIGN: We conducted semi-structured, in-depth telephone interviews. Transcribed responses were discussed by co-authors to identify major themes; disagreements were resolved by consensus.

SETTING: Primary care, university based, outpatient Family Medicine clinic.

PARTICIPANTS: Twenty-five participants randomly selected from three recent knee OA prolotherapy studies.

RESULTS: Qualitative data reflected variability in subject outcomes; most had substantial symptom reduction and quality of life improvement. Six themes emerged: most participants reported (1) long-lasting (1 year) reduction in knee pain and improved ability to perform activities of daily living; (2) most improvement occurred after the second treatment session; (3) self-limited negative aspects of prolotherapy including numerous injections, pain during and immediately following treatment; (4) safety; there were no long-term or unexpected side effects; (5) an initial informational meeting and positive prolotherapist-participant interactions helped foster optimism toward prolotherapy; (6) they would consider receiving prolotherapy in the future and would recommend it to others.

CONCLUSIONS: Most subjects reported that prolotherapy produced effective, long-lasting results without side effects. Positive treatment effects usually required at least two injection sessions, which were perceived by most subjects as painful but worth the effort. Clear, complete description of the rationale and procedures in the study, and positive prolotherapist-subject interaction may have enhanced adherence to treatment appointment and tolerance of the therapy.

Effectiveness of a Wilderness First Aid Course

Philip Deming, Rod Erickson, MD

Brief training courses for emergency skills are commonplace within the health care community. Commonly referred to as “alphabet soup” they include courses such as BLS, ACLS, and ATLS along with a vast array of specialty courses. Used as a method to teach specific knowledge and skill sets to both lay and professional caregivers, these courses have been employed with varying degrees of success. While “advanced courses” are often taught to professionals, the lay public is often presented with “basic courses”. Within this milieu have been the emerging, and increasing popular “wilderness caregiver” courses, ranging from “first aid” to “advanced life support”. Even the most basic of these often involve some “advanced-care skills and strategies" taught to lay caregivers. Increasingly, such courses are being required for leaders taking groups into wilderness environments where access to both emergency and routine care is limited. These courses are requiring groups to spend thousands, perhaps millions, of dollars and hours to obtain training and certification. Despite these requirements there is little documentation that these courses achieve their desired objective: provide a safer experience for expedition participants.

To assess the effectiveness of this training, we are conducting a survey of course participants from three 16-hour Wilderness First Aid courses sponsored by the Sandhill Skills Center from 2008-2010 to determine the perceived usefulness of the course by participants since they took the course. The survey asks if they have encountered a first aid situation since taking the course and if so, if it was helpful, if they have changed their leadership approach to outdoor activities, and what recommendations they may have for the course based on their experience since the time they took the course. Their experiences will be compared to those reported in the literature by those caring for wilderness activity participants.

Toward a Grounded Theory of Factors Influencing Physicians' Learning Decisions

Lisa M. Elsinger, Med

Context: Research on physician learning has resulted in learning models describing stages physicians go through as they attempt to solve clinical problems or increase their general knowledge and skills. This study will explore the stage of learning Slotnick (1999) defined as evaluating or deciding, in order to better understand how and why physicians pursue learning about particular problems and not others even though they may continue to encounter these problems. Primary care physicians in family practice were selected as the population for this study because of the broad array of topics they must choose from when deciding to learn, and the challenge this presents. The value of this study to primary care is in facilitating reflective practice and fostering stronger awareness of individual and collective decision-making regarding the learning necessary to enhance clinical practice.

Objective: The purpose of this study is to explore the factors that influence primary care physicians' decisions to either initiate learning or decide not to learn when dealing with emergent issues in their clinical practice. How do they decide from the available options, given that "the number of practice aspects which a physician might wish to improve is virtually unlimited, it is likely that active concern is felt for only a limited number and that they are related to values, interests, and experience, but above all, conditioned by events in the physician's practice" (Geertsma et al, 1982, pp. 758-759)?

Design: To investigate this issue, I will use a qualitative approach, grounded theory, that allows for emphasis on the viewpoints of the research participants and takes into consideration their setting or context, in this case the clinical practice. Data collection will entail narrative interviews with primary care physicians.

Results: This dissertation study is in progress and preliminary results will be discussed during the presentation.

A Quality Improvement Study on Adolescent Immunization at a Central Wisconsin Family Practice Residency Clinic

Amy J. H. Ewan, DO, Vicki Bender, RN

Context: Adolescents tend to be behind on immunizations compared to younger children. More vaccinations are available for adolescents than have been before. This is significant to primary care since vaccinations are key to preventative medicine.

Objective: Increase the number of adolescents in our clinic who are up-to-date on vaccinations and increase parental awareness of current CDC vaccine recommendations.

Design: Quality improvement study following the Plan-Do-Study-Act model.

Setting: Family medicine residency clinic.

Patients: Current patients of UW Health – Wausau, age 12 to 19, who were in need of vaccinations. There were 424 adolescent patients at the time of the study; 298 were in need of vaccinations. Influenza and Hepatitis A vaccinations were excluded.

Intervention: A letter was sent to the parents of the 298 patients in need of vaccinations. Vaccination Information Sheets (VIS) from the CDC were included with the letter. Parents were encouraged to schedule a vaccination appointment, either during regular clinic hours or in a specific evening "Adolescent Immunization Clinic."

