

Proceedings from the 2004 Wisconsin Primary Care Research Forum

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INTRODUCTION

The 17th Annual Wisconsin Primary Care Research Forum was held January 30, 2004 in Waukesha, Wis. A 1-day conference sponsored by the Wisconsin Academy of Family Physicians, the Forum included presentations of invited work and original research by students and faculty from both the Medical College of Wisconsin and the University of Wisconsin Medical School.

Plenary speaker Bernard Ewigman, MD, Professor and Chair of the Department of Family Medicine at the University of Chicago, discussed "Integration of Research Evidence and Clinical Experience." An open meeting of the Wisconsin Research Network (WReN), a statewide network of primary care physicians interested in practice-based research, followed the research presentations. Abstracts of original research presentations are included here.

Geographic Information System Analysis of Blastomycosis in Northern Wisconsin: Clusters, Waterways and Soil

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Background: Geographic Information Systems (GIS) are powerful tools for investigating the ecogeography of environmentally acquired infections.

Methods: ARC-GIS technology was used to geocode and map cases of blastomycosis, by household, of human and dog residents of Vilas County, Wisconsin. Human case households (N=136) were from a comprehensive street address registry, 1979-2001; human controls were 200 random number selected households from 2001

county tax records. Dog cases (N=116) were from a consecutive street address registry from a private veterinarian practice, Eagle River; dog controls were 200 random number selected addresses from the 2001 total practice registry. Where geocoding was not available from existing maps, home sites were visited and geocoded using a handheld global positioning system (N=61). Waterway characteristics were obtained from the Department of Natural Resources GNIS database, and soil type data from the USDA. Data were analyzed with chi-square and Mann-Whitney tests; cluster analysis was done with Crime-Stat II software.

Results: A disproportionate number of human and dog cases were associated with waterways of the western Eagle River area. Human and dog cases were more commonly near waterways 1640 feet elevation (more nutrient rich) [p 0.001 for both] and were associated with sands (prone to drought and leaching) [p 0.01 for both]. In a binary logistic regression model, these 2 factors were independent variables. When the nearest waterway was a lake, case addresses were more commonly near lakes < 25 feet maximum depth (more lake

mixing) [p<0.05, humans and dogs], but mean depth, type, and size of lakes did not differ from controls.

Conclusion: While further studies are needed to clarify the nature of these associations, this study suggests that the micro-environment of *B. dermatitidis* includes changing conditions of temperature, moisture, pH, and mineral and organic content.

Spirituality and the Caregiver Experience

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Introduction: Spirituality in caregivers has been a topic of current research; however, little is on the specific role of spirituality in the caregiver experience. The purpose of this study was to discover the relationship between spirituality and: the decision to become a caregiver, the current caregiver role, and caregiver strain, comparing African American and Hispanic populations.

Methods: Eleven caregivers (8 African American, 2 Hispanic, 1 Caucasian), were recruited from 3 Community Care for the Elderly sites in Milwaukee and interviewed. Qualitative analysis of the semi-structured interview explored these issues, with comparison to 2 quantitative surveys: spirituality and strain.

Results: Caregivers reported feelings of love and duty as factors in their decision to become a caregiver. Subsequently, most cited their role as "God's purpose" for their lives. Generally, God was the major coping mechanism, followed by prayer. The average spiritual perspec-

tive score was 5.3 out of 6; the highest individual scoring question was the use of prayer or meditation, 5.7, 6 being daily use. Most caregiver strain was within normal ranges, excepting activity restriction. We did not find a correlation with the survey measures between caregiver strain and spirituality, due to limited range in spiritual scale averages and small sample size. However, the qualitative data do show that strain is mediated by spirituality. No sample comparison could be conducted due to small Hispanic sample size.

Conclusions: These findings have implications for physicians caring for the frail elderly and their caregivers. Whether caregivers with lower spirituality demonstrate even higher stress still needs to be explored.

What Determines the Quality of Work Life and Effectiveness of Family Physicians within Wisconsin Health Care Organizations?

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Background: Workforce Satisfaction has been found to be correlated with retention of physician, quality of care, and decreased medical liability actions. This study explored the characteristics of different Health Care Organizations (HCOs) that are associated with a better quality of work life and a higher degree of work satisfaction.

