



# SONDEREGGER RESEARCH CENTER

Interdisciplinary Research in Social and Administrative Pharmacy

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## 1985 - 2001

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## Joseph B. Wiederholt, PhD, RPh *IN MEMORIAM*

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*The Staff and Faculty of the Sonderegger Research Center dedicate this 2001 report in honor and to the memory of Joseph B. Wiederholt, who died May 28, 2001. Joe, with School of Pharmacy Dean "Gus" Lemberger and William Young, Professor Emeritus, Political Science, worked with the Rennebohm Foundation to give birth to the Sonderegger Research Center in 1985. Joe was a moving force behind the center for the full 16 years since its inception. His positive outlook and selfless contributions to faculty colleagues, graduate students and research at the Sonderegger Research Center are a continuing inspiration.*



*Here, we share his "pearls" regarding leadership:*

- ☞ Lead by your example.*
- ☞ Dream to create your own vision and define your goals.*
- ☞ Listen with an open mind.*
- ☞ Take risks and watch opportunities appear.*
- ☞ Commit to excellence - and quality is assured.*
- ☞ Build communication bridges and problem solve through humility and selflessness.*
- ☞ Maintain your integrity and be rewarded with truth and respect.*
- ☞ Smile and laugh often to make teaching and learning fun.*
- ☞ Mentor the next generation - they hold the key to the future.*



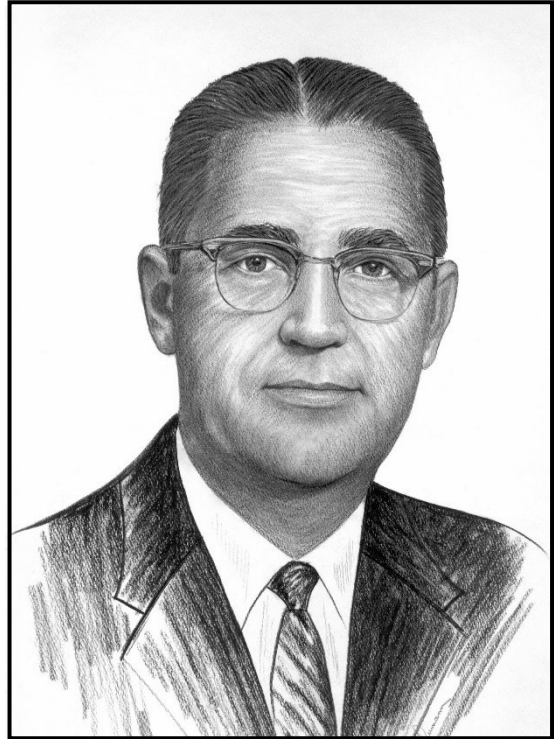
## John L. Sonderegger

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*In 1985, the Rennebohm Foundation established a research center in the School of Pharmacy to honor longtime employee and friend, John L. Sonderegger.*

Much of John L. Sonderegger's career was spent in the employ of Rennebohm Pharmacies, a Madison-based chain owned by Oscar Rennebohm who started the chain, and, in 1949, organized the Rennebohm Foundation.

A talented and productive man, Mr. Sonderegger brought good humor, wisdom, and political savvy to all areas of his work. He served as Comptroller, President and Treasurer, and finally as Chairman of the Board and CEO of Rennebohm Drug Stores over his 48-year career there, until the Rennebohm chain was sold to Walgreens.



Mr. Sonderegger was Secretary and Treasurer of the Oscar Rennebohm Foundation at its inception and later became its President. In addition, he served as President and Treasurer on the Board of Directors for Wisconsin Life Insurance Company, and later served as President and CEO of Wisconsin Life Insurance Company until it was merged into Central Life of Des Moines, Iowa. He served as Chairman of the Board of Central Life Insurance until his retirement.

Skilled accountant, successful manager, effective executive, honorable public servant, dedicated community supporter and insightful philanthropist, John L. Sonderegger lived several lives. He believed in staying abreast of and ferreting out the truth. He did so by going to the source. Part of his strategy, too, was to keep teaching himself to have a vision of where projects might lead. He always did the work of three people and did it very well. He gave of himself to the limit and beyond, serving any demand and need, except, perhaps, his own. His keen interest in tackling the tough problems, as well as his appreciation for careful work in doing so, continue to inspire the Sonderegger Research Center today. It is our hope that SRC will uphold his vision and continue doing Mr. John L. Sonderegger the honor which his memory so richly deserves.

## Remembering John Sonderegger

By William Young

*John Sonderegger's association with Oscar Rennebohm and the chain of drug stores he built began in 1936 during Mr. Sonderegger's attendance at the University. At that time, he was hired as a part-time clerk. He impressed Oscar with his business acumen, his industry, and his loyalty to such an extent that after his graduation from the School of Business in 1940, John Sonderegger was hired as a full-time employee in the accounting office. He rose steadily in rank and importance and was eventually made President and Treasurer of the company in 1956. There he continued as Chief Executive Officer until the drug stores were sold to Walgreens in 1980.*

*"Sondy" - as he was known to his friends and associates -- was an unusually effective leader with incredible capacity for hard work, and mastery of detail and grand strategy, a caring employer, straightforward in business relations and honest in character. When Oscar Rennebohm embarked on a political career in 1947, he could do so with confidence that John Sonderegger could manage the drug stores.*

*Not only did Mr. Sonderegger manage the business, he also worked tirelessly helping Oscar's campaign for office. When Oscar succeeded to the Governorship in 1944, he called for John Sonderegger to help him craft the affairs of state into a more business-like framework. Rennebohm named Sonderegger to brief terms as State Treasurer and later as Insurance Commissioner. In these capacities, John Sonderegger helped reform the state's fiscal system and saved the state several million dollars.*

*Most of us would have crumbled under the double burden of state service and business executive. Yet John Sonderegger still found time to devote talent and time to the offices of his church, Bethel Lutheran and to the United Way. No doubt, Mr. Sonderegger sacrificed time with his family and the enjoyment of leisure.*

*With Oscar's death in 1968, John Sonderegger - now recognized as the sole head of the drug stores - found his talent more and more in demand. He was called to serve on the Board of Directors of the First Wisconsin Trust Company, the Madison Gas and Electric Company and Edgewood College. In each organization, he was respected and admired for his diligence, shrewdness and good business judgement.*

*When it appeared that the drug stores were not a large enough chain to compete with other retail giants, Mr. Sonderegger skillfully managed the sale to Walgreen's and was pleased that a majority of his employees were retained by the new owner.*

*On completion of the sale, John Sonderegger accepted the position of Chief Executive Officer of Wisconsin Life Insurance Company and helped guide it to merge with a larger company. Having done so, Mr. Sonderegger then turned to conserving his failing health and energy.*

*When, in 1949, Oscar Rennebohm organized the Oscar Rennebohm Foundation, John Sonderegger was named one of the first directors and served with distinction on the Board until his death in 1992. Most of the many grants made during his tenure - and especially those to community activities - bore his imprints. They were either initiated or strongly supported by him. The Sonderegger Research Center was one of them.*



## SRC Research Agenda

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A core of interdisciplinary faculty of social and administrative scientists affiliated with the Sonderegger Research Center study the organization, delivery, financing, quality, patient perspective and outcomes of pharmacy within the broader health care system. Target audiences for this work include policy makers, professionals and citizens, in an effort to improve health and health service delivery.

Prior to the opening of the Sonderegger Research Center in 1985, there was no research center anywhere in the country that was dedicated to the study and furtherance of social and administrative pharmacy. That absence was particularly felt at the University of Wisconsin where its School of Pharmacy had been one of the first in the country to offer a master's and Doctorate in Pharmacy Administration and Social Studies in Pharmacy.

When initiated, the Sonderegger Research Center was the first U.S. center to feature social science-focused research in pharmacy, and it remains a national leader. The field of pharmacy continues to exist in a highly competitive environment undergoing major financial and structural changes. To better understand and address this evolution, six pharmacy professors affiliated with the SRC have conducted the federal, international and private studies outlined in this report.

The Sonderegger Research Center values its interdisciplinary approach and collaboration with other agencies and university groups. In an effort to support cooperation and coordination of health services research conducted by the University of Wisconsin-Madison campus, the Sonderegger Research Center was a founding member of the Wisconsin Public Health and Health Policy Institute (formerly Wisconsin Network for Health Policy Research). The Sonderegger Research Center has collaborated with the Center for Health Systems Research and Analysis, the Great Lakes Inter-Tribal Council, and other universities on National Institutes of Health cooperative agreement research. SRC projects have included multidisciplinary collaboration with colleagues from varied University of Wisconsin departments including sociology, pediatric medicine, internal medicine, social work, business, biostatistics, engineering, counseling psychology, human ecology, and library science.





## Grants & Projects of SRC Faculty

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Over the past fifteen years, a growing body of research and associated publications were generated by the faculty and graduate students associated with the Sonderegger Research Center. The following section provides a brief description of each study and its funding source in chronological order from most recent to least recent research.

***Pharmacy-Based Smoking Cessation Program for Young Adults.* Betty Chewning, PhD, Principal Investigator. David Kreling, PhD, Co-Principal Investigator, Dale Wilson, MA, Co-Investigator. Awarded by the Wisconsin Tobacco Control Board, DHFS. \$175,084. 2000 - 2001.**

This is a pilot study to design, implement and evaluate a pharmacy based smoking cessation program for employees at their work site, drawing on the Transtheoretical Model. Pharmacists working in Roundy's Food Stores offer tobacco cessation programs to 18-24 year old workers as a part of a major statewide initiative to decrease smoking among young adults.

***Early Head Start Program Evaluation.* Betty Chewning, PhD, Director of Evaluation under Subcontract. Awarded by the U.S. Administration for Children and Families, DHSS. \$158,900. 1998 - 2003.**

This is a descriptive study of the health of families in poverty with children under 3 years of age. A subset of 80 families is being followed for three years to document the influence of policy changes regarding HMO enrollment and Medicaid on their access to services including pharmacy care.