Outcomes: 298 of 424 adolescents age 12 to 19 in our clinic were in need of immunizations before the intervention, 70.3%. Data is in process for six months later.

Results: Of the 298 letters sent, 44 patients scheduled appointments. Two of the patients failed to show for their appointments, 6 were non-adolescent siblings in need of vaccination, and one was an adolescent sibling in need of vaccination that did not previously belong to our clinic. Thirty-five out of the 298 patients were vaccinated the night of the adolescent immunization clinic, signifying an 11.7% success rate.

Conclusions: This study demonstrates a good response rate to a letter-writing campaign; however, many adolescents are still in need of vaccination. A different intervention is planned for the near future.

The Wisconsin Collaborative Diabetes Quality Improvement Project: Effective Statewide Collaboration.

Kristin Gallagher, BS, Jenny Camponeschi, MS, Charlanne FitzGerald, MPH, Leah Ludlum, RN, CDE, Patrick Remington, MD, MPH

In 1998, the Wisconsin Diabetes Advisory Group developed and published the Wisconsin Diabetes Mellitus Essential Care Guidelines as a means to help improve diabetes care through providers and health systems. Over 70% of Wisconsin's licensed HMOs adopted or adapted the Guidelines. Efforts to evaluate statewide implementation of the Guidelines began in 1999 when the Wisconsin Diabetes Prevention and Control Program, in partnership with the University of Wisconsin Population Health Institute, members of the Diabetes Advisory Group and state health plans/systems, convened the Wisconsin Collaborative Diabetes Quality Improvement Project. The purpose of the Project is to facilitate standardized data collection at the population level to help identify the current status of diabetes care in health systems throughout Wisconsin. In addition, the data will be used to identify gaps between current practice and the Wisconsin Diabetes Mellitus Essential Care Guidelines.

Goals of this Project include:

- Evaluating implementation of the Wisconsin Diabetes Mellitus Essential Care Guidelines
- Sharing resources, population-based strategies, and best practices among collaborators
- Improving diabetes care through collaborative quality improvement initiatives

Aggregate data from the eleventh year of the project show that Wisconsin collaborators collectively exceeded the NCQA national averages on all Comprehensive Diabetes Care measures.

Some successes of the Project include:

- The majority of Wisconsin's HMOs currently participate in the project. Collaborators share best practices, strategies, and lessons learned.
- The Project collaborators have developed statewide quality improvement initiatives, including an Eye Care Initiative that began in 2001, a Cardiovascular Risk Reduction Initiative that began in 2003, a revitalized Eye Care Initiative that began in 2006, and a Chronic Kidney Disease DVD distribution in 2009.
- Over time, the Project has expanded to collect data on selected cardiovascular-related care measures, cancer screening measures, asthma care measures, arthritis care measures, and smoking cessation measures.

WREN's Collaboration with a Dental Network (PEARL)

Mike Grasmick, PhD, Peggy O' Halloran, MPH, Paul Smith, MD

This project is a collaboration with a dental practice-based research network (Practitioners Engaged in Applied Research and Learning-PEARL). Both the types of maxillofacial pain as seen between family physicians and dentists, as well as how dentists and family physicians use particular drug interventions for acute pain are unknown. Using an internet survey to be deployed October 2010, this project will gather information from dentists and physicians on how they manage acute maxillofacial pain and their attitudes and practices in prescribing medications for pain relief.

Macrolide treatment for "Chlamydial asthma": evidence for enrollment bias in an effectiveness trial

David Hahn, Mike Grasmick, Scott Hetzel

Context: Increasingly robust *in vitro*, animal model, epidemiological and clinical evidence supports macrolide treatment for chlamydia-associated asthma, characterized by increased severity, steroid resistance, concomitant chronic bronchitis and/or COPD (i.e., the "overlap syndromes" that have been systematically excluded from US asthma treatment trials). Another challenge when performing effectiveness randomized clinical trials (RCTs) for "chlamydial asthma" is off-study treatment sought by severely affected patients.

Objectives: To assess the impact of off-study macrolide treatment on the generalizability of RCT results.

Design: RCT with an open-label (OL) arm for eligible subjects who declined randomization.

Setting: Primary care practices throughout North America.

Patients: 96 adults with persistent asthma and reversible airway obstruction, of whom 22 (23%) elected the OL arm.

Intervention: Azithromycin (600 mg) or placebo, daily for 3 days, then once weekly for 11 weeks as an adjunct to usual care. Outcomes were assessed until 48 weeks post-randomization.

Main and Secondary Outcome Measures: *Main:* asthma symptoms. *Secondary:* asthma quality of life (AQLQ) and asthma control (ACQ).

Results: *Baseline:* compared to randomized subjects (n=74), OL subjects (n=22) reported greater asthma severity (P=0.03), higher frequency of asthma initiation after an acute lower respiratory tract illness (P=0.04) and more chronic sinusitis (P<0.001). Most OL subjects also reported temporary asthma remission after prior conventional azithromycin treatment for unrelated illnesses. *Outcomes:* there were few significant differences for any outcome between subjects randomized to azithromycin or placebo (RCT groups). Compared to the RCT groups at 6 months after treatment completion, OL subjects demonstrated persistent clinically and statistically significant improvements in symptoms (P=0.001), AQLQ (P=0.003) and ACQ (P=0.005).