Methods: A survey of members of the WAFP who are employed by HCOs was done in 2000. There were highly significant differences in physicians' satisfaction with their HCO. The 5 outcome measures used were satisfaction with the HCO, perceived quality of care, satisfaction with being a physician, ability to achieve professional goals, and intention to stay in the practice. The associated factors were clinical autonomy, work flow control, administrative control, emphasis on production, time pressure, reason-

able paperwork, balance of work and family, management values physician, management and physician goals compatible, relationships with colleagues, continuity of care, and satisfaction with income.

Results: While almost all associated factors were significantly associated with the outcome measures, the management valuation of the physician and the management goals being compatible factors were the most important, and issues related to control and autonomy were next most important. Satisfaction with income did not play as large a role as expected, nor did "hassle" factors.

Discussion: Both HCOs and physicians can take measures to improve the quality of work life and effectiveness of family physicians.

Using an EMR to Improve the Quality of Diabetic Care

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Purpose: Moving towards an EMR in the office is becoming quite popular, but utilization of it on a higher level has just begun. This project shows that with an EMR, quality improvement projects can be done efficiently in terms of both time and manpower.

Methods: Using an EMR, any information can be accessed and tracked over time quite easily with crystal reports. We have generated reports tracking individual patient parameter data as well as individual provider data on all diabetic patients. Using a quality care model as well as a chronic disease model, our clinic has been able to improve on several parameters of diabetic care. All patients seen in the last 18 months with the diagnosis of diabetes were included, totalling approximately 400. We have tracked HgA1C within the last year (HgA1C <8, HgA1C <9), LDL within the past 2 years (LDL <100, LDL <130), pneumovax offered, pneumovax given, BUN/creatinine, blood pressure performed at last visit, and blood pressure (<140/90).

Results: Since we could track any information we wanted to because of the ease of an EMR and crystal reports, we implement and track progress on quality improvement projects at the touch of a button. This saves a tremendous amount of effort and time that can be spent sending reminders and telephoning patients about needed blood work and appointments. We have shown improvement in our parameters, which will hopefully lead to improved health outcomes. All of this was made easier with an EMR.

Psychosocial Effects in Long-Term Head and Neck Cancer Survivors

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Objectives/Hypothesis: To identify and rate the importance of several psychosocial and physiological influences on quality of life (QOL) among a cohort of 5-year head and neck cancer survivors.

Study Design: Observational case series utilizing both questionnaires and physiological evaluations.

Methods: QOL was assessed by the Functional Assessment of Cancer Therapy (FACT) and the FACT Head and Neck additional concerns (FACT-H&N) questionnaires. Psychosocial characteristics (or risk factors) potentially influencing QOL were measured by the Millon Behavioral Health Inventory (MBHI), and the Social Support Questionnaire (SSQSR). Physiological risk factors were measured in exams that included shoulder and neck range of motion, whole and stimulated saliva measurements, and oropharyngeal swallowing efficiency. We evaluated the association of selected QOL measures with 3 groups of potential risk factors: psychosocial factors consisting of selected MBHI & SSQSR

scales; physiological factors, consisting of selected physical ability measures; and a combination of psychosocial/physiological factors.

Results: The entire study population of 105 subjects completed the FACT and FACT-H&N questionnaires, 86 of whom completed the physiological tests as well. Combined psychosocial/physiological models best predicted all QOL measures considered. Psychosocial models alone, as compared to physiological models alone, better predicted FACT physical and social/family well-being measures. Physiological models alone, as compared to psychosocial models alone, better predicted FACT H&N additional concerns measures. Premorbid pessimism (MBHI) was consistently the best predictor of QOL measures.

Conclusions: Both psychosocial and physiological factors influence QOL in head and neck cancer patients, but many QOL measures are most strongly influenced by psychosocial considerations. Physicians and surgeons caring for long-term head and neck cancer survivors should be cognizant of the importance of psychosocial risk factors on the quality of life of their patients.

The Influence of Student Indebtedness on Specialty Choice

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Background: In recent years, medical student indebtedness has continued to increase at an alarming rate. This has caused concern in the medical community that medical school graduates will choose the most remunerative specialties in order to pay off their debts more quickly. Because primary care specialties are traditionally among the lowest paying specialties, this could lead to a future shortage of primary care physicians. Most previous literature has shown that indebtedness is not a major influence on specialty choice. However, little of the research was performed in recent years, when increases

in indebtedness have corresponded with a decrease in the number of students choosing primary care specialties. Moreover, some of the research has produced conflicting and ambiguous results. Therefore, there is still a need for further research to examine the correlation between indebtedness and specialty choice.

