

System Innovation and Quality Improvement Portfolio

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February 24, 2012

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A. Introduction

The Professorial Promotions Committee requested that I compile a portfolio addressing my impact as a System Innovation and Quality Improvement Activities Program Builder. While the Silver Book has a distinct template for an educator's portfolio, there is not such a template for System Innovation and Quality Improvement Activities Portfolio. I was referred to Dr. Nancy Hutton's submission to the Committee and have tailored my response to her example of a Program Builders' Portfolio.

B. Leadership in Academic Medicine Philosophy Statement

My overall goal during my career has been to improve the health and wellness of working individuals. Long before the Patient Protection and Affordability Care Acts, I recognized the potential of preventive medicine (screening, early diagnosis and treatment) and safety engineering programs to decrease the impact of injury and disease on a population and was able to quantify their outcomes. I feel I was successful in these efforts because I was able to document the benefits of these programs and able to use this information to convince upper management that these initiatives could be successfully implemented, improving health and increasing productivity. Equally important were my efforts to improve employee access to care for catastrophic conditions (cancer, coronary artery disease, etc.) at recognized treatment facilities demonstrating that medical care, provided by highly skilled physicians, ultimately leads to better medical outcomes and reduced costs.

I applied what I had observed in Corporate America about population health management to Johns Hopkins Hospital and University when I arrived here in 1991. This enabled me to immediately enact programs that significantly reduced illness and injury incidence, as well as affording injured workers the best possible medical care available, regardless of income or job status. This resulted in a system of occupational health care that continues to receive extremely high satisfaction ratings from Hopkins' employees. Lastly, I was also able to extend the Johns Hopkins mission of innovative clinical care, education and clinical research beyond the borders of the institution into the workplace at 7 large corporations at 54 industrial locations in 23 States.

C. Program Development, Design, Innovation, Leadership

C.1 Centers of Excellence

In 1981, as a Corporate Vice President of Tenneco, Inc. in Houston, Texas, I created a partnership between Tenneco and the Texas Heart Institute (Denton Cooley, MD), Baylor College of Medicine (Neurosurgery) and MD Anderson Hospital (Medical and Surgical Oncology), Johns Hopkins (Donlin Long, MD), Rush University Medical Center (Neurology) to provide specific types of tertiary care for Tenneco employees and their dependents. This became one of the first Centers of Excellence Programs (The Tenneco Select Provider Program) in Corporate America. To incentivize the employees to utilize these Centers, we modified the medical plan waiving the deductible and co-payment and arranged for transportation if the employee or their dependent did not live near one of these Centers. This initiative enabled Tenneco's 250,000 medical plan participants to obtain medical care for catastrophic conditions at a reduced cost for themselves and the corporation. Improvements in clinical outcomes and decreased expenditures were observed for the individuals who received their care as participants in this program. The Tenneco Select Provider Program became the model for other large medical plans as a cost containment and quality improvement strategy in the late 80s and early 90s. In addition, the use of selected providers for catastrophic illness in a fee for service medical plan proved to be a cost effective alternative to HMO coverage ({4 SIQIA peer-review}, {2 SIQIA non-peer-review}).

C.2 Analyze and Redesign Medical Plans to Improve Health Outcomes

At Tenneco, part of my job responsibilities included the design of the company's health benefits plan. In order to initiate benefit improvements, I analyzed treatment patterns for various groups of employees by illness categories and geographic location. With these data, two major initiatives were undertaken and the outcomes quantified: 1) redesign of mental health care benefits that limited inpatient care but improved access to outpatient treatment and 2) wellness and exercise programming. The references demonstrate the success of these initiatives in improving mental health care for children and the health benefits of exercise and wellness programs. ({2,4,7-18, 20-22 SIQIA peer review} and {3-4 SIQIA non-peer review}).

C.3 Use of Nurse Practitioners and Physicians Assistants to Deliver Onsite Medical Care

During the 1980s, I recognized the potential of using nurse practitioners and other mid-level providers to provide injury care, preventive medical assessments and primary care in industrial settings. The corporation utilized these professionals in staffing the onsite clinics of the companies' many subsidiaries (Tenneco West, Newport News Shipyard, Monroe, Walker Mufflers, Tenneco Oil, Tenneco Gas Transmission Company, etc). We were able to document the efficiencies of these practitioners in screening programs and creating an assessment and referral service utilizing local physicians to render care to employees. This model was used as the basis of creating a Johns Hopkins network of onsite medical clinics for major corporations. ({6 and 35 SIQIA peer review} and {1 SIQIA non-peer review}).