***Pharmacy Cost of Dispensing/Acquisition Cost Study.* David Kreling, PhD., Principal Investigator. Awarded by the State of Wisconsin, DHFS. \$45,471. 2000 – 2001.**

This study has two objectives: 1) to estimate the cost of dispensing a prescription and 2) assess prescription drug acquisition costs in community pharmacies that participate in the Wisconsin Medicaid program. For the cost of dispensing component, pharmacy managers and/or chain pharmacy executives will be contacted to report financial and operational data for calculating the average cost of dispensing a prescription in their pharmacy(s). Approximately 600 pharmacies will be selected for the study based on the number of Medicaid claims paid to the pharmacies, with emphasis on higher claim volume pharmacies.

For the acquisition cost component of the study, a subset of pharmacies will submit one month's worth of prescription drug purchase invoices. Costs for selected target drugs (selected because they commonly are dispensed to Medicaid recipients) will be compared with reference prices to determine the percentage of pharmacy acquisition costs relative to Average Wholesale Prices (AWPs). The costs determined in the two parts of the study will be examined for differences across pharmacies associated with pharmacy characteristics (e.g., rural/urban, high/low volume, special services, etc.).

***Updating the Prescription Drug Trends Chartbook.* David Kreling, PhD, Principal Investigator. David Mott, PhD, Joseph Wiederholt, PhD, Co-Principal Investigators. Awarded by the Henry J. Kaiser Family Foundation. \$9,992. 2001.**

The goal of this project was to update the original chartbook on trends in the pharmaceutical industry that was done for the Kaiser Family Foundation. Key charts were duplicated to include more recent data, and new charts reflecting different analyses or aspects of trends were added. The update was intended to enhance understanding of trends and factors contributing to trends related to prescription drugs. The update also is published and distributed by the Kaiser Family Foundation ([www.kff.org](http://www.kff.org)).

***Evaluation of Prescription Drug Information Materials-2001.* Bonnie Svarstad, PhD, Principal Investigator. Jeanine Mount, PhD, RPh, and Nathan Kanous, PharmD, Co-Investigators. Awarded by the National Association of Boards of Pharmacy and the U.S. DHHS PBS Food and Drug Administration. \$161,770. 2000 – 2001.**

This is a national study to evaluate the quality of written patient information provided with new prescriptions in community pharmacies. Shoppers presented four prescriptions at a random sample of 400 pharmacies in 50 states during spring 2001. If pharmacy staff provided patient information leaflets, they were accepted and mailed to UW-Madison for evaluation using a national expert panel and consumer evaluators in different states. Findings will be submitted to the FDA and public in spring 2002.

***National Sample Survey of the Pharmacist Workforce to Determine Contemporary Demographic and Practice Characteristics.* David Mott, PhD, William Doucette, PhD, Caroline Gaither, PhD, Craig Pederson, PhD, Jon C. Schommer, PhD, Co-Principal Investigators. Awarded by the Pharmacy Manpower Project, Inc. \$56,283. 2000.**

The overall objective of this study was to obtain reliable information on demographic and practice characteristics of the pharmacist workforce in the United States during 2000. The survey was designed to collect such information from a nationally representative sample of 5,000 pharmacists. Specific goals of the study included: 1) describe the pharmacist workforce in the United States in terms of demographic and practice characteristics, 2) examine factors influencing hours worked annually by pharmacists, 3) describe work patterns in terms of setting and hours worked, 4) examine job satisfaction, and 5) document job turnover intentions and pharmacist work histories. The Pharmacy Manpower Project was a consortium of national pharmacy organizations which included the APhA, AACP, NACDS, ASHP, NCPA, AMCP, ACA, ASCP, BHPPr, NABP, NCSPA, NPhA, NWDA, PhRMA, and PTCB.

***A National Survey of Elderly Drug Insurance and Drug Use. David Mott, PhD and Jon C. Schommer, PhD, Co-Principal Investigators. Awarded by the University of Minnesota. \$12,000. 2000.***

The purpose of this study is to: 1) describe the presence and type of prescription drug coverage for older Americans (aged 65 and over), 2) describe out-of-pocket payment level required by prescription drug plans used by older Americans, and 3) examine the association of prescription drug coverage type with the use of prescription drugs by older Americans. A randomly selected national sample of 1,300 community dwelling older Americans will be mailed a survey.

***Use of Over-the-Counter Drug Products: The Role of Prescription Drug Insurance and Time Costs. David Mott, PhD, Principal Investigator. Awarded by the University of Wisconsin Graduate School. \$13,800. 2000.***

The purpose of this study was empirically to evaluate the association of insurance system variables, time variables and demographic variables with the use of over-the-counter drug products. A random sample of 4,000 Wisconsin residents between the age of 25 and 64 were mailed surveys to evaluate use and cost of non-prescription drugs, risk they associated with using over-the-counter drugs, and the time costs of obtaining prescription and over-the-counter drugs.

***Pharmaceutical Care Outcomes: The Patient Role. Betty Chewning, PhD, Principal Investigator. Carolyn L. Bell, MD, Larry E. Bob, MS, Nancy S. Nowlin, MD, David Kreling, PhD, Joseph Wiederholt, PhD, Co-Principal Investigators. Dale Wilson, MA, Co- Investigator. Awarded by the Agency for Health Care Policy and Research, U.S. DHHS. \$2,014,590. 1993 – 1999.***

This descriptive study of patients with rheumatoid arthritis and osteoarthritis documented their medication decisions and outcomes. Over a three-year period, patients' decisions to augment, substitute, adhere to, or discontinue medications were tracked with respect to both prescription and OTC drugs. Patients' quality of life and functional health status as well as clinical measures of health status were examined in relation to their prescribed regimen variations and additional OTC drug use. The findings indicate that patients play an active role in their care and their decisions have major implications for health outcomes. The findings also

affirm the importance of acknowledging the complexity of patients' medication and self-care regimens, the process and safety of patients' decisions, their priorities for symptom management and economic pressures, and the need for effective partnerships with health care providers.

***Rural Native Americans: A Minority Youth Intervention.* Betty A. Chewning, Principal Investigator. Pat Kokotailo, MD, Co-Principal Investigator, Dale Wilson, MA, Co-Investigator. Awarded by the National Institute of Child Health and Human Development, HHS. \$1,427,826. 1992 – 1999.**

This collaboration with the Great Lakes Inter-Tribal Council worked to reduce adolescent pregnancy, the incidence of sexually transmitted disease, including HIV, and violence. Community and school-based interventions were targeted at adolescents in the community. The intervention used video, computer and class exercises to develop increased social skills for problem-solving, accessing support and services, and reducing health risk-taking behaviors. A longitudinal design of annual student surveys was used to examine the impact of different durations of exposure to the curriculum in Grades 6 through 9. Factors significantly associated with abstinence from intercourse and/or consistent use of birth control included perceived lower risk behavior of friends, higher perceived parental support, higher perceived parental knowledge and monitoring of the adolescent's activities and friends, a higher value on scholastic achievement, higher reported academic performance, and higher self-efficacy for safer sexual behaviors.

***Chartbook on the Trends in the Pharmaceutical Industry.* David Kreling, PhD, Principal Investigator. Joseph Wiederholt, PhD, David Mott, PhD, Co-Principal Investigators. Awarded by the Henry J. Kaiser Family Foundation. \$75,000. 1999.**

A compilation of charts and supporting text was developed to inform policy makers about recent trends related to prescription drugs. Data from the literature and available sources were obtained to exhibit and examine trends and related factors influencing the trends. The chartbook included trends in expenditures, insurance coverage, prices, utilization, promotion, research and development, and characteristics of firms in the channel of distribution for pharmaceuticals (manufacturers, wholesalers, and retail pharmacies). The Kaiser Family Foundation published and distributed the chartbook, it is available at [www.kff.org](http://www.kff.org).

***Core Disease State Documents.* David Kreling, PhD, Principal Investigator. David Mott, PhD, and Patrick D. Meek, PharmD, Co-Principal Investigators. Awarded by Eli Lilly and Company. \$15,000. 1999.**

The purpose of this study was to review the literature describing Parkinson's disease and ALS to summarize available information about three aspects of each disease. The first aspect was characteristics of each disease (etiology, clinical presentation, diagnosis, disease progression, incidence, care seeking behavior, current therapy, treatment guidelines). Humanistic measurements (quality of life and health status) and economic measurements (patient costs and resource use) comprised the second and third aspects of each disease.

***Factors Associated with Generic Drug Use Behavior.* David Mott, PhD, Principal Investigator. Awarded by the American Association of Colleges of Pharmacy. \$12,500. 1998.**

The first goal of this project was the development of a comprehensive model of health system, physician, patient, insurance system, pharmacy and drug product characteristics associated with generic drug use. The second goal was to use data at the pharmacy level to empirically estimate the effects of factors associated with generic drug use. A database of 7,500 prescription orders dispensed from community pharmacies was used for analysis.

***Consumer Attitudes and Behaviors Toward Pharmacist Services and Prescription Drug Plans.* Joseph Wiederholt, PhD, Principal Investigator. David Kreling, PhD, Co-Principal Investigator. Awarded by the Pharmacist Society of Wisconsin. \$2,500. 1998.**

Two surveys of consumers residing in Wisconsin were conducted. The surveys were done concurrently to separate samples of consumers throughout the state. One survey focused on perceptions about pharmacies and pharmacy services, including patronage motives, importance of professional pharmacist services, and working and communicating with pharmacists. The second survey assessed prescription coverage and events/concerns about that coverage, perceptions about working with pharmacists, and attitudes about two sample expanded pharmacist medication

services (e.g., usefulness, appropriate price, whether should be covered by insurance).

***Aazhiganan Project. Grant Author Betty Chewning Ph.D. Awarded by the State of Wisconsin APPS Board to the Aazhiganan Coalition. \$55,412 for Year 1. 1995 - 1998.***

The Sonderegger Research Center was asked to help design and evaluate an education intervention to offer prevention services to adolescents considered high risk for sexually transmitted disease and pregnancy. The project used a multi-faceted approach to deliver the program to 150 adolescents through education and case management approaches. This grant augmented the activities of the National Institutes of Health grant already awarded to the Sonderegger Research Center in the same community. Funding began July 1, 1995 with funding to be renewed annually for three years.