Methods: The purpose of our summer research project was to create and refine a questionnaire that examines the influence that indebtedness has on specialty choice. The questionnaire was created after a thorough review of relevant literature. The questionnaire will be refined by administering it to small groups of residents and practicing physicians. During the group sessions, the participants will answer the questionnaire and give specific feedback about its content, relevance, and format. This part of the project is still pending.

Statistical data will not be obtained from the small group sessions. However, the refined questionnaire may be used in a future, larger study that statistically examines the influence that indebtedness may have on specialty choice.

All Terrain Vehicle- and Snowmobile-Related Injuries Resulting in Hospitalization in Wisconsin, 1999-2002

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Context: Snowmobiling and All Terrain Vehicle (ATV) riding are popular activities in Wisconsin. In 2002, there were 226,886 snowmobiles and 169,461 ATVs registered to Wisconsin residents. While much research has examined snowmobile- and ATV-related injuries in the Emergency Department or at a few regional hospitals, there is little information on injuries resulting in hospitalizations statewide.

Objective: To describe the rates and injury patterns of ATV- and snowmobile-related injuries resulting in hospitalizations in Wisconsin.

Methods: We categorized hospitalizations for ATV- and snowmobile-re-

lated injuries reported in the Wisconsin Bureau of Health Information mandatory reporting system of non-federal hospital inpatient discharge data files (1999-2002) according to the International Classifications of Diseases, 9th Revision, Clinical Modification (ICD-9-CM), External Causes of Injury (E codes). For all ATV- and snowmobile-related injuries resulting in hospitalization in Wisconsin, we investigated characteristics of the injured person, including age, sex, reported alcohol use, and whether the injured was a driver or passenger. We also examined type, location, and severity of injury following methodology set forth in the Barell Injury Diagnosis Matrix.

Results: Of 22,134 patients hospitalized over the 4-year period for motorized and non-motorized land vehicle-related injuries, 687 patients (3.1%) had snowmobile-related injuries and 876 patients (4.0%) had ATV-related injuries. The average annual rate of snowmobile-related injury hospitalizations was 7.80 per 10,000 registered snowmobiles, and the average annual rate of ATV-related injury hospitalizations was 15.46 per 10,000 registered ATVs. Males accounted for 83.8% of snowmobile-related hospitalizations and 82.9% of ATV-related hospitalizations.

For both hospitalized snowmobile and ATV riders overall, the most frequently injured body region was hip and lower extremity (46.9% and 39.4% respectively). Those 15 years of age and under hospitalized for ATV-related injuries had a risk ratio (RR) of 2.870 (95% Confidence Interval [CI] 1.70-4.84) of receiving a traumatic brain injury (TBI) compared with all other ages. Snowmobilers age 18 to 24 had a higher proportion of TBIs compared to all other ages (RR = 2.306 [95% CI 1.55-3.43]). Alcohol was also associated with TBIs among both hospitalized snowmobilers and ATV riders (RR= 1.960 [95% CI 1.19-3.22] and RR=2.654 [95% CI 1.85-3.81] respectively).

Fractures were the most common type of injury. Of those hospitalized with a snowmobile-related injury, 87% had a fracture, with the top 4 locations being tibia/fibula, ribs, femur, and non-cervical vertebrae. Fractures occurred in

72.8% of hospitalized ATV riders, with ribs, ankle/foot, noncervical vertebrae, and skull being the most common sites. While only 6.4% of snowmobilers had skull fractures, 10.3% of ATV riders experienced skull fractures. Being a snowmobile passenger was associated with spinal cord and vertebral injury (RR = 1.955 [95% CI 1.27-3.00]).

Conclusions: Snowmobile- and ATV-related injuries are an important public health concern in Wisconsin. Snowmobile manufacturers should consider passenger safety measures in future equipment design. Additional efforts at reducing injuries among participants in these activities, especially in the pediatric population, are necessary.