C.4 Occupational Injury Management and Accident Reduction

I was appointed as Executive Director of Health, Safety and Environment for Johns Hopkins Institutions in 1991. During that year, I was able to establish an injury prevention program that focused on ergonomics as well as a surveillance program to identify and abate safety risks in high accident frequency areas. This was coupled with an initiative to channel injured employees to a small network of Hopkins physicians skilled in the treatment of occupational injuries. I severely curtailed the institution's prior emphasis on claims adjudication to control costs feeling that this alienated employees and actually increased costs. My hypothesis was that accident prevention coupled with excellent medical care delivered in a responsive manner by skilled specialists would ultimately reduce costs. This hypothesis was validated by 20 years of data on accident frequency and health care costs. There was a reduction in the frequency of disabling accidents at the Johns Hopkins University and Hospital. When the program was initiated in 1991, there were 480 lost time accidents recorded for a population of 21,000. In 2011, the number of accidents had decreased to 255 for a population of 54,000. Furthermore, at the Johns Hopkins Hospital and University, the number of days away from work for these injuries decreased from 34,000 in 1991 to 18,000 in 2011. The program also resulted in increased employee satisfaction with the care of injuries as evidenced by high employee satisfaction ratings and decreased workers' compensation litigation. ({24-30 SIQIS peer review} and {7-8 SIQIS non-peer review}).

C.5 Provision of Onsite Medical Care for Corporations

I became Director of the Division of Occupational Medicine at Johns Hopkins in 1994. At that time, I was able to transition the Division from a clinic-based occupational health service for Baltimore area employers into a program that offered standardized on-site wellness programming and occupational injury and illness management throughout the country. Through the years, the Program grew and now serves over 200,000 employed individuals at seven large US corporations at sites in 23 States. In this model, wellness and occupational care management programs designed at Johns Hopkins are delivered by nurse practitioners and physicians assistants at manufacturing sites throughout North America. The most significant initiatives to date have been: 1. weight management program, which encompasses a three month weight reduction contest held twice per year in which 22 participants per site lose an average of 10-15 lbs. per person. 2. health screenings in which 80-95% of the employees undergo a physical assessment at each wellness location.

Practitioner performance, in conforming to evidenced-based practice guidelines at the onsite clinics, is monitored electronically utilizing a software system that was developed by the Johns Hopkins Division of Occupational Medicine. This software is also being used to manage clinic activities at other academic medical centers and by two other manufacturing companies. The development of the system won the International Occupational Health Award from the American College of Occupational and Environmental Medicine. (35 SIQIA peer review and 9-10 SIQIA non-peer review).

C.6 Workers' Compensation

C.6.1 Physician Network Development

My work in quantifying interventions utilized to decrease accidents and improve medical outcomes for the Johns Hopkins Workers' Compensation Program indicated there was a tremendous opportunity to do similar work for casual insurance carriers, Third Party Administrators (TPAs) and large self-insurance employees.

I assisted the Louisiana Workers' Compensation Corporation in creating a physician network to treat injured workers. The premise used in creating the network was that "quality medical management applied by empowered, yet accountable physicians, trained in care management techniques and unencumbered by precertification requirements will minimize disability." Subsequent studies documented that injured workers treated by network physicians had significantly lower days off from work than patients treated by non-network physicians. This reduction in lost time resulted in lower disability costs. (31-32 SIQIA).

C.6.2 Analytics

Over the past seven years, I have worked with two insurance carriers to identify the factors associated with adverse workers compensation claims (claims that are expected to be uncomplicated but become complicated and resembled catastrophic claims at settlement). In doing this work, I found that in addition to the type and severity of an injury, attorney involvement, obesity, and use of opioids were important predictors of catastrophic claims. This allowed me to create a tool to predict the ultimate cost of a worker's compensation claim at the time the first reserve is placed on a claim (approximately one month after injury). This information allows an insurance carrier or self-insured employer to identify high risk claims and use incentives to motivate injured employees to seek the best possible medical care. For example, individuals whose back injury is identified as being potentially high-risk may be channeled to neurosurgeons that specialize in the care and management of these conditions. The adoption of this tool by the Louisiana Workers' Compensation Corporation has resulted in improved medical outcomes for many of the workers insured by this company, as well as reducing costs for certain types of workers' compensation claims.

In creating these Programs and performing these studies, I noted that pain management physicians were associated with delayed return to work. This prompted my investigation of the relationship between opioid use and delayed return to work and morbidity associated with claimants prescribed opioids. This has resulted in two peer-reviewed papers and the initiation of three subsequent investigations into the problems of chronic opioid use among workers' compensation claimants. As a result of his research, I have been asked by the Department of Labor, Office of Workers' Compensation Programs, to assist them in their efforts to control opioid use in injured federal workers (33-34, 37-39 SIQIA peer review).