Conclusions: Compared to randomized subjects, the OL group had more severe disease and a greater likelihood of long-lasting treatment benefit. Future asthma macrolide effectiveness RCTs should focus on more severe asthma, and should include an open-label arm as an external validity control to mitigate the risk of "enrollment bias."

Incidence of Eosinophilic Esophagitis in Marshfield Epidemiological Study Area (MESA)

Rajesh B Kethireddy, MD, Naga P Grandhe, MD, Camille F Torbey, MD, Jeffrey M Resnick, MD, John W Melski, MD

Context: Eosinophilic Esophagitis (EE) is a relatively "new" clinicopathological entity characterized by esophageal symptoms and a dense Eosinophilic infiltration of esophageal mucosa. This would be the first study estimating the incidence of disease in the population in USA.

Objectives: 1)To estimate the incidence of EE in MESA population and to observe the incidence trends between 1995-1997 and 2005-2007; 2) To evaluate the temporal relationship between onset of Atopic Dermatitis (AD) and diagnosis of EE.

Design: Retrospective Cohort Study

Setting: The study population will be from the MESA area covering North and central Wisconsin.

Participants and Methodology: We screened all esophageal biopsy reports from 1995-97 and 2005-07 using SNOMED and MESA database. The date of biopsy for each case was considered for the date of diagnosis. We reviewed clinical presentation, macroscopic findings on endoscopy, site of biopsy from the electronic medical records. Cases of Esophagitis due to chemicals, drugs, infections, inflammation were excluded along with those with structural abnormalities of esophagus like tumors, strictures, ulcers. Finally pathologist reviewed 373 tissue specimens of those histopathology reports in which EE can't be ruled out and those with features suggestive of EE. Selection bias was overcome as pathologist was unaware of clinical, endoscopic features and previous histopathology reports. Medical records of confirmed EE cases were reviewed to look for atopic dermatitis.

Results: So far 27 confirmed EE cases are identified. Gender specific incidence rates will be calculated in both adult (sub-grouped for age less than 30, 31-40, 41-50, 51-60, 61-70, more than 70years) and pediatric (ages 0-5, 6-10, 11-17 years) population. Atopic dermatitis was associated in three cases of EE. In the univariate analysis, the descriptive statistics will be reported at baseline of the study for each of the patient's attributes. The study is still in progress and expecting completion shortly.

Workflow Schmerkflow

Jamie A. Lapin, MS , Daniel J. Krueger , Tosha B. Wetterneck, MD, MS, G. Talley Holman, PhD , John Beasley, MD, Ben-Tzion Karsh, PhD, Daniel J. Krueger

Context: Statements about the integration of electronic health records (EHRs) into primary care clinician workflow make assumptions that "what is workflow at this clinic?" can be answered. However, given the complexity of primary care, defining workflow may not be straightforward. This has implications for EHR implementation in primary care clinics.

Objective: To determine the workflow of primary care physicians during a clinic visit. We hypothesize that the workflow is not linear in nature and that variation in workflow is related to many factors including the physician, patient, clinic, and existing EHR technology.

Design and Setting: This study uses physician-patient visit data from two studies of adult primary care work that used the similar free-text observation data collection protocols. Observations were coded using a comprehensive physician task list consisting of 12 major tasks and 203 subtasks with detail up to 4 levels of subcoding. We compared physician workflow at 3 levels: 1) Within physician, 2) within physicians from the same clinic, and 3) across primary care clinics with regard to the presence of an EHR. Microsoft Excel was used to analyze the tasks performed during the visit and the sequence of tasks.

Participants: 30 physicians, a mix of internists and family physicians, were observed across 17 clinics. Patients were aged 65 years and older in one study and 18 years and older in the other. Obstetrical visits were excluded.

Results: Thirty-four physician-patient visits were coded and analyzed. As hypothesized, workflow was not linear in nature and variation was found between EHR and non-EHR clinics, between physicians within the same clinic, and between physicians themselves.

Conclusions: A standard "workflow" does not exist in primary care. Individual tasks that physicians perform can be determined. The design and implementation of EHRs must take into consideration the great variability of physician workflow during patient visits.

Outcomes of Community Clinic-Based Deliveries in a Wisconsin Amish Community

Jim Deline, MD; Lee Dresang, MD; Laura Lynch, BA; John Frey, MD; Mark Gideonsen, MD; Patrick McKenna, MD; Lisa Varnes-Epstein, MHS, PA-C

Context: For over 18 years, the LaFarge Clinic in Southwestern Wisconsin has provided an alternative to home birthing for Amish women, whose religious and cultural beliefs foster a different attitude toward childbirth, including management of labor, risk factors, and birth outcomes. In collaboration with Amish midwives and families, the staff of the clinic has developed a variety of methods of managing labor and delivery of high risk pregnancies that have resulted in exceptional birth outcomes. This experience can carry implications for other populations both in the United States and beyond.

Objective: To examine birth experience and maternity care outcomes at a clinic specializing in management of Amish women with high-risk pregnancies.

Design, Setting, Participants: A case series study of 937 Amish and Mennonite deliveries from 1993-2010 at a primary care birthing suite in LaFarge, Wisconsin.

Main Outcome Measures: Intrapartum and delivery data including maternal and fetal outcomes and complications, mode of delivery, number of prenatal visits, infant weight, APGAR scores, and use of medication and anesthesia during labor.