Funding Source: Wisconsin Academy of Family Physicians

Breastfeeding Reduces Obesity in Wisconsin American Indian Children

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Background: The prevalence of obesity and overweight in American Indian (AI) children has steadily risen over the last 2 decades. Recent evidence suggests that breastfeeding may play a role in preventing obesity. The objective of this study was to evaluate the relationship of breastfeeding to obesity in Wisconsin AI children aged 5-7.

Methods: Chart reviews were done on children from 3 Wisconsin Indian Reservations: Bad River, Lac du Flambeau, and Menominee. University of Wisconsin-Madison IRB and National Indian Health Service IRB approval for data collection was obtained. WIC charts from children born from 1995 to 2002 were reviewed. Reviews included children's heights and weights from birth onward, length breastfed, mothers' body mass index (BMI), and demographic data. Child screenings (n=270) were held to collect data on BMI, cholesterol, glucose, skin folds, and waist circumference for children aged 3 to 7 years. In all, growth data was obtained for 1727 unique children, 1722 pregnancies and 1118 unique

mothers. Data was analyzed using SPSS for ANOVA and chi-square testing. For this study, breastfeeding was defined as any breastfeeding of 1 week or more.

Results: This population had a very high level of breastfeeding initiation (72.3%), but only 21% of the total population breastfed for 6 months or longer. Results indicated mother's BMI and child's birth weight predicted BMI of the child beyond 12 months of age. At 5 years of age, BMI of children of normal weight mothers (BMI<25) was 16.4(+1.3) vs. BMI of children of obese mothers, (BMI 30) which was 18.1(+2.6) (p<0.05). At 5 years of age mean BMI was 15.5(+1.2) for children born at low birth weight (<2500g) and 18.6 (+0.42) for children born at high birth weight (>4000g) (p<0.002). Having established that maternal pre-pregnancy weight and birth weight were significant predictors of obesity, these covariates were controlled and the effect of breastfeeding on later BMI was evaluated. Breastfeeding showed a significant reduction in the prevalence of obesity in children aged 5-7 years old. BMI of breastfed vs. non-breastfed children was 17.3 (+0.4) vs. 18.1 (+0.3) (p<0.038). Additionally, breastfeeding raises the BMI of low birth weight children and reduces the BMI of high birth weight children from 6 to 60 months.

Conclusions: This study demonstrates that maternal pre-pregnancy BMI, infant birth weight, and breastfeeding are significant factors influencing BMI of children at 5-7 years of age in this AI population. This is an important finding because of the high rate of maternal and childhood obesity in this population. This study supports previous studies that investigated the role of breastfeeding in reducing obesity; however, this is the first study to demonstrate a reduction in childhood obesity due to breastfeeding in a high-risk AI population.

Immigration in Wisconsin and Torture Survivorship

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Problem: During the last 2 decades

many refugees have come to Wisconsin for primary and secondary resettlement. Primary care physicians in the state are increasingly likely to encounter refugees with social, mental, and physical health problems related to past torture. However, patients may not offer details of their history, and physicians often miss this important factor underlying patient complaints. This author presented recent Wisconsin refugee immigration data and the literature related to identifying torture survivors in primary care patient populations.

Method: Immigration data from the state of Wisconsin and the US Department of Justice were reviewed, 3 refugee resettlement workers in Wisconsin were contacted to fill in missing data, and a Medline search was performed on identifying torture survivors within a primary care physician's population.

Findings: Based on data from the year 2000, more than 1000 refugees live in 74% (12) of Wisconsin counties. They came from >20 countries compared with only a few countries during the 1980s. Historical patterns of resettlement in urban areas or within populations sharing similar ethnic backgrounds continue to shift, and refugees are now found as well in rural or previously "isolated" communities.

Discussion: Wisconsin physicians can expect 10% of their refugee patients to have survived torture or to have had family members survive torture. However, patients often do not disclose a history of torture unless specifically asked. Primary care physicians should add a past history of torture to the health inventory for patients who are refugees. For assistance with referral or care of the torture survivor, there are 2 regional centers that offer multidisciplinary approaches to the treatment of torture.

Conclusion: As new patient populations form in many Wisconsin communities, primary care physicians must identify and direct resources toward the health sequelae of torture. Doing this will improve the health of individuals and communities as patients adapt, become contributing members, and find satisfaction with their new lives.