C.7 Health, Safety and Environment at Johns Hopkins Hospital and University

I have led the Health, Safety and Environment Department at Johns Hopkins Hospital and University for over 20 years. The organization of this program differs from the vast majority of academic medical centers in that all safety and health related efforts, from the prevention of accidents to the care of injured workers, reside in one department. This has allowed me to assess the impact of injuries on productivity and to design programs to reduce accident frequency as well as the resultant loss in productivity. Over the years, I have implemented a number of systems and programs that have reduced the incidence of injuries or have better addressed the care of injured workers. The most significant efforts were the creation of an in-house preferred provider organization to treat occupational injuries, medical case management, an encrypted electronic medical record for occupational health, an online reporting mechanism for Medicare reportable injuries, Bloodborne Pathogen Control Program, online Bloodborne Pathogen Reporting System and a mass Influenza Immunization Program. In this position, I have been able to do a number of investigations in the area of safety and occupational health related to hepatitis B, HCV, CNS effects of exposure to volatile anesthetics and ergonomics programming. ({12-16, 18 PR research section of CV} and {24-30, 36 SIQIA peer review} and {6, 7 Book Chapters of CV}).

C.8 Teaching, Lecturing and Mentoring

- Over the past seven years, I have been responsible for the Occupational Medicine portion of the Patient, Physician and Society Course presented yearly to first year medical students at the Johns Hopkins University School of Medicine.

- Currently, I hold a joint appointment in the Department of Environmental Health Sciences in the Bloomberg School of Public Health and Hygiene (BSPH). I am a lecturer in the Anna Baetjer Course, a member of the Residency Advisory Committee and preceptor of the Johns Hopkins University (BSPH), and Occupational Medicine Residency Program. I am responsible for the resident's rotation at the Johns Hopkins Hospital's Occupational Injury Clinic where the residents participate in the assessment and treatment of occupational injuries and illnesses of Hospital and University employees. This rotation also teaches the residents how to identify and abate chemical, physical and biologic hazards in a healthcare environment.

- My commitment to training extends to involvement with the American College of Occupational and Environmental Medicine's continuing medical education efforts. At almost all of the College's spring and Fall Meetings over the last ten years, I have presented papers or organized scientific sessions for the attendees. I organized three national conferences for the College: the American Occupational Health Conference in Houston, Texas (May 1989), the State of the Art conference in Dallas, Texas (October 1992) and the State of the Art Conference in Baltimore, Maryland (October 2001). I was a member of the Planning Committee for the American Health Conference, which took place in Washington, DC (March 2011).

- Each year, the Division of Occupational Medicine conducts a training course for physicians, nurse practitioners, nurses and physicians' assistants, employed by the Division. These are three day continuing education programs which are conducted at the JHU East Baltimore Campus. The Course is approved for 8.5 Category I credits towards the AMA Physicians' Recognition Award. Course offerings vary from year to year, usually include; topics on screening for disease, the treatment of musculoskeletal illnesses/injuries, mental illness and primary prevention programs.

- I presented a paper on Occupational Ergonomics at the 29th Annual Conference of International Health in Milan, Italy in June of 2006 and a paper on Occupational Injury Control to the Society of Occupational Medicine in Durham, United Kingdom in July 2002.

C.9 Leadership, Honors and Awards

- American College of Occupational and Environmental Medicine, Board Member 1987-2003

- American College of Occupational and Environmental Medicine, President 2002-2003

- American Association of Occupational Health Nurses/
American College of Occupational and Environmental Medicine
Joint Research Award - Year 2000 Recipient
Philadelphia, PA
May, 2000

- Central States Occupational Medical Association National Leadership Award
Presented by the Central States Occupational Medical Association, Chicago, IL
March, 2005

- ACOEM Robert A. Kehoe Award of Merit
Presented at the American College of Occupational Medicine Annual Meeting, Washington, DC
March, 2011
This international award is "given to an individual who has made significant contributions to occupational and environmental medicine".