Results: A preliminary analysis of data from 1993-2006 has been completed. Results include low number of prenatal visits ($\mu = 2.60$), mean 1 and 5 minute APGAR scores of 7.25 and 8.67, respectively, low use of anesthesia (4.8%), 43 vaginal births after cesarean attempted (7% of all births), and 3.2% of all births resulting in cesarean section. A complete analysis of data from 1993-2010 is in progress.

Conclusions: LaFarge clinic has positive maternal and fetal outcomes and may serve as a model for birthing centers within other Amish communities and in settings within and outside the United States with limited access to medical services and technology.

Demographic Snapshot of Motivational Interviewing for Health Maintenance and Promotion in a Primary Care Setting

Ruth M. Perez, BA, Elizabeth Bade, MD, Jennifer Evertsen, MS

Context: Nutrition and exercise are directly related to multiple chronic illnesses. National organizations have made recommendations for primary care doctors to provide nutrition and exercise counseling at office visits, but time constraints make it challenging. Using a non-medical prevention specialist trained in motivational interviewing (MI) to address dietary and exercise habits may be an efficient and cost-effective option.

Objective: To summarize baseline demographics for participants enrolled in a clinical trial using MI to promote fruit and vegetable (F/V) intake.

Design: Cross-sectional

Setting: Aurora Sinai Family Care Center, Milwaukee, WI and surrounding area

Participants: 150 adults were enrolled in the study. Eligibility included a positive brief screen for diet and exercise and primary care physician visit within the last year.

Results: The mean age was 43 years (range 19-74) with 50.7% males and 72.7% African Americans. 28.7% earned less than $5,000 last year, 19.3% and 17.3% earned between $5,000-$10,000 and between $20,000-40,000 respectively. 26%, 23.3% and 24.7% had some high school, completed high school and some college respectively. Average weight was 95kg with a BMI of 33.6. Over 80% were considered overweight or obese. Average daily intake of F/V was 3.8 servings. Those with no more than a high school degree ate 2.8 servings compared to participants with some college that ate 4.8 servings ($p=0.02$). Those with a BMI under 25 ate an average of 5 servings while those with a BMI higher than 25 ate only 3.5 servings ($p=0.03$). No statistical difference was found for F/V intake within race, age, marital status, and income.

Conclusions: The number of servings of F/V was lower in those with less education and who were obese. We look forward to our final intervention results to determine if a brief intervention with MI is effective at making positive behavioral changes.

Clinical Predictors of Severity and Duration of the Common Cold

Joshua Taylor, Bruce Barrett MD, PhD

Context: The common cold produces significant impacts on quality of life and results in significant economic costs in diagnosis, treatment, and lost work hours. It is not known whether physicians seeing patients in the beginning of a cold can predict the subsequent duration and severity.

Objective: The objective of this study is to determine whether and to what extent a physician seeing a patient in the beginning of a cold can predict subsequent duration and severity.

Design: The study from which these data were drawn used a two-way factorial allocation to randomize subjects who, after developing cold symptoms and enlisting in the study within 36 hours of symptom onset were randomized as follows. Patients were divided into 4 groups, no pill, blinded Echinacea, blinded placebo, and labeled Echinacea. Those groups were further divided into those who received no physician visits, those who received a standard physician visit and those who received and enhanced patient-oriented physician visits. For the two-thirds randomized to a doctor visit, the clinician was asked to predict subsequent duration and severity. Patients self-rated their cold symptoms twice daily from intake until their colds had resolved, up to a maximum of 14 days. The current study compares physician predictions of duration/severity to the actual duration/severity of the patients' colds.

Setting: Enrollment/physician visits occurred at UW Department of Family medicine and UW Verona Clinic.

Patients: General population was eligible and must have answered yes to the question "Do you think you have a cold?" and report at least one of four key cold symptoms: runny nose, congestion, sneezing, or sore throat.

Interventions: Interventions included the previously mentioned Echinacea/Physician visits.

Main outcome measures: Illness duration and severity were assessed using the Wisconsin Upper Respiratory Symptom Survey (WURSS-21). Physician's predictions were assessed with 100mm visual analogue scales.

Results: There appears to be a statistically significant but weak correlation between predicted duration and actual duration among all physician visits is seen with R2 value of 0.0061.

Conclusion: The degree to which physicians can predict the outcomes of acute respiratory illness episodes appears to be quite limited.

Electronic Surveillance for Seasonal and Pandemic Influenza In Family Practice Settings

Jonathan L. Temte, MD/PhD, Chuck Illingworth, MS

Context: Although influenza is a common pathogen in primary care medical practice, clinicians often miss this diagnosis and, consequently, provide diagnostic codes for other entities. The availability of electronic health records (EHR) allows for population health assessments, such as influenza surveillance, using easily available clinical data, but may be limited by the imprecise coding inherent in primary care.

Objectives: Assess the performance of a simple algorithm to identify outbreaks of seasonal and pandemic influenza.

Design: Exploratory, secondary data analysis of existing clinical EHR data sets.

Setting: University of Wisconsin affiliated family medicine clinics from July 2006 through April 2010. The period encompassed three seasonal influenza outbreaks and two waves of pandemic influenza.