***Assessment of the Impact of Pharmacy Benefit Managers. HCFA Master Contract Proposal. David Kreling, Co-Principal Investigator and Helene Lipton, Co-Principal Investigator and Project Director, University of California, San Francisco. Health Care Financing Administration, U.S. DHHS. \$213,163. July 1995 - July 1996.***

This joint project submitted under the HCFA Master contract held by UW Center for Health Systems Research and Analysis (CHSRA) sought to assess the role of pharmacy benefits managers (PBMs) in providing pharmaceutical services and study their impact on quality, costs and other providers of pharmaceutical care. A comprehensive literature review provided background about and suggested a typology of PBMs. Phone interview and site visit surveys with Medicaid Directors, Managed Care Organization (MCO) executives, and PBM executives provided information for comparing costs and quality issues related to PBMs and the potential impact of PBMs on pharmacy systems (including pharmacists, patients, manufacturers, and Medicaid programs).

***Graduate Explorer Monograph Project, Joseph Wiederholt, PhD, Principal Investigator. Funded by Glaxo. \$7,500. 1993 - 1996.***

A career guide was developed for pharmacy graduates entering a profession associated with Social Administrative Sciences rather than pharmacy practice. The Guide gives definitions of subdisciplines and the nature of careers available. Examples include pharmaceutical marketing, pharmacy law, and informatics. The guide was piloted-tested and evaluated in 12 Schools of Pharmacy.

***Methodology for Calculating the Savings Attributable to the Medicaid Drug Utilization Program. David Kreling and Joseph Wiederholt, consultants to Shepard Patterson, Inc. contract with U.S. DHHS, HCFA. \$80,000. October 1993 - August 1994.***

The product of this effort was a document, "Guidelines for Estimating the Impact of Medicaid DUR" for use by state Medicaid officials and others to evaluate DUR programs and interventions. As written, the guidelines are targeted toward state Medicaid staff and their advisors/consultants/contractors for their drug program DUR activities. Profs. Kreling and Wiederholt were part of a core team of five researchers (also including Ted Collins and David Zimmerman at the UW Center for Health Systems Research and Analysis, and Earlene Lipowski at the University of Florida School of Pharmacy) developing the guidelines with an advisory panel of experts nationwide.

***Evaluation of the Wisconsin Pharmacy Self-Inspection Project. Joseph B. Wiederholt, PhD, Principal Investigator, Jon C. Schommer PhD, and Thomas D. McGregor MBA, Co-Investigators. Funding support from Wisconsin Department of Regulation and Licensing and from an educational grant from Schering Pharmaceuticals. 1992 - 1994.***

To address the problems of understanding and interpreting pharmacy legal regulations (e.g., pharmacist consultation), the Wisconsin Pharmacy Examining Board (PEB) implemented a self-assessment program. The voluntary program, titled the *Wisconsin Pharmacy Self-Inspection Project* had five goals: 1) To provide an effective vehicle for continuing education in the aspect of jurisprudence pertaining to pharmacy practice; 2) To provide an effective method of communication between the PEB and practicing pharmacists to identify areas needing interpretation and clarification; 3) To increase the PEB's visibility in its



role as a consumer protection agency; 4) To provide practicing pharmacists with the opportunity to update practice procedures and the assurance that their procedures are in compliance with current regulations; and 5) To provide a vehicle for the PEB to identify expectations of pharmacy practice to the profession in a positive environment.

Of the 1,200 pharmacies (pharmacy managers) asked to participate, 80% did, and over 75% of the participants reported they had made changes in their practices to update practice procedures and improved compliance with regulations.

***Up-to-date Immunization Evaluation Project. Betty Chewning, Director, in collaboration with the Dane County Head Start Program. Awarded by the U.S. Administration for Children and Families. 1992 - 1993.***

The Sonderegger Research Center is committed to applying its research skills to increase the public health of the community and state. Madison's most vulnerable population includes children under age two from the lowest income families. The Sonderegger Research Center was asked to collaborate with the Dane County Head Start Program and staff from the Madison Department of Public Health to design and evaluate an innovative program to increase immunizations to this difficult to reach group. This research is now completed and has led to a series of recommendations and a further grant submission by the Sonderegger Research Center in collaboration with the Dane County Head Start Program involving pharmacy students to help implement a comprehensive program to reach families most at risk.

***Patient Gender and Psychotropic Prescribing. Betsy Sleath, PhD, Principal Investigator. Bonnie Svarstad, PhD. Awarded by the Agency for Health Care Policy Research, U.S. DHHS. \$21,000. 1992 - 1993.***

The study examined how patient gender differences in 508 audio-taped physician-patient interactions influenced the prescribing of psychotropic medications to male and female patients in 11 different primary care settings. Seventeen percent of the patients received at least one or more prescriptions for psychotropic medications. Logistic regression techniques were used to examine how: (1) patient gender, (2) patient somatic, emotional, and social problem expression, and (3) physician

perceptions of patient emotional health and social problems influenced psychotropic prescribing.

Male patients were almost twice as likely to receive a prescription. Patients who expressed more emotional complaints and patients who physicians perceived as being in worse emotional health were significantly more likely to receive a prescription for psychotropic medication.

***Background Paper -- Alternative Payment Methods: Value and Payment of Pharmacy Services. David Kreling, Co-Investigator with Michael T. Rupp, PhD, Associate Professor of Pharmacy Administration at Purdue University. Commissioned and funded by the National Association of Chain Drug Stores. \$5,000. 1992.***

A literature review for published and unpublished papers on the value of pharmacists' cognitive services was conducted to provide background for a task force assembled by NACDS intended to examine the potential of alternate payment mechanisms that could be used to recognize and reward non-dispensing cognitive services by pharmacists. The literature search was supplemented with descriptions of research projects underway at universities relative to pharmacist cognitive service activities and provision thereof, with particular focus on those valuing the services (outcomes quantification).

The studies and projects identified and reviewed support the notion that professional pharmacy services "add value to" patient care. The scope, magnitude, and cost of drug-related problems are compelling arguments that efforts to improve drug use are warranted. Although the "value" of pharmacists' professional services has yet to be fully quantified, evidence in support of the positive impact that pharmacists' efforts can have on patient health and economic outcomes is substantial.

***Analysis of Prescription Marketplace Parameters and Reimbursement, David Kreling, Principal Investigator. Funded by the National Association of Chain Drug Stores. \$14,893. 1991 - 1992.***

Reimbursement amounts that would result from different approaches for determining third-party prescription payment were compared with marketplace parameters (usual and customary (U&C) prices), and with each other to examine

the effects of different methods or levels of reimbursement. Payment amounts under many potential scenarios were simulated for the market mix of prescriptions dispensed in community pharmacies that was represented by audit data on cash prescriptions dispensed in the pharmacies. Payment simulations included percentile caps on U&C prices and drug cost plus dispensing fee formulas, where drug cost estimates were based on varying discounts off of Average Wholesale Price (AWP) or varying percent mark-ups added to Wholesaler Acquisition Cost (WAC). To examine additional provisions typical in public (Medicaid) prescription drug programs, drug cost limits (FFP limits) and use of the lower of the calculated formula amount or U&C price ("lower of" clause) were added to the simulations.

With a given payment level as a standard or basis, it generally was possible to match the overall outcome of that payment with alternate methods of determining payment amounts. Payment methods that combined FFP ingredient cost payment limit and "lower of" provisions yielded the most conservative payment levels.

***The International Medication Compliance Project. Betty Chewning, PhD, Bonnie Svarstad, PhD, and Larry E. Boh, MS, Investigators. Awarded by APOTEKSBOLAGET, the National Corporation of Swedish Pharmacies. \$54,749. 1989 - 1991.***

Consumers of prescription medications often make one or more mistakes in taking their drugs, errors with respect to dosage, duration and/or early discontinuation of the medication prescribed. This joint Swedish and American project developed and evaluated an instrument to be used cross-nationally to measure patient drug errors. The instrument also measured factors to identify whether an individual was at risk of noncompliance. In preparation for the instrument design, Swedish and American collaborators identified classes of drug errors and risk factors for these errors such as complexity of regimen, nature of drug side-effects for the medication prescribed, and physical handicaps of the consumer. Based on the cross-national research, the project developed and validated an instrument to be used by both Swedish and American teams. The instrument became the Brief Medication Questionnaire (BMQ).

***Demonstration and Evaluation of a Computerized Contraceptive Counseling Aid for Adolescents. Betty Chewning, PhD, Principal Investigator. Awarded by the Office of Family Planning, U.S. DHHS. \$395,968. 1988 - 1991.***

Patients' drug compliance is a critical issue in the pharmacy field. This project examined the impact of a computerized education program on subsequent oral contraception compliance of family planning clinic patients. To assist individuals in selecting and using birth control, this research developed a computerized counseling aid, using input from national and local advisory committees.

As part of a three-year federal study, impact of the computerized contraceptive decision aid was evaluated in terms of the patient knowledge, confidence, use and discontinuance of oral contraceptives. The target audience for this research consisted of women under age 20 who were making an initial visit to a Title X family planning clinic. A longitudinal study was conducted with 950 clients in inner-city Chicago and Madison.

When clients were interviewed following their use of the computer program, none of the Madison, and only 2% of the Chicago clients reported they did not like using the computer. Sixty-seven percent of the Madison and 63% of the Chicago clients reported the program made them feel better about the method they chose. Immediately after the visit, and again one year later, there were significant gains in knowledge and confidence about oral contraceptives for the experimental group who had seen the computer program versus the control group who had not.

***The Pharmaceutical Access and Prudent Purchasing Act of 1990: Estimating the Economic Impact on Institutional Pharmacy Providers. David Kreling, Principal Investigator. Funded by the American Society of Hospital Pharmacy. \$1,000. 1990.***

The Pharmaceutical Access and Prudent Purchasing Act of 1990 included provisions whereby manufacturers of pharmaceuticals would be asked via a rebate mechanism to charge Medicaid programs no more than the lowest price charged to hospitals or other organizations serving the indigent. In this analysis, we attempted to project, in the form of revenue shifts, the impact on hospitals that could occur by estimating potential pharmaceutical product price increases and subsequent costs of products purchased by institutional pharmacy providers as a result of the "best price" provision. The overall impact was estimated as increases in costs for

hospital pharmaceutical purchases of approximately 4 to 7 percent. The estimates depended on the discount assumed that Medicaid would achieve from the "best price" provision, the mix of single- source and multiple-source pharmaceuticals used in the hospital, and whether the revenue compensation would occur as price increases on all products or single-source products only.