Racial Disparities in Mammography Use Among Breast Cancer Survivors

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Objective: Annual mammography is central to routine follow-up care for breast cancer survivors (“survivors”). We sought to determine if racial disparities exist in follow-up care for older survivors.

Methods: A population-based cohort of 3828 survivors diagnosed in 1995 was developed using federal tumor registry data linked to Medicare claims. Patients in the cohort were age 65 with continuous Medicare enrollment and survived for at least 48 months post cancer diagnosis. Mammography use over 3 follow-up years after breast cancer treatment was measured by claims data.

Results: There were 217 African American (AA) survivors, comprising roughly 6% of the study cohort. Only 45.2% of AA survivors received mammography in all 3 follow-up years, compared to 58.2% for non-AA survivors, equivalent to a relative risk of receiving appropriate follow-up mammography of 77.7% (95% CI: 66.9%, 90.1%). In a multivariable logistic regression model adjusted for potential confounders, the odds ratio (OR) for receiving mammography in all 3 follow-up years was 0.71 (95% CI: 0.59, 0.85) for AA vs. non-AA survivors. AA survivors were more likely to receive mammography in only 1 of 3 follow-up years (16.6% vs. 9.8%). This disparity remained in the adjusted multivariate model, with an OR of 1.38 (95% CI: 1.07, 1.77) for AA survivors compared to others.

Conclusion: Compared to non-AA survivors, AA survivors receive poorer quality follow-up care after breast cancer treatment. This disparity could explain in part lower 5-year survival rates for AA women with breast cancer.

Computer Interviewing in a Primary Care Office: The Patients are Ready

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Background: Computer patient interviewing has been used since 1968 and must be acceptable to a majority of patients for widespread use to occur. Computer interviewing is still not used widely in the United States. Potential barriers have not been identified in the literature.

Methods: One hundred fifty of 164 (91.5%) eligible patients at a family medicine ambulatory practice were enrolled in a study to evaluate computer interview of cough and sore throat complaints. Subjects were given the choice to have the interview in the waiting or examination room. Telephone interviews were conducted 2-4 weeks later with 143 of 150 patients (95.3%).

Results: One hundred and two of 150 (68%) subjects chose the waiting room and 48 of 150 (32%) chose the examination room for the computer interview. One hundred twenty-seven of 143 (88.8%) were willing to use the computer interview for evaluation of cough or sore throat again in the future. One hundred sixteen of 143 (81.1%) were willing to use the computer interview for other medical complaints in the future.

Conclusions: Patients are willing to use computer interviewing and some interviews may be conducted in the waiting room.

Clinicians, Practices and Patients of the Wisconsin Research Network.

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Background: The Wisconsin Research Network (WReN) is one of the oldest primary care, practice-based research networks in North America. In 2002, WReN received an infrastructure support grant from the Agency

for Healthcare Research and Quality (AHRQ), which served as a point of restructuring and reinvention. To better define the network, and to serve as a source of background information, a significant effort was made to describe the clinicians, the practices, and the patients that comprise WReN.

Methods: Two survey instruments, made available from AHRQ, were used to systematically collect data. PRINS_1 (Primary Care Network Survey Clinician Interview) was distributed to 26 clinicians and used to define clinician demographics, practice structure, and scope of practice. PRINS_2 (Primary Care Network Survey Patient Record) was used to collect data on 30 consecutive patient encounters for 27 participating clinicians, including patient demographics and visit descriptors.

Results: WReN clinicians were predominantly male (73%), white (96.2%) and non-Hispanic (92.3%). They saw, on average, 67.5 patients per week in their practices, with 80% of visits occurring with continuity patients. Females were represented in a majority of patient encounters (57.2%). Blacks comprised 3.3% of encounters, Asians were 1.9%, and Native Americans were 0.8%. Hispanic ethnicity was reported in 7.2% of encounters. The average patient visit lasted 17.7 minutes. Half of the visits (51.6%) included education or counseling, 39.1% involved counseling or education on diet/nutrition and/or physical activity, and 5.1% involved a surgical procedure.

Conclusions: WReN encompasses a great diversity of clinicians, patients, and scope of care. WReN patients are representative of the general population of Wisconsin. Accordingly, WReN serves as an excellent Wisconsin-based primary care laboratory.

Wisconsin Medical Journal

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