Participants: De-identified patient encounters extracted from a primary care clinical data warehouse. Main and Secondary Outcome

Measures: Weekly counts and percentages of patients presenting with all-cause acute respiratory infections (ARI - ICD-9: 480.0-488.1 and 460-466.19) and with influenza-like illnesses (ARI plus measured temperature ≥ 100oF). Percentage of ARI patients with ILI. Results: ARI visits (n=262,106) accounted for 8.1% of 3.25 million patient encounters assessed over the study period (weekly range: 3.4% to 14.6% of all visits). ILI visits accounted for 4.1% of ARI visits (weekly range: 2.2% to 8.5% of ARI visits). A 5% threshold for the 3-point moving average of the ILI/ARI ratio had a 100% sensitivity and specificity for influenza outbreaks. A 2% or greater rise in the ILI/ARI ratio over 3 weeks also preceded peak influenza by 1 to 6 weeks.

Conclusions: A simple and intuitive algorithm using the ratio of ILI/ARI visits derived from clinical diagnostic coding and temperature data can easily identify influenza outbreaks.

Face mask use by patients in primary care

Jessica S. Tischendorf, BS, Jonathan L. Temte, MD/PhD

Context: Face masks are an effective barrier against transmission of influenza and have been recommended by the CDC for patients presenting with respiratory symptoms or fever. Little knowledge exists regarding actual utilization and acceptance of face masks in a primary care clinic.

Objective: Estimate the annual need for and demographics of face mask use in a primary care clinic and assess the trend of distribution in relationship to occurrence of acute respiratory infection (ARI) and influenza-like illness (ILI) in the community.

Design: Retrospective observational study of practice data.

Setting: Family practice clinic located in Madison, WI during a 31 week period starting in October 2009.

Patients: Patients presenting with fever or cough or other respiratory symptoms are evaluated by reception desk staff.

Measures: Main and secondary outcome measures: Age and sex of individuals receiving a mask and weekly counts of mask distribution. Counts of ARI and ILI patients based on ICD-9 coding from 27 state-wide clinics during the study period.

Results: Face mask counts were 80% of ARI counts for the clinic. Females received the majority of masks (63.6%), reflecting the demographics of the clinic population. Distribution of face masks was highly correlated to prevalence of ARI ($R=0.781$, $p<0.001$) and ILI ($R=0.620$, $p<0.001$). Approximately 8% of annual visits to the clinic were attributable to ARI.

Conclusions: The high percentage of face mask use among ARI patients reflects the feasibility of using this intervention to help control influenza transmission in a primary care setting. The observed trend in gender distribution of face mask use has been demonstrated in other studies and may be a result of increased contact with children among females. Applying data obtained in this study, family practice clinics can estimate the number of face masks that needed to be ordered yearly.

An assessment of racial disparity in rates of possible risk factors for H1N1-associated hospitalization: Dane County, WI

Jessica S. Tischendorf, BS, Jonathan L. Temte, MD/PhD Thomas Schlenker, MD, MPH, Amanda Kita, MPH, Chuck Illingworth, MS

Context: Investigation completed by the Dane County-City of Madison Department of Public Health revealed a nine-fold disparity in crude hospitalization rates for H1N1 influenza between black and non-Hispanic whites in Dane County, Wisconsin (104.6 per 100,000 for black vs. 15.3 per 100,000 for non-Hispanic whites). This disparity is three times what was observed in the state of Wisconsin.

Objectives: Determine the prevalence of risk factors associated with hospitalization for H1N1 in clinical populations in Dane County. We are also interested in any racial (black vs. non-Hispanic white) differences in prevalence.

Design: Retrospective, cross-sectional study of potential risk factors for H1N1 hospitalization drawn from a family medicine clinical data warehouse.

Setting: Twenty-two University of Wisconsin affiliated family practice clinics in Dane County.

Participants: De-identified patient records segregated by age, race and ethnicity for all unique individuals with a visit from January 2008 to December 2009.

Main and Secondary Outcome Measures: Four primary demographic group affiliations: black children (0-17 years) and adults, and white children and adults. Counts and prevalence rates (cases/1000) of the following potential risk factors: malignant neoplasms, diabetes mellitus, hemoglobinopathies, neurological disease, heart disease, chronic lung disease, asthma, renal disease, pregnancy, tobacco exposure and obesity.

Results: Preliminary assessment suggests significant disparities between black and non-Hispanic white Dane County residents in the prevalence of diabetes mellitus, hemoglobinopathies, chronic lung disease, renal disease, pregnancy, tobacco exposure, and obesity.

Conclusions: Study currently in progress, conclusions to be determined.

Quality of Life and Depression as Determinants of Treatment Adherence in Hypertensive Patients

Bautista LE, Smith P, Colombo C, Fryback D, Abramson LY, Vera LM.

Background: Non-adherence to pharmacologic treatment is a major contributor to antihypertensive treatment failure. Adherence during the first year of treatment is about 50% and 50% of patients with refractory hypertension are in fact non-adherent. Antihypertensive drugs can have significant positive and negative impact on health related quality of life (QOL) and depression symptoms severity (DSS). In turn, both QOL and DSS may influence treatment adherence. However, there is little or no information on the roles of QOL and DSS on treatment adherence.

Objective: To evaluate whether baseline levels and changes in QOL and DSS are predictive of treatment adherence in newly treated hypertensive patients.