***Estimating the Costs of Inappropriate Psychotropic Medication Use Among Nursing Home Patients.* David Kreling, PhD, Principal Investigator. Funded by Graduate School, UW-Madison. \$1,851. Summer 1988.**

A method was developed to estimate direct costs of potentially inappropriate medication orders. Data from a previous qualitative study investigating the appropriateness of psychotropic drug orders among 760 nursing home residents in seven long-term care facilities in Wisconsin were used to exemplify the method. Direct costs were estimated by assigning the drug product cost for the number of units billed at Medicaid reimbursement rates and adding the Medicaid dispensing fee amounts.

Overall, 80.7% of the dollars spent for psychotropic drug orders in this population of nursing home residents may have been wasted due to potentially inappropriate use. Antipsychotic orders with potential errors associated with them had both the highest estimated total monthly cost (\$2,318) and mean monthly cost (\$13.72). The type of potential error with the greatest estimated monthly cost was drugs with no indication (no corresponding diagnosis on the medical chart).

***The Potential Impact of Drug Reimbursement Policy Changes on Community Pharmacies in Wisconsin.* David Kreling, Principal Investigator, Funded by Sonderegger Research Center. \$13,648. 1985 - 1988.**

This research analyzed how varying levels of reimbursement for prescription drug ingredient costs would affect community pharmacies economically. Specifically, the study evaluated whether drug cost reimbursement based on Average Wholesale Price (AWP) less 10.5% or wholesaler cost plus 5.01% would yield amounts above or below what pharmacists paid for products. Purchase costs for a large market basket of products were obtained from wholesalers serving

community pharmacies throughout the state. Additional information about purchasing and pharmacy characteristics were obtained directly from pharmacists.

In general, pharmacists were able to purchase drugs at the reimbursement amounts proposed. The “cost plus” reimbursement amounts tended to be more conservative, and variation between pharmacies was related to their purchase patterns, i.e., the wholesaler purchased from and percent of purchases from those wholesalers versus direct from manufacturers. The type of product involved (generic, brand, controlled substances, etc.) was also a factor.

***Consultant Pharmacy Study. Jeanine Mount, PhD, Principal Investigator. Funded by the UW Graduate School and Sonderegger Research Center. \$11,464. 1986 - 1988.***

The quality of medication and dispensing in nursing homes has been a critical component of care quality. This study focused on 20 consultant pharmacists providing services to nursing homes. The role of the consultant pharmacist was examined in initiating change effectively when the pharmacist had a concern about a patient's medication. Specifically, the study examined the consultant pharmacist's role in reviewing prescriptions and communicating any medication concerns to other nursing home staff. The study coded who the pharmacist communicated with, the format of the communication, and the result of the communication. These variables were examined in relation to the organizational structure of the nursing home, the interprofessional relationships among staff associated with the nursing home, and resident care outcomes.

Three interviews were conducted with each consultant pharmacist, and data was collected from a variety of institutional records including: the consultant pharmacist's review of the "federal indicators"; nursing station inspection forms; medication problems identified by the provider pharmacy; minutes of Pharmacy and Therapeutics, Utilization Review and other facility committees (where accessible); and resident incident/accident reports.

***Environmental Dimensions of Consumer Choice for the Purpose of Prescription Drugs.***  
**PhD dissertation by Earlene Lipowski, major professor Joseph B. Wiederholt, PhD.**  
**Partially funded by the Sonderegger Research Center. \$12,407. 1986 - 1988.**

Some consumers select a pharmacy with little deliberation whereas others thoughtfully weigh multiple attributes. We propose that a well-reasoned selection depends upon motivation, ability and opportunity. Consumers will use heuristics, random choice or avoid making a decision if motivation, ability or opportunity are lacking. The objectives of this study were to assess the motivation and self-rated ability of consumers to select a pharmacy for the purchase of a prescription drug, and to examine the personal and environmental factors related to their motivation and ability. We surveyed 757 households in three communities with different pharmacy market environments and obtained responses from 461 (61%). Motivation varied with respondents' perception of the business complexity of retail pharmacy, their familiarity with the prescription purchase task, income, product involvement, age and annual medical expenditures (R-square = 0.20). Predictors of perceived ability included familiarity with prescription purchase task and perception of interdependence among health professionals, the business complexity of retail pharmacy, conflict among health professionals, and diversity among pharmacies (R-square = 0.17). More reliable measures of consumer perceptions are needed, but market environment and individual characteristics appear to influence motivation and ability and thereby affect the choice process.

***Practice Economics in Community Pharmacies.*** **David Kreling, PhD, Principal Investigator. Funded by Wisconsin Independent Community Pharmacists. \$300. Fall 1989.**

Pharmacy providers participating in prescription drug plans of HMO and third-party insurers have been offered contracts with changes in payments for prescriptions dispensed to beneficiaries. Payments have been reduced in attempts to control costs for the drug component of coverage HMOs and insurers provide. Pharmacist costs of providing services were analyzed in relation to potential revenues from third-party reimbursements for a small, pilot sample of nine pharmacies. Cost of dispensing was estimated from data gathered from pharmacists via a brief self-report questionnaire. Revenues were estimated for 100 prescriptions [approximately 50 single source (brand) and 50 multi-source (generic) prescriptions] dispensed in the pharmacies. Existing and proposed

reimbursement formulas were applied to the 100 prescriptions (drug cost plus fee formula) and the resulting gross margins were compared with the cost of dispensing for the pharmacies.

***Predicting Sleep Medication Use in Nursing Homes.* Bonnie Svarstad, PhD, Principal Investigator. Funded by the National Institute on Aging, NIH, \$140,000. 1985-1988.**

The purpose of this study was to examine the resident, nurse, and facility factors that affect the nature and quality of sleep medication use in nursing homes. Over 2,000 residents in 18 randomly selected skilled nursing facilities were studied using medical and pharmacy records, nurse surveys, and observational data. Findings showed that the quality of psychoactive drugs use was better in facilities with a resident-centered treatment culture and better nurse staffing. The study also found that resident depression, pain, and demand for medication played a significant role in whether or not the resident received benzodiazepine medications on a chronic basis. A follow-up study was done in the same facilities after implementation of stricter federal regulations. Results showed that antipsychotic drug use declined as a result of stricter regulations; however, stricter regulations had no effect on the prevalence or chronic use of benzodiazepines, antidepressants, or polymedicine.





## Sonderegger Research Center Educational Agenda

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In addition to its primary research goal, the Sonderegger Research Center has an educational agenda. The translation of research study findings into publications is part of this agenda. In addition, SRC researchers have made numerous invited presentations to a variety of national and international agencies as well as federal agencies. This year, SRC provided seminars to Wisconsin legislators regarding state prescription drug benefits to assist policy development as described below.

***"Rising Prescription Drug Costs: Reasons, Needs, and Policy Responses" (#15) and "Designing a State Prescription Drug Benefit: Strategies to Control Costs" (#16). Wisconsin Family Impact Seminars. Developed in partnership with the University of Wisconsin-Madison School of Human Ecology and the Center for Excellence in Family Studies, with collaborative funding from The Helen Bader Foundation, Inc., The Lynde and Harry Bradley Foundation, The Sonderegger Research Center, and Elizabeth C. Davies. David Mott and David Kreling, speakers, discussants, and program planning committee members. January and March 2001.***

Family impact seminars are designed to bring a family focus to policy making. The series was established in 1993, and the State of Wisconsin became one of the first states to sponsor Family Impact Seminars, modeled after the seminar series for federal policy makers. Each Family Impact Seminar provides objective non-partisan research on current issues and do not lobby for particular policies. The Seminars include presentations, briefing reports, and follow-up activities that provide up-to-date, solution-oriented research on current issues for state policymakers, legislators and their aides, Governor's office staff, legislative support bureau personnel, and state agency representatives.

Seminar participants discuss policy options and identify common ground where it exists. Family Impact Seminars analyze the consequences an issue, policy, or program may have for families. The 15th Seminar featured David Mott; Bruce Stuart, Ph.D. from the Peter Lamy Center on Drug Therapy and Aging at the University of Maryland; and Tom Snedden, Director of the Pharmaceutical

Assistance Contract for the Elderly in the Pennsylvania Department of Aging. The 16th seminar featured David Kreling; John Hansen, Assistant Director of Health Care Issues, U.S. General Accounting Office; and Stephen Schondelmeyer, Ph.D., Director of the PRIME Institute, University of Minnesota.

The Sonderegger Research Center also promotes the refinement of research skills through involvement of graduate students as research assistants on its research grants. SRC is pleased to facilitate the submission of research proposals by Pharmacy Social and Administrative Studies graduate students both to encourage and refine grant submission skills of a talented group of young Social and Administrative Pharmacy researchers. It is our belief that these young investigators are a critical resource for the quality of future research in the Social and Administrative Pharmacy field.

In 1999, SRC established the Dissertator Research Grants Program to support dissertation research of students in the UW School of Pharmacy Graduate Program in Social and Administrative Sciences. The spirit underlying the dissertator grant program is to: 1) help promising dissertators pursue research in the Social and Administrative Sciences in Pharmacy that complements the mission of SRC; 2) supplement students' other dissertation funding efforts; and 3) encourage students to refine their grant proposal preparation skills. A maximum of \$3,500 is awarded to each dissertator. The dissertation must have been approved by the student's dissertation committee, and the student must also prepare an application for external funding.

The following are the award recipients (to date) and their dissertation titles:

Jan 2001      **Carol Hermansen**, *"Patients Monitoring Chemotherapy Side Effects."*

Jan 2001      **Piyarat Nimpitakpong**, *"Effect of Pharmacist Intervention on Medication Adherence and Rehospitalization in Patients with Congestive Heart Failure in Thailand."*

- Mar 2001 **Richard C. Cline**, *"The Demand for a Medicare Prescription Drug Benefit: Exploring Consumer Preferences in a Hypothetical Managed Competition Environment."*
- Jan 1999 **Julie Ganther**, *"Prescription Drug Utilization: Moral Hazard, Adverse Selection, and the Role of Consumer Medical Preferences."*



## Sonderregger Research Center Faculty and Staff

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Pictured from left to right, back row:  
Dale Wilson, Dave Mott, Betty Chewning;  
front row: Dave Kreling, Bonnie Svarstad,  
Jeanine Mount

### **Betty Chewning, PhD**

Dr. Betty Chewning (Associate Professor) is Director of the Sonderregger Research Center. She completed her PhD in Educational Psychology and a post-doctoral program in Industrial Engineering at the University of Wisconsin. Dr. Chewning's research has focused on identifying client needs for health information and support. She has studied how computers can increase health information dissemination to clients in clinics, pharmacy and school settings. Dr. Chewning is currently Principal Investigator for two studies.

Dr. Chewning recently completed work as the Principal Investigator for two five-year federal research grants. The first, funded by the Agency Health Care Policy and Research, is a descriptive study of patients with arthritis. She studied patient medication decision-making and behaviors in relation to their clinical status and perceived quality of life. The second grant, funded through the National Institute of Child Health and Human Development, NIH, was a demonstration and evaluation project to reduce the spread of

AIDS and other sexually transmitted diseases as well as unwanted pregnancy among adolescents.

Dr. Chewning has been the director and principal investigator on several other grants in the areas of health education, client adherence to regimens, and staff roles in health education. Her work in patient education resulted in a series of staff training manuals published and distributed nationally by the American Hospital Association.

### **David H. Kreling, PhD**

Dr. Dave Kreling (Professor) received his BS degree in 1978 in pharmacy from Ferris State University (1978), and his MS and PhD in pharmacy administration from Purdue University (1981) and the University of Texas at Austin (1984), respectively. Dr. Kreling is a fellow in the APhA APRS. His primary research interest can be described as pharmacy economics and policy. He studies various economic aspects of pharmacy and pharmacy practice. His secondary interest is in marketing and consumer behavior related to pharmaceuticals and pharmacy services.

Dr. Kreling has conducted research projects pertaining to costs, pricing and reimbursement related to pharmacy practice. Recent work includes a compilation of prescription drug trends, an examination of Pharmacy Benefit Management companies, analyses of cost parameters in community pharmacies and factors influencing expenditures. He also has been involved in biennial surveys of compensation, work activities, and other labor market characteristics among pharmacists in Wisconsin.

### **David Mott, PhD, RPh**

Dr. Dave Mott (Assistant Professor) received his BS (1988) in pharmacy, and his MS (1992) and PhD (1995) in pharmacy administration, all from the University of Wisconsin-Madison. His minor fields of study for his PhD degree were economics and public policy analysis. Dr. Mott practiced pharmacy in community settings. Before joining the University of Wisconsin School of Pharmacy faculty in 1998, Dr. Mott was on the faculty at the Ohio State University College of Pharmacy: He was named Teacher of the Year in 1999 and 2001 by first year doctor of pharmacy students at the University of Wisconsin-Madison. He has

published widely in pharmacy journals and outside of pharmacy. He currently teaches courses in the health care system, pharmacy marketing and policy, pharmacy economics, and pharmacy service, program and policy evaluation.

Dr. Mott has two primary areas of research: the pharmacy labor market and economic factors associated with drug utilization. His research of the pharmacist labor market has investigated trends in the supply and demand of pharmacists, factors associated with the number of hours worked by pharmacists, and trends in turnover rates, and reasons pharmacists leave jobs. In 2000 he worked on the National Pharmacist Workforce Survey. His research of economic factors associated with drug utilization has examined the role of types of prescription drug insurance on the cost of drugs used. A recent study examined how patient and insurance variables influenced the opportunity for generic drug use by prescribing physicians and generic substitution by pharmacists. Current studies examine prescription drug insurance choice by elderly consumers, the role of patient and insurance variables on drug use by the elderly, the use of new drug products, and the use of non-prescription drug products.

### **Jeanine Kerl Mount, PhD, RPh**

Dr. Jeanine Mount (Associate Professor) received her BS degree (1979) in pharmacy, and her MS (1982) and PhD (1985) degrees in sociology, all from Purdue University. As a registered pharmacist, she has practiced pharmacy in a variety of hospital and community settings. She is active in numerous professional organizations. Professor Mount joined the UW-Madison faculty in 1985.

Dr. Mount's current research interests focus on two general areas: the effects of organizational and professional characteristics on the process of health service delivery, and the social organization of pharmacy and the pharmacy profession in the United States.

Processes of Service Delivery: In this area, Dr. Mount has been interested in looking at how health and social service organizations and their professional staff members address the needs of their patients or clients. She has had a particular interest in services for the aged population. She has studied how a community-based network of health and social service agencies interacts to provide integrated services to the aged persons in a community. Her research has focused on the structure of administrative and service-related inter-organizational relationships and how the structure influences coordination of services. Another research project of Dr. Mount's has analyzed the role of the consultant pharmacist

in long-term care. More specifically, it focused on the nature and effects of consultant pharmacists' interactions with other health professionals (e.g., physicians, nurses, medical social workers), nursing home residents and their families.

Dr. Mount has also been involved in a NIMH-funded multi-disciplinary study of the organization and provision of services to the severely mentally ill. The study analyzes patterns of mental health service provision in several rural Wisconsin counties.

Social Organization of Pharmacy: In this area, Dr. Mount has been interested in studying the organization and activities of professional and trade associations, the process of pharmaceutical policy making, development of leadership within the profession, and the overall process of professionalization within the pharmacy.

### **Bonnie L. Svarstad, PhD**

Dr. Bonnie Svarstad (Professor) received her MA (1966) and PhD (1974) degrees in sociology from the University of Wisconsin-Madison. Before joining the UW-Madison faculty in 1975, she worked as a medical sociologist at the Dr. Martin Luther King Jr. Health Center and Albert Einstein College of Medicine in New York City. Prof Svarstad has served on the American Pharmaceutical Association's Task Force on Women in Pharmacy and the National Academy of Sciences - Institute of Medicine Committee to Evaluate Patient Package inserts. From 1985-89 she served on the National Advisory Council on Health Professions Education. In 1988, Dr. Svarstad received the American Pharmaceutical Association Foundation Research Achievement Award in Economic, Social and Administrative Sciences. She has also been cited for the development of a widely accepted health communication model that helps explain patient adherence with drug regimens and ways to improve medication use through better professional-patient communication, monitoring, and collaborative problem-solving.

For some time now, Dr. Svarstad has been conducting research into factors that affect the use and misuse of psychoactive medication in nursing homes. Outside the nursing home, she has been examining factors that affect pharmacist-patient communication and the quality of oral consultation and written drug information provided in community pharmacies.

In addition to her research, she teaches graduate students and a pharmacy course called "Pharmacist Communication: Educational and Behavioral Interventions". The

communications course is offered in a new state-of-the-art communications laboratory in the new pharmacy building.

**Dale Wilson, MA**

Dale has been the SRC Research Program Manager since 1989. Prior to this, she was a Research Analyst for the State of Wisconsin Center for Health Statistics, working on the Wisconsin Ambulatory Medical Care Survey from 1984-89. Ms. Wilson received her MA in Health Services Administration from the University of Wisconsin-Madison. She served as co-investigator with SRC faculty on the following projects: "Pharmaceutical Care Outcomes: The Patient Role" and "Rural Native Americans: A Minority Youth Intervention."





## Original Board Members & Past Contributors

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### **Dr. Robert Hammel**

"Doc" Hammel (Professor-Emeritus) received his BS in pharmacy, MBA and PhD degrees from the University of Wisconsin-Madison. He had extensive experience in pharmacy and was a teaching assistant in the School of Business for two years before joining the UW-Madison pharmacy faculty in 1958. Dr. Hammel, an APS fellow, received the APS Research Achievement Award in Economics and Administrative Sciences, the Reed Peterson Award, Wisconsin Pharmacists Association Distinguished Service Award, a University of Wisconsin School of Pharmacy Citation, and a Citation from the Wisconsin Legislature in recognition of his professional achievements. His research interests have included economic, legal and professional aspects of pharmacy practice.

### **Dr. August P. Lemberger**

Dr. "Gus" Lemberger (Professor-Emeritus) is the Former Dean of the School of Pharmacy, University of Wisconsin-Madison. After receiving his BS (1948) and PhD (1952) from the University of Wisconsin, he joined Merck and Company as a senior chemist in pharmaceutical research. In 1953, he returned to the University of Wisconsin as an instructor, moving up through the academic ranks to full professor in ten years. In 1969, he accepted appointment as professor of Pharmacy and Dean of the University of Illinois College of Pharmacy holding that post until returning to the University of Wisconsin-Madison in 1980.

Dr. Lemberger has been active in national professional and scientific organizations and held a number of elective offices. He has served on the Executive Committee of the American Association of Colleges of Pharmacy (1971-74), as Vice President (1976-77) and President (1982-84) of the Academy of Pharmaceutical Sciences, as President (1982-84) of the National Rho Chi Society, and as a member (1978-84) and Vice President (1980-84) of the American Council on Pharmaceutical Education. Dr. Lemberger served as a member of the American Pharmaceutical Association Board of Trustees from 1985 to 1989, Treasurer of American Pharmaceutical Association, and chaired the national commission jointly sponsored by the AACP and the AFPE to study graduate education in the pharmaceutical

sciences (1986-88). Among his many honors are the Distinguished Service Award of the Wisconsin Pharmacists Association (1969), the Kiekhofers Memorial Teaching Award of the University of Wisconsin (1957), a citation of Merit from the University of Wisconsin (1977), the Meritorious Award of the Wayne State Pharmacy Alumni Association (1984), and the Rho Chi Lecture Award (1988). He is a Fellow of the American Foundation for Pharmaceutical Education, the Academy of Pharmaceutical Research and Science, and the American Association for Advancement of Science. He has authored well over 65 scientific and professional articles.