Design: Longitudinal cohort study. QOL and DSS were evaluated at baseline and at 3, 6, 9, and 12 months after the start of treatment. Participants (n=280) were recruited from clinics at UW-Department of Family Medicine and the Wisconsin Research and Education Network. Hypertensive patients 20-69 years old (SBP≥140 or DBP≥90 mm Hg, based on the mean of 2 or more BP measurements) starting pharmacologic treatment for the first time or re-starting after a discontinuation ≥2 months were recruited. The Health Utilities Index, the Physical Symptoms Distress Index, the Sexual Symptoms Distress Index, the Psychological General Well-Being (PGWB), and the Sleep Dysfunction Scale were used to measure QOL, and the Beck Depression Inventory-II (BDI-II) to evaluate DSS. Treatment adherence was measured by pill count. Non-adherence was defined as taking <80% of the prescribed number of pill. Incidence density rates of non-adherence were calculated in each quarter and cumulative risk of non-adherence was calculated as: risk=1-exp(-rate*time). The independent effects of the exposures were estimated using logistic regression for cluster data with a robust estimate of the variance to account for the presence of repeated observations.

Results: We enrolled 214 patients (58% male; mean age: 50 years). A total of 489 follow-up visits, corresponding to 1553 person-months of follow-up were accrued. Ninety eight episodes of non-adherence were observed in the cohort. Non-adherence rates for 0-3, 3-6, 6-9, and 9-12 months were 9.3, 5.3, 5.1, and 5.6 per 100 patient-months, corresponding to a cumulative risk of 54.4% in 12 months (95% confidence interval: 51.2%-57.6%). Only 10.6% of the sample had a BDI-II score ≥ 14 indicating the presence of at least mild depression and the average PGWB score was 85.2 (range 20-110). In a multivariate analysis adjusted for age and gender, unemployment (odds ratio –OR: 2.2; p=0.021), a BDI score ≥14 (OR: 3.1; p=0.001), and higher PGWB score (OR: 0.98; p=0.005) were significant predictors of treatment adherence. Overall, the regression model with a predicted risk cut point of 0.30 correctly classifies 71% of all cases, with a sensitivity of 34% and a specificity of 82%.

Conclusions: The risk of non-adherence in this study (54% in 12 months) was similar to that reported in other cohort studies. Patients with at least mild depression were 3 times more likely to become non-adherent to antihypertensive drug-treatment. Consistently, the risk of non-adherence was lower in patients with higher psychological well being. Our results suggest that these two factors could be used as screening tools to identify patients at high risk of non-adherence.

In Depth Analysis of Information Flow and Hospital Follow-up Visits

Tosha Wetterneck, MD

Transitions of care from the hospital to the primary care physician's office are vulnerable periods of time for medication errors and/or adverse drug events to occur due erroneous or missing information. We report on findings from the WREN study, Medication Information Management and Transitions of Care. We analyze observation data from the patient's follow-up visit from the hospital with their primary care physician and report failures that occur, potential causes of those failures and recovery attempts to fix the failures.

The Impact of Serum Glucose on Clinical Outcomes in Patients Hospitalized with Community-Acquired Pneumonia

Desiree A. Godar, David Kumar, Kate M. Schmelzer, Hong Liang PhD, John R. Schmelzer, PhD, Joseph J. Mazza, MD, Steven H. Yale, MD

PURPOSE: Community-acquired pneumonia (CAP) is a common medical condition resulting in excess morbidity, mortality and high rates of hospitalization. Despite high hospitalization rates for CAP, the relationship between abnormal glucose levels (hyperglycemic and hypoglycemia) and the seriousness of the illness as measured by length of stay (LOS) is not well established. We examined relationships of CAP to multiple factors that impact predictability and severity of the disease process. They include: glycemic control; hospital utilization, including LOS; 30-day hospital readmission; intensive care unit (ICU) admissions, after adjusting for co-morbidities; illness severity; and timing of antibiotic treatment.

METHODS: We conducted a retrospective, observational cohort study of adult patients hospitalized for CAP between January 1, 1992 and June 23, 2007. Case screening was conducted electronically using International Classification of Diseases, 9th Revision (ICD-9) codes 480.0-487.9. Medical record abstraction yielded 969 qualifying cases with comprehensive data on past and current medical problems.

RESULTS: Serum glucose levels at admission were independently associated with LOS for CAP patients. Patients with levels between 90 mg/dL and 140 mg/dL on admission had shorter LOS compared to those with levels of <90 mg/dL and >140 mg/dL (median 3.9 vs. 4.2 days, P=.0398). Multivariate analyses confirmed the univariate results. Serum glucose levels at initial hospitalization were not associated with 30-day hospital readmission (P=.3398) or ICU admission (P=.4775).

CONCLUSIONS: Abnormal glucose levels are an independent predictor of increased LOS for CAP. Control of blood glucose may lead to improved outcomes, including shortened LOS, and should be a priority in CAP management.

Maximum Lifetime Blood Lead Levels and Attention-Deficit/Hyperactivity Disorder Diagnosis in Children: Eastern Wisconsin, USA

Dennis J. Baumgardner, MD, Jeffrey A. Havlena, MS, Dale Steber, MS, Melissa Lemke, MA

Context: Attention-Deficit/Hyperactivity Disorder (ADHD) is a prevalent, highly familial neurodevelopmental disorder of childhood. Certain environmental factors, including lead, may have important interactions with genotype in the manifestation of this disease.

Objective: To investigate the association of lifetime maximum lead level and ADHD diagnosis in Eastern Wisconsin.