### **Joseph B. Wiederholt, PhD, RPh**

Dr. "Joe" Wiederholt (Professor) received his BS degree in pharmacy from Creighton University and his MS and PhD degrees in pharmacy administration from the University of Georgia-Athens. He was a licensed pharmacist in Wisconsin and Nebraska. He also practiced in community and hospital pharmacy in Texas and Georgia. Before joining the University of Wisconsin-Madison School of Pharmacy in 1981, Dr. Wiederholt taught at Creighton University and at the United States Army's Academy of Health Sciences, Fort Sam in Houston, Texas, with an adjunct faculty appointment at Baylor University. He earned the rank of Captain in the U.S. Army Medical Service Corps. He received the Rufus A. Lyman Award for the best paper published in the *American Journal of Pharmaceutical Education*, Teacher of the Year, and Teaching Excellence honors from the University of Wisconsin School of Pharmacy. He was named APRS Fellow and was awarded the Distinguished Pharmacy Educator Award from the AACP and the President's Award from Creighton University.

Dr. Wiederholt published widely in numerous national pharmacy reviews and sat on a number of professional and governmental advisory boards and committees at state and federal levels. He taught courses in pharmacy management, pharmacy law, pharmaceutical marketing, and pharmaceutical marketing research at the University of Wisconsin-Madison. Dr. Wiederholt's primary research interests were the investigation of consumer attitudes, behaviors, and environments regarding purchase decisions for prescription and non-prescription drugs and services.

Dr. Wiederholt passed away after a prolonged illness in May 2001. He is lovingly missed by the faculty and staff of the Sonderegger Research Center and his many students in the School of Pharmacy.



## Publications

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The following bibliography provides a representative list of publications from faculty associated with the Sonderegger Research Center.

### 2001

**Chewning, B., Wiederholt, J.,** Bell, C., Boh D., Boh, L., Douglas, J., **Kreling, D.,** Van Koningsveld, R. & **Wilson, D.** *Does the concordance framework serve medicine management?* The International Journal of Pharmacy Practice, 9; 71-79.

Ganther, J.M., **Wiederholt, J.B. & Kreling, D.H.** *Measuring Patients' Medical Care Preferences: Care-seeking versus Self-treating.* Medical Decision Making, Vol.21, No.2: 133-140.

**Svarstad, B.L., Mount, J.K. & Bigelow W.** *Variations in Treatment Culture and Nursing Home Response to Drug Regulations.* Psychiatric Services, 52: 666-672.

**Svarstad, B.L.,** Shireman, T.I. & Sweeney, J.K. *Using Claims Data to Assess Medication Adherence and its Effects on Hospital Use and Costs in Severe Mental Illness.* Psychiatric Services, 52:805-811.

### 2000

Bultman, D.C. & **Svarstad, B.L.** *Effects of Physician Communication Style on Client Medication Beliefs and Adherence with Antidepressant Treatment.* Patient Education and Counseling, 40:173-185.

**Chewning, B.,** Yu, T. & Johnson, J. *T'ai Chi: An Evaluation of Health Outcomes.* Health and Fitness Journal, 4; 21-26.

Ganther, J.M. & **Kreling, D.H.** *Consumer Perceptions of Risk and Required Price Savings for Generic Prescription Drugs.* Journal of the American Pharmaceutical Association, 40:378-383.

**Kreling, D.H., Mott, D.A., Wiederholt, J.B., Lundy, J. & Levitt, L.** *Prescription Drug Trends: A Chart book.* Kaiser Family Foundation.

**Kreling, D.H., Mott, D.A. & Wiederholt, J.B.** *1999 Pharmacist Salary Survey: Compensation, Hours Worked, and Fringe Benefits for Practicing Pharmacists.* Journal of the Pharmacy Society of Wisconsin, 17-23.

**Mott, D.A.** *Pharmacist Labor Turnover: A 15-Year Analysis of Turnover Rates, Length of Service and Reasons for Leaving.* American Journal of Health-System Pharmacy. 57(10): 975-984.

**Mott, D.A. & Cline R.R.** *Job Matching in Pharmacy Labor Markets: A Study in Four States.* Pharmaceutical Research, 17(2):1537-1545.

**Mott, D.A. & Meek, P.** *Evaluating Prescriptions for the Elderly: Drug-Age Criteria as a Tool to Help Community Pharmacists.* Journal of the American Pharmaceutical Association, 40(3):417-424.

**Nimpitakpong, P., Svarstad, B.L. & Zimmerman, M.H.** *Patient Participation in a Callback Program for Home Delivery Patients in HMO Pharmacies.* J Soc Admin Pharm, 17:159-168.

**Pedersen, C., Doucette, W., Gaither, C., Mott, D.A. & Schommer, J.C.** *National Pharmacist Workforce Survey.* Pharmacy Manpower Project, Inc.

**Shireman, T.I. & Kreling, D.H.** *Impact of Third Party Penetration and Competition on Community Pharmacies' Profits.* Journal of Research in Pharmaceutical Economics, 10, no.1:7-28.

**Sleath, B.L., Chewing, B.A., Svarstad, B.L. & Roter, D.** *Patient Expression of Complaints and Adherence Problems with Medications During Chronic Disease Medical Visits.* Journal of Social and Administrative Pharmacy, 17; 71-80.

**Svarstad, B.L. & Bultman, D.C.** *The Patient: Behavioral Determinants.* Remington: The Science and Practice of Pharmacy, Chap.113.

<b>1999</b>
-------------

**Bultman, D.C. & Svarstad, B.L.** *Physician and Pharmacist Communication, Consumer Beliefs, and Outcomes of Antidepressant Therapy.* Journal of Social and Administrative Pharmacy, 16:76.

**Chewning, B.,** Mosena, P., **Wilson, D.,** Erdman, H. & Potthoff, S. *Evaluation of a Computerized Contraceptive Decision Aid for Adolescent Patients.* Patient Education and Counseling, 38; 227-239.

Cline, R. & **Mott D.A.** *The Relationship Between Attitudes, Demographics, and Application Decisions Among Pre-Pharmacy Students: An Exploratory Investigation.* American Journal of Pharmaceutical Education, 63(4): 394-401.

Curtin, RB., **Svarstad, B.L.** & Keller, T. *Hemodialysis Patients' Noncompliance with Oral Medications.* ANNA Journal, 26: 307-316.

Douglas, J., Kosorov, M. & **Chewning, B.** *A Latent Variable Model for Multivariate Psychometric Response Times.* Psychometrika, 64; 69-82.

Franic, Duska, Pathak, Dev S. & **Mott, D.A.** *Pharmaceutical Care and Health Outcomes in Community Settings: A Matched Pair Analysis of Perceptions of Hypertensive Patients Versus Pharmacists.* Pharmacy Practice Management Quarterly, 19(2):1-17.

Ganther, J.M. & **Kreling, D.H.** *The Effect of a Change in Third Party Reimbursement Rate on Prescription Gross Margin.* Journal of the American Pharmaceutical Association, 39, No.3: 346-352.

Lipton, H. L., **Kreling, D.H.,** Collins, T. & Hertz, K.C. *Pharmacy Benefit Management Companies: Dimensions of Performance.* Annual Reviews of Public Health, 20: 361-401.

McAuley, J.W., **Mott, D.A.** & Akers, A. *Assessing the Impact of a Substance Abuse Educational Program on Pharmacy Students' Knowledge Base: A Controlled Study.* American Journal of Pharmaceutical Education, 63(3): 309-314.

McAuley, J.W., **Mott, D.A.,** Schommer, J.C., Moore, J.L. & Reeves, A.L. *Assessing the Needs of Community Pharmacists and Primary Care Physicians in Providing Care to Patients with Epilepsy.* Journal of the American Pharmaceutical Association, 39(4):499-504.

**Mott, D.A.,** Vanderpool, W.R. & Smeenck, D.A. *Ohio Technicians' Demographics and Attitudes Toward National Voluntary Technician Certification.* Journal of Pharmacy Technology, 15(1):18-4.

Shireman, T.I., **Svarstad, B.L.** & Sweeney, J.K. *Validity of Claims Data for Long-Acting Injectable Medications.* Journal of Pharmacoepidemiology, 7: 41-54.

Sleath, B., Roter, D., **Chewning, B.** & **Svarstad, B.** *Asking Questions About Medication: Analysis of Physician-Patient Interaction and Physician Perceptions.* Medical Care, 37; 1169-1173.

**Svarstad, B., Chewning, B.,** Sleath, B. & Claesson, C. *The Brief Medication Questionnaire: A Tool for Screening Patient Adherence and Barriers to Adherence.* Patient Education and Counseling, 37; 113-124.

**Svarstad, B.L.,** Shireman, T.I. & Sweeney, J.K. *Using Claims Data to Assess Medication Adherence and its Effects on Hospital Use and Costs in Severe Mental Illness.* Journal of Social and Administrative Pharmacy, 16:108-109 (abstract).

<b>1998</b>
-------------

**Chewning, B.** & Van Koningsveld, R. *Predicting Adolescents' Initiation of Intercourse and Contraceptive Use.* Journal of Applied Social Psychology, 28, 1245-1286.

**Kreling, D.H. & Wiederholt, J.B.** 1997 *Wisconsin Pharmacist Salary Survey Part II: Part Time and Other Pharmacists, Pharmacist Schedules, and Work Activities.* Wisconsin Pharmacist, 15-21.

**Mott, D.A.** *Comparison of Targeting A DUR Letter Intervention at Pharmacists Separate from and in Addition to Physicians.* Journal of the American Pharmaceutical Association, 38(3):325-332.

**Mott, D.A. & Kreling, D.H.** *The Association of Insurance Type with Costs of Prescribed Drugs.* Inquiry, 35(1):23-35.

**Mott, D.A. & Rothermich, E.** *Age of Dispensed Drug Products: The Role of Insurance Type, Physician Characteristics, and Physician Practice Systems.* Journal of Research in Pharmaceutical Economics, 9(3):5-19.

**Mott, D.A.,** Schommer, J.C., Doucette, W.R. & **Kreling, D.H.** *Agency Theory and Decisions Within the Pharmaceutical Utilization System: Implications for Public Policy.* Journal of Public Policy and Marketing, 17(2):1-8.