Design: Retrospective database GIS study. Street addresses and individual demographic data were geocoded, mapped and analyzed using ArcGIS, CrimeStat III and SaTScan. Block group level U.S. Census 2000 data including population density; and household size, ownership and income were linked to subjects. Univariate analysis was performed by chi-square test or Mann-Whitney U test, and multivariate analysis by logistic regression.

Setting/Subjects: Maximum lifetime lead levels from a State database were confidently matched to 2,837 subjects in a comprehensive dataset of 19,229 primary care clinic children age 5-11 with and without ADHD diagnosis from an Eastern WI integrated medical system.

Results: The rate of ADHD diagnosis was 16.2%, compared to 15.3% in the whole dataset ($p=0.2$), and the percentages of males, and White and Black children were similar, however Hispanic children were overrepresented (5.2% vs. 2.3%; $p<0.001$). All 21 counties with 0.1% or more of the entire study population were represented in this subset; Milwaukee County children represented 25.7%, compared to 23.0% of the whole. Maximum lifetime blood lead levels were higher in children with diagnosis of ADHD than controls (mean 5.4 vs. 5.0 µg/dl; $p=0.02$). Among the children with ADHD diagnosis, the proportion of those with a maximum blood lead level of 10 µg/dl or more (43/460, 9.3%) differed significantly from controls (134/2377, 5.6%; $p=0.003$). Lead levels of 10 µg/dl or more remained a significant predictor of ADHD diagnosis ($p=0.002$) when entered into a binary logistic regression model with age, gender, race category, median household income and population density (these factors also remaining significant).

Conclusions: Elevated lifetime maximum lead levels were associated with ADHD diagnosis in a subset of Southeastern Wisconsin children, consistent with older literature.

Information chaos in primary care: Implications for patient safety

John W. Beasley MD, Ben-Tzion Karsh, PhD, Jon Temte, MD, PhD, Jamie A. Lapin, MS, Tosha Wetterneck, MD, MS, Paul Smith, MD, A. Joy Rivera, MS

Aims: We will explore the concept of information chaos in primary care and how this affects patient safety.

Overview: A team of Family Doctors and Industrial Engineers studied 15 primary care practices through direct observation of care, internet-based hazard reporting, and focus groups of physicians and patients. We looked for patient safety hazards; that is, for situations which could have an adverse impact on physician performance or result in errors of commission or omission in patient care.

Results: Many of the hazards are related to information overload, information underload, information scatter, and erroneous or uncertain information. We use the term "information chaos" to mean any combination of these factors. Information Chaos leads to impaired situational awareness, increased mental workload and increased physician stress. Modifiers include interruptions, expertise, time limitations and effort. It is not clear that EHRs will reduce information chaos.

Conclusions: Information chaos presents many hazards to patient safety in primary care; more study is needed to develop ways to understand, measure and reduce information chaos.

Workshop: What are the unanswered questions regarding the impact of HER use on patient care?

John W. Beasley, MD

1. Medical care is moving rapidly towards using electronic health records (EHRs). While there are probably some advantages to this, they remain to be demonstrated, especially in primary care.

Background: There are no systematic studies of the potential unintended consequences of EHR use. The situation is analogous to releasing a medication without doing follow-up studies for side effects.

Methods: Using informal group process the attendees will explore the possible areas of unintended consequences of EHR use. Time permitting; they will propose specific studies which might serve to explore this area.

2. What is the impact of using an EHR on Clinician workload?

The purpose of this workshop is to explore the methods that can be used to assess the impact of EHR use on physician workload.

Background: There is an overwhelming sense among clinicians, especially physicians, that the use of the EHR has been related to a 10 to 20% loss of efficiency -- or, a 10 to 20% increase in workload. Actual data are sparse, but suggest that the use of the EHR has added to workload. There are no good studies looking at this issue in primary care.

Methods: After a brief introduction to the existing data (anecdotal, observational) attendees will work to develop a plan to assess the impact of EHR use on workload.

Anticipated Result: A series of proposals that could be turned into grant applications -- or possibly explored under existing grant funding.

Motivational Interviewing in primary care: what is it and how can it help?

Celeste Hunter, MS, CRC; Christine Cassleman, MA; Elizabeth Bade, MD, Kim Schoen

Motivational interviewing (MI) is a brief, patient-centered, and directive counseling approach that enhances intrinsic motivation to engage and maintain positive behavior change. The technique was first developed to assist individuals with substance use issues to reduce or abstain from using, and is subsequently proving efficacious in facilitating health-related behavior change across a variety of patient populations.

More recently, MI has also begun to be taught in medical schools to help clinicians communicate about behavior change more effectively with patients. From its beginnings, MI has focused on the use of active and empathetic listening to attune to and evoke clients' own reasons, desires, ability, and need for change. Strategic application of these and other MI techniques has been shown to significantly increase patients' readiness to change, especially when a commitment to an achievable action plan has been specified.

MI is a stage-matched intervention that involves helping individuals who are ambivalent or resistant to change weigh the advantages and disadvantages of change in the context of their life goals. Practitioners using MI can facilitate movement through the stages of change by recognizing and matching their responses to the readiness level of their patients. For patients who are currently engaging in health-related behavior change, motivational interviewers aid in refining the plans based on patients' own perceived barriers and abilities to progress toward their life goals. Additionally, MI is inherently culturally sensitive, in that counselors largely avoid giving unwanted advice and ask patients to weigh the pros and cons of behavior change in light of their own goals and values, which may be influenced by their culture.