**Mott, D. A.,** Vanderpool, W.H. & Smeenk, D.A. *Perceptions of National Voluntary Certification for Pharmacy Technicians in Institutional Settings.* American Journal of Health-System Pharmacy, 55(17):1799-1803.

Roter, D.L., Hall, J.A., Merisca, R., Ruehle, B., Creten, D. & **Svarstad, B.L.** *Effectiveness of Interventions to Improve Patient Compliance: A Meta-Analysis.* Medical Care, 36: 1138-1161.

Schmidt, I., Claesson, C., Westerholm, B. & **Svarstad, B.L.** *The Impact of Regular Multidisciplinary Team Interventions on Psychotropic Prescribing in Swedish Nursing Homes.* Journal of American Geriatrics Society. 46: 77-82.

Schmidt, I., Claesson, C., Westerholm, B. & **Svarstad, B.L.** *Resident characteristics and Organizational Factors Influencing the Quality of Drug Use in Swedish Nursing Homes.* Social Science and Medicine, 47: 961-971.

Sleath, B, **Svarstad, B.L.** & Roter, D. *Patient Race and Psychotropic Prescribing During Medical Encounters.* Patient Education and Counseling. 34: 227-238.

Sutter, T.L., Wellman, G., **Mott, D.A.**, Schommer, J.C. & Sherrin, T. *An Evaluation of Access Discrepancies Associated with an Automated Storage and Distribution Cabinet.* American Journal of Health-System Pharmacy, 55(18), 1998.

<b>1997</b>
-------------

**Chewning, B.** *Patient Involvement in Pharmaceutical Care: A Conceptual Framework.* American Journal of Pharmaceutical Education, 61, 394-401.

Curtin, R.B., **Svarstad, B.L.**, Andress, D., Keller, T. & Sacksteder, P. *Differences in Older Versus Younger Hemodialysis Patients' Noncompliance with Oral Medications.* Geriatric Nephrology and Urology, 7:35-44.

Doucette, W.R. & **Wiederholt, J.B.** *Cooperation in Pharmacy-Drug Wholesaler Relations.* Pharmaceutical Research, Vol.14 (8): 976-983.

**Kreling, D.H.** *Basic Bibliography: Cognitive Sciences Reimbursement.* Hospital Pharmacy. 32, No.7:1063.

**Kreling, D.H.** *A Brief Look at the 1997 Salary Survey Results.* The Wisconsin Pharmacy Graduate, 1.

**Kreling, D.H. & Wiederholt, J.B.** *1997 Wisconsin Pharmacist Salary Survey: Practicing Pharmacists Salary Survey.* Wisconsin Pharmacist, 10-21.

**Mott, D.A. & Kreling, D.H.** *The Influence of Therapeutic Category and Insurance Type on Generic Substitution of Drug Products.* Journal of Research in Pharmaceutical Economics, 8, No.3: 3-22.

Rupp, M.T. & **Kreling, D.H.** *The Impact of Pharmaceutical Care on Patient Outcomes: What Do We Know?* Drug Benefit Trends, 9, No.2: 35-47.

Schommer, J.C. & **Wiederholt, J.B.** *The Association of Prescription Status, Patient Age, Gender and Patient Question Asking Behavior with the Content of Pharmacist-Patient Communication.* Pharmaceutical Research, 14 (2): 145-151.

Sleath, B., **Svarstad, B.L.** & Roter, D. *Physician Vs. Patient Initiation of Psychotropic Prescribing in Primary Care Settings: A Content Analysis of Audiotapes.* Social Science and Medicine, 44:541-548.

Sorensen, E.W., Herborg, H. & **Mount, J.K.** *Pharmacy Practice Research in Denmark, 1980-1990.* Journal of Social and Administrative Pharmacy. 14(2):76-92.

**Wiederholt, J.B.** & Wiederholt, P.A. *The Patient: Our Friend and Teacher.* American Journal of Pharmaceutical Education, 61 (Winter): 415-473.

<b>1996</b>
-------------

Bayley, C. & **Mount, J.K.** *Relationships with the pharmaceutical industry.* In: BD Weinstein (ed), Ethical Issues in Pharmacy. Vancouver, WA: Applied Therapeutics Press.

**Chewning, B.** & Sleath, B. *Medication Decision-Making and Management: A Client-Centered Model.* Social Science & Medicine, 42: 389-398.

**Chewning, B.** & Schommer, J. *Increasing Clients' Knowledge of Community Pharmacists' Roles.* Journal of Pharmaceutical Research, 13, 1299-1304.

Doucette, W.R. & **Wiederholt, J.B.** *Contextual Factors and Cooperativeness of Conflict Resolution Strategies in Interfirm Relationships.* Journal of Marketing Channels, 5(2):1-24.

Lipton, H.L., **Kreling, D.H.**, Collins, T.M. & Hertz, K. *Assessment of the Impact of Pharmacy Benefit Managers.* Report to HCFA, contract # HCFA-95-023/PK.

**Svarstad, B.L.** *Using Patient Input to Improve Pharmacy Practice.* International Pharmacy. Vol. 10, Suppl I, SI/20.



**1995**

Hermansen, C.J. & **Wiederholt, J.B.** 1995 *Wisconsin Pharmacists Salary Survey Results, an Economic Analysis of the Salaried Pharmacist Labor Market in Wisconsin, Compensation, Duty Hours, and Fringe Benefits.* Wisconsin Pharmacist, (Nov 1995): 5-18.

Jambulingam, T. & **Kreling, D.H.** *Relationship Between the Number of Firms and Generic Price Competition.* Journal of Research in Pharmaceutical Economics, 6, No.3: 39-60.

Kokotailo, P., LaCourt J., St. Clair, D. & **Chewning, B.** *A Pilot Video Intervention to Promote Health Careers Among Native American Youth.* Journal of School Health, 65: 113-114.

**Mott, D.A., Kreling, D.H.** & Cain, G.C. *The Relationship Between Internal Rates of Return, Pharmacist Supply and Applications and Admissions: A Case Study in Wisconsin.* American Journal of Pharmaceutical Education, 59 (1); 59-66.

Nowlin, N., Bell, C., **Chewning, B., Wilson, D.,** Chappell, R., Boh, L. & Boh, D. *A Comparison of Physician and Patient Global Ratings of Health in Rheumatoid Arthritis (RA) and Osteoarthritis (OA).* Arthritis and Rheumatism, 38: 6 (suppl) R-15.

**1994**

Adams, E.K., **Kreling, D.H.** & Gondek, K. *State Medicaid Pharmacy Payments and Their Relation to Estimated Costs.* Health Care Financing Review. 15 (1); 25-42.

**Chewning, B.,** Bell, C.L., Nowlin, N.S., **Wilson, D.A.,** Chappell, R., Boh, L.E. & Boh, D.M. *A Comparison of AIMS2 and SF-36 for Measuring Arthritis Patients' Quality of Life and Functional Health Status.* Arthritis and Rheumatism, 37: 6 (suppl.) R-13.

**Mott, D.A. & Kreling, D.H.** *An Internal Rate of Return Approach to Investigate Pharmacist Supply in the United States.* Health Economics, 3 (6); 373-384.

Nowlin, N.S., Bell, C.L., **Chewning, B., Wilson, D.A.,** Boh, D.M., Boh, L.E. & Chapell, R. *Non-Drug Alternative Therapy for Arthritis.* Arthritis and Rheumatism, 37: 6 (suppl.) R-14.

Schommer J.C. & **Wiederholt J.B.** *Patients' Satisfaction with Pharmacist Consultation Services: Application of a Model of Service Encounter Evaluation.* Journal of Consumer Satisfaction, Dissatisfaction, and Complaining Behavior.

Schommer J.C. & **Wiederholt J.B.** *Pharmacist Conceptual Views of Patient Counseling.* American Pharmacy.

Schommer J.C. & **Wiederholt J.B.** *Pharmacists' Perceptions of Patients' Needs for Counseling.* American Journal of Hospital Pharmacy, 51:478-485.

**Svarstad, B.L.** *Development of Behavioral Science Curricula and Faculty in Pharmacy: Some Issues Requiring Attention.* American Journal of Pharmaceutical Education, 177-183.

Zimmerman, D., Collins, T., **Kreling, D.H. & Wiederholt, J.B.** *Guidelines for Estimating the Impact of Medicaid D.U.R.* Final Report submitted to the Health Care Finance Administration Medicaid Bureau.

<b>1993</b>
-------------

**Chewning, B.** *Evaluating the Computer as a Data Camera in Family Planning Research.* In Advances in Population: Psychosocial Perspectives, Ed. Lawrence J. Severy. Vol. I: 85-101, Jessica Kingsley Publishers, London.

Doucette W.D. & **Wiederholt J.B.** *The Effect of Consumer Characteristics and Drug Use Process Variables on Consumers' Meaning of Prescribed Medication.* Journal of Pharmaceutical Marketing and Management, 7(4):85-95.

**Kreling, D.H. & Mott, D.A.** *The Cost Effectiveness of Drug Utilization Review in an Outpatient Setting.* Pharmacoeconomics, 4: 414-436.

**Mott D.A. & Wiederholt J.B.** *Wisconsin Pharmacy Salary Survey Results: An Economic Analysis of the Salaried Labor Market in Wisconsin, Part I: Compensation, Duty Hours and Fringe Benefits.* Wisconsin Pharmacist, 62:5-13,23-24.

**Mott D.A. & Wiederholt J.B.** *Wisconsin Pharmacy Salary Survey Results: An Economic Analysis of the Salaried Pharmacist Labor Market in Wisconsin, Part 2: Factors Influencing Supply and Demand/or Pharmacists.* Wisconsin Pharmacist, 63:7-12.

Page, C., **Kreling, D.H. & Matsumura, E.M.** *Comparison of the Mean Per-Unit and Ratio Estimators Under a Simple Applications-Motivated Model.* Statistics & Probability Letters, 17: 97-104.

Paulson L.D. & **Wiederholt J.B.** *Analysis and Implications of Pharmacy Product Information in Community Pharmacy Newspaper Advertisements.* Journal of Pharmaceutical Marketing and Management, 7(4):59-83.

**Svarstad, B.L.** *Communication Education: Reflections on the Iceberg Effect.* In: Proceedings of U.S.P Conference on Patient Education.

**Wiederholt, J.B.,** Schommer, J.C. & Lobner, T.L. *Endorsing Accuracy in Consultant Pharmacy.* The Consultant Pharmacist, 8:115-116.

<b>1992</b>
-------------

Doucette W.R. & **Wiederholt J.B.** *Measuring Product Meaning/or Prescribed Medication Using a Means-End Chain Model.* Journal of Health Care Marketing. 12(1):48-54.

**Kreling, D.H.** & Mucha, R.E. *Drug Product Management in Health Maintenance Organizations.* American Journal of Hospital Pharmacy, 49: 374-381.

**Mount, J.K. & Svarstad, B.L.** *Using the Wisconsin Psychotropic Screening Protocol to Assess the Quality of Nursing Home Residents' Psychotropic Drug Orders.* In: E. Portella and J. M. Via (eds), Proceedings of SYSTED '91: 4th International Conference on Systems Science in Health and Social Services for the Elderly and the Disabled.

**Mount, J.K.,** Tesdahl, E.L. & **Svarstad, B.L.** *Using Published Criteria to Assess Psychotropic Drug Use in Elderly Nursing Home Residents.* In: E. Portella and J.M. Via (eds), Proceedings of SYSTED '91: 4th International Conference on Systems Science in Health and Social Services for the Elderly and the Disabled.

**Svarstad, B.L. & Mount, J.K.** *The Social Systems Perspective on Patient Care.* In: T. Brown and M. Smith, The Handbook of Institutional Pharmacy Practice (Third Ed).

**Wiederholt J.B.,** Clarridge B.R. & **Svarstad B.L.** *Verbal Consultation for Prescription Drugs: Findings from a Statewide Study.* Medical Care, 30:159-173.

**1991**

**Kreling, D.H.** *A Comparison of Pharmacists' Acquisition Costs and Potential Medicaid Prescription Ingredient Cost Reimbursement in Wisconsin.* Journal of Research in Pharmaceutical Economics, 3:25-53.

Lobner T.L. & **Wiederholt J.B.** *Importance of Criteria Used in Selecting Pharmaceutical Services in Wisconsin Skilled Nursing Facilities: An Exploratory Study.* The Consultant Pharmacist, 6(11): 919-925.

Schommer J.C. & **Wiederholt J.B.** *The Elderly's Perspective of the Relative Importance of Pharmacy Selection Factors for Long-term Care Facility Residents.* Journal of Pharmaceutical Marketing and Management, 6(2):63-80.

Schommer J.C. & **Wiederholt J.B.** *Long-term Care Facility Residents Rights: An Elderly Population Perspective.* The Consultant Pharmacist, 6(11):1-7.

**Svarstad, B.L.** *Sleep Medication Use in Skilled Nursing Facilities: Effects of Nurse Beliefs and Norms.* The Gerontologist, 31: 90.

**Svarstad, B.L. & Mount, J.K.** *Nursing Home Resources and Tranquilizer Use Among the Institutionalized Elderly.* Journal of the American Geriatrics Society. 39: 869-875.

**1990**

**Kreling, D.H.** & Schommer, J.C. *Costs of Potentially Inappropriate Psychotropic Drug Orders for Nursing Home Residents: Method and Estimation.* The Consultant Pharmacist, 5: 166-172.

**Kreling, D.H.** & Dzvimbo, W.J. *Drug Information Sources Used by Physicians and Pharmacists: A Study of Public Hospitals in Zimbabwe.* Journal of Social and Administrative Pharmacy. 6:197-207.

Martin, M. & **Svarstad, B.** *Gender, Employment, and Women's Reproductive Role: Testing Their Effects on Legal Drug Use.* Social Science and Medicine, 31:971-978.

Schommer J.C., **Wiederholt J.B.** & **Hammel R.W.** *Pilot Study of the Wisconsin Pharmacy Self-Inspection Project.* Wisconsin Pharmacist, 59:18-20.

Sullivan, S.D., **Kreling, D.H.** & Hazlet, T.K. *Noncompliance with Medication Regimens and Subsequent Hospitalizations: A Literature Analysis and Cost of Hospitalization Estimate.* Journal of Research in Pharmaceutical Economics, 2:19-33.

**1989**

**Kreling, D.H.** *Assessing Potential Prescription Reimbursement Changes: Estimated Acquisition Costs in Wisconsin.* Health Care Financing Review, 10:67-75.

**Kreling, D.H.**, Knocke, D.J. & **Hammel, R W.** *The Effects of an Internal Analgesic Formulary Restriction on Medicaid Drug Expenditures in Wisconsin.* Medical Care, 27:34-44.

**Kreling, D.H.** & Paulsen, E.K. *Medicare Supplement Insurance: A Primer for Pharmacists.* The Wisconsin Pharmacist, 58:15-17.

**Mount, J.** *Contributions of the Social Sciences, Chapter 1.* In M. Smith and A. Wertheimer (eds), Pharmacy Practice: Social and Behavioral Aspects, 3rd Edition. Williams and Wilkins.

Ranelli, P., **Svarstad, B.** & Boh, L. *Factors Affecting Outcomes of Medication History Interviewing by Pharmacy Students.* American Journal of Hospital Pharmacy, 46:267-281.

Robers, P. & **Svarstad, B.** *Resident Characteristics and Sleep Medication Use in Nursing Homes.* Journal of Geriatric Drug Therapy. 4:87-111.

**Svarstad, B.** *The Sociology of Drugs in Health Care.* In A. Wertheimer and M. Smith (eds.), Pharmacy Practice: Social and Behavioral Aspects (Third Edition). Baltimore: University Park Press, pp 197-211.

**1988**

Fuhs, D.W., **Wiederholt, J.B.**, Sorkness, C.A. & Pitterle, M.E. *The Use of Serum Drug Concentrations in a Private Ambulatory Clinic and its Affiliated Health Maintenance Organization.* Topics in Hospital Pharmacy Management, 8:43-54 .

**Hammel, R.W.** & **Wiederholt, J.B.** *Biennial Survey: Pharmacists' Salaries, Duty Hours and Fringe Benefits in Wisconsin.* Wisconsin Pharmacist, 57(1); 14-22.

**Kreling, D.H.,** Knocke, D.J. & **Hammel, R.W.** *Changes in Market Shares for Internal Analgesic Products after a Medicaid Formulary Restriction.* Journal of Pharmaceutical Marketing and Management, 3:65-75.

Robers, P., Moore, T. & **Svarstad, B.** *Nurse Administration of Sleep Medication: A Comparison of Registered Nurses and Licensed Practical Nurses.* American Journal of Public Health, 78:1581-1583.

<b>1987</b>
-------------

Boh, L.E., Pitterle, M.E., **Wiederholt, J.B.** & Tyler, L. *Development and Application of a Computer Simulation Program to Enhance the Clinical Problem-Solving Skills of Students.* American J of Pharmaceutical Education, 51:253-261.

**Hammel, R.W.** *Pharmacy Graduate Internships.* Wisconsin Pharmacist, 56(7); 12-14.

**Hammel, R.W.** & Lobner, T.L. *Pharmacy Practice Profile -Part I.* Wisconsin Pharmacist, 56(8); 14-16.

**Hammel, R.W.** & Lobner, T.L. *Pharmacy Practice Profile -Part II.* Wisconsin Pharmacist, 56(9); 8-10.

Hawkins, R., Gustafson, D., **Chewning, B.**, Bosworth, K. & Day, T. *Reaching Hard to Reach Populations: Interactive Computer Programs as Public Information Campaigns for Adolescents: The BARN Project.* Journal of Communications, Vol. 36: 8-28.

**Kreling, D.H.** *Direct Price Reimbursement: Can Pharmacists Buy from Wholesalers at Direct Prices.* Wisconsin Pharmacist, 56(10), 8-10.

**Kreling, D.H.** *Pharmacists' Use of Average Wholesale Price in Pricing Prescriptions.* Journal of Pharmaceutical Marketing and Management, 2(1), 97-113.

**Kreling, D.H.** & Doucette, W.R. *Relief Pharmacists in Wisconsin: Use, Unmet Need, and Potential Supply.* Wisconsin Pharmacists, 56(11), 18-21.

**Kreling, D.H. & Wiederholt, J.B.** *Selecting Health Insurance: The Importance of Prescription Drug Coverage and Pharmacy Factors in Consumer Decision Making.* Journal of Pharmaceutical Marketing and Management, 1:3-18.

**Kreling, D.H.** & Witzany, C.J. *Direct Price Reimbursement: Does the Medicaid Policy Reflect Pharmacists' Purchase Patterns?* Wisconsin Pharmacist, 56:10-12.

**Kreling, D.H.** & Witzany, C.J. *Direct Purchase Patterns Among Pharmacists in Wisconsin.* Wisconsin Pharmacist, 56(6):10-12.

Lipowski, E.E. & **Wiederholt, J.B.** *Developing a Measure of Retail Pharmacy Image.* Journal of Pharmaceutical Marketing and Development, 1:149-157.

**Svarstad, B.**, Cleary, P., Mechanic, D. & Robers, P. *Gender Differences in the Acquisition of Prescription Drugs: An Epidemiological Study.* Medical Care, 25:1089-1098.

Vejraska, M.T., **Wiederholt, J.B.** & Zilz, D.A. *Qualification of Future Hospital Pharmacy Directors from the Perspective of Pharmacy Directors and Administrators of Wisconsin Hospitals.* American Journal of Hospital Pharmacy. 44, 1606-1614.

**Wiederholt J.B.** *Development of an Instrument to Measure Evaluative Criteria that Patients Use in Selecting a Pharmacy for Obtaining Prescription Drugs.* Journal of Pharmaceutical Marketing and Management, 1(4):35-60.

Wittenberg, J.A., **Wiederholt, J.B.** & **Hammel, R.W.** *Pharmacists' Opinions about Pharmaceutical Manufacturers: A Follow-up Study in Wisconsin.* Journal of Pharmaceutical and Marketing Management, 2:131-146.