This interactive workshop will focus on educating primary care practitioners in the basic tenants of motivational interviewing while demonstrating hands on tips specific to help elicit positive behavior change most relevant to primary care, as well as applications for research.

Wisconsin Network for Health Research (WiNHR)

Howard Bailey, MD, Deb Kruser, RN BS, Val Schend, RPh, MJ Washburn, RRT CCRC

Investigators can partner with the Wisconsin Network for Health Research (WiNHR) to perform research studies at health systems across the state of Wisconsin. Originally formed in 2005 in response to the NIH Roadmap Initiative which stressed improved clinical and translational research, WiNHR is a partnership of Aurora Health Care/CUPH, Gundersen Lutheran, Marshfield Clinics, and the University of Wisconsin SMPH. WiNHR has been associated with the Institute for Clinical and Translational Research (ICTR) since 2007, and has collaborative partnerships with multiple core groups within ICTR.

WiNHR partnership provides clinical researchers with: 1) an expanded geographic reach and ethnically diverse study populations; 2) potential access to the electronic medical records of 3-4 million residents served by the partner sites; 3) disease specialists and primary care collaborators from other institutions; and 4) greater efficiency in conducting research and meeting accrual goals.

WiNHR provides improved research efficiency due to infrastructure refinements at its network sites. This includes the standardization of operating procedures through memorandums of understanding, reciprocal protocol deferral afforded by the Wisconsin IRB Consortium, and multisite study data management through OnCore software.

In addition to investigator initiated and federally-funded research, WiNHR is now expanding to include industry sponsorship opportunities, especially for trials targeting novel treatments, comparative effectiveness, and outcomes based research.

The mission of WiNHR is to foster research throughout Wisconsin via a collaborative, multidisciplinary statewide research network. This is done by aligning WiNHR objectives with state and national priorities, facilitating applied research to improve patient care, and performing population-based, prospective, comparative effectiveness, cost effectiveness, health outcomes, translational, and clinical research studies throughout the state.

Implementing the Medical Office Survey on Patient Safety (MO-SOPS): Lessons from a successful WREN project

Peggy O'Halloran, MPH, Paul D. Smith, MD, Michael Grasmick, PhD, Katherine Pronschinske, BS

Introduction: The Wisconsin Research and Education Network (WREN) was one of 12 practice based research networks that participated in a project to contribute to the national database for the Medical Office Survey on Patient Safety (SOPS). WREN recruited 49 practices to participate, far exceeding the recruitment goal of 25 practices. Participating practices included WREN member practices, and family practice, internal medicine and pediatrics practices from the UW Health system.

Methods: All participating practices distributed hard copies of the survey to all medical office personnel, including office staff and clinical staff during the months of June through October 2009. The WREN project coordinator communicated with a clinic point of contact, usually the clinic manager, to implement the survey. Practices used different methods to complete the survey, but most introduced and allowed time for survey completion during a regularly scheduled meeting. WREN staff attended several of these sessions to help describe the purpose of the survey.

Results: Of the 49 clinics recruited to participate in this project, 47 completed the survey with practice staff, with an average response rate of 78% across all clinics. Wisconsin sites reported similar patient safety strengths and weaknesses compared to a national sample.

Conclusion: WREN successfully implemented the SOPS at 47 practices, with many lessons learned for recruitment, high response rate, and results dissemination that will be applied to future projects.

Traumatic Brain Injury (TBI) and Primary Care Clinician: A Critical Connection

Tom W. Tatlock

Traumatic Brain Injury (TBI) is a major public health problem. TBI is a chronic condition without a protocol for long-term treatment. Primary Care Clinicians have a unique role in the treatment of symptomatic TBI. This workshop will address the incidence and prevalence of TBI; the mechanisms of injury; the consequences resulting from a TBI; and the challenges presented to the patient, to the family and to the Primary Care Clinicians. I'll use my personal story to illustrate some of the TBI symptoms. Some suggestions concerning follow-up care will be presented as an introduction to a group discussion on "protocol development."

Using the charting tool, Smart Phrase, to improve the quality of care provided to patients with chronic pain.

Alex Young MD, Nancy Pandhi MD, MPH, Zaher Karp B.A.

Introduction: Patients can find chronic pain very debilitating and often feel narcotic pain medications are necessary to help them lead productive lives. However, for primary care providers, managing chronic pain can be very difficult since it is frustratingly subjective to assess and these medications have the potential to be abused, diverted, or even cause death.

Methods: At the Access Community Health Center, two Smart Phrases were developed to improve management of chronic pain. One Smart Phrase is used as a template for developing an individualized care plan for each patient. Another Smart Phrase is used as a template to improve documentation about chronic pain at each office visit. The content of the Smart Phrases include assessment questions that have been validated by research studies and also have questions that remind providers of the current clinic policy guidelines / expectations for management of chronic pain. Questions were reviewed and modified by providers in an iterative process. To improve the efficiency of documentation, the format of the Smart Phrases was adjusted to keep manual typing at a minimum and to promote a standardized checklist approach.

Results: This poster presentation will highlight the Smart Phrase development process, content, and possible future uses.

Discussion: Charting tools can serve as participatory processes that potentially improve the quality of care during patient visits.