D. Appendix: Publications

System Innovation and Quality Improvement Publications (SIQIA)

D.1 Peer Review Articles D.1 Peer Review Articles * Corresponding Author

1. *Bernacki EJ. "Determining the Work Relatedness of Disease." Connecticut Medicine. 46:495-497, 1982.
2. *Bernacki EJ, Baun WB. "The Relationship to Job Performance to Exercise Adherence in a Corporate Fitness Program." Journal of Occupational Medicine. 26:529-531, 1984.
3. Baun WB, *Bernacki EJ, Tsai SP. "A Preliminary Investigation, The Effect of a Corporate Fitness Program on Absenteeism and Health Care Cost." Journal of Occupational Medicine. 28:18-22,1986.
4. *Bernacki EJ, Tsai SP, Reedy SM. "An Analysis of a Corporation=s Health Care Experience: Implications for Cost Containment and Disease Prevention." Journal of Occupational Medicine. 28:5092-508, 1986.
5. Tsai SP, Baun WB, *Bernacki EJ. "The Relationship of Employee Turnover to Exercise Adherence in a Corporate Fitness Program." Journal of Occupational Medicine. 29:572-575, 1987.
6. Scharon GM, Tsai SP. *Bernacki EJ. "Nurse Practitioners in an Occupational Setting: Utilizing Patterns for the Delivery of Primary Care." AAOHN Journal. 6:280-284, 1987.
7. *Tsai SP, Bernacki EJ, Reedy SM. "Mental Health Care Utilization and Costs in a Corporate Setting." Journal of Occupational Medicine. 29:812-816, 1987.
8. *Tsai SP, Bernacki EJ, Reedy SM, Miller KE. "Health Care Utilization and Cost for Disease of the Circulatory System in a Corporate Setting." Preventive Medicine. 17:1-11, 1988.
9. *Tsai SP, Reedy SM, Bernacki EJ, Lee ES. "Effect of Curtailed Insurance Benefits in of Use of Mental Health Care - Tenneco Health Plan." Medical Care. 26:43-440-, 1988.
10. *Tsai SP, Lucas LL, Bernacki EJ. "Obesity and Morbidity Prevalence in a Workers Population." Journal of Occupational Medicine. 30:589-591, 1988.
11. *Tsai SP, Bernacki EJ, Baun WB. "Injury Prevalence and Associated Costs Among Participants of an Employee Fitness Program." Preventive Medicine. 17:475-482, 1988.
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14. *Tsai SP, Reedy SM, Bernacki EJ, Lee ES. "Effect of Curtailed Insurance Benefits in of Use of Mental Health Care - Tenneco Health Plan." Medical Care. 26:43-440-,1988.
15. *Tsai SP, Lucas LL, Bernacki EJ. "Obesity and Morbidity Prevalence in a Workers Population." Journal of Occupational Medicine. 30:589-591, 1988.
16. *Tsai SP, Bernacki EJ, Baun WB. "Injury Prevalence and Associated Costs Among Participants of an Employee Fitness Program." Preventive Medicine. 17:475-482, 1988.
17. *Tsai SP, Bernacki EJ, Dowd CM. "Incidence and Cost of Injury in an Industrial Population." Journal Occupational Medicine 31:9:781-784, 1989.
18. *Bernacki EJ, Tsai SP. "Use of Group Health Insurance Claims Data to Access Morbidity Among Employed Persons." Journal of Occupational Medicine. 31:781-784, 1989.

19. *Tsai SP, Bernacki EJ, Lucas LJ. "A Longitudinal Method of Evaluating Employee Turnover." Journal of Business and Psychology. 3:465-473, 1989.
20. *Tsai SP, Bernacki EJ, Dowd CM. "The Relationship Between Work-Related and Non-Work-Related Injuries." Journal of Community Health. 16:205-212, 1991.
21. *Tsai SP, Bernacki EJ, Dowd CM. "Health Care Utilization and Costs for Injury in a Corporate Setting." Journal of Community Health. 16:92-102, 1991.
22. *Tsai SP, Bernacki EJ, Dowd CM. "The Relationship Between Work-Related and Non-Work-Related Injuries." Journal of Community Health. 16:205-212, 1991.
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25. *Bernacki EJ, Tsai SP. "Managed Care for Workers= Compensation: Three Years Experience in an employee Choice@ State." Journal of Occupational and Environmental Medicine. 28:11:1091-1097, 1996.
26. *Green-McKenzie J, Parkerson J, Bernacki EJ. "Comparison of Workers= Compensation Costs for Two Cohorts of Injured Workers Before and After the Introduction of Managed Care." Journal of Occupational and Environmental Medicine. 40:6:568-572, 1998.
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28. *Bernacki EJ, Guidera JA, Schaefer JA, Lavin RA, Tsai SP. "An Ergonomics Program Designed to Reduce the Incident of Upper Extremity Work Related Musculoskeletal Disorders." Journal of Occupational and Environmental Medicine. 41:12:1032-1041, 1999.
29. *Bernacki EJ, Guidera JA, Schaefer JA, Tsai SP. "A Facilitated Early Return to Work Program at a Large Urban Medical Center." Journal of Occupational and Environmental Medicine. 42:12:1173-1177, 2000.
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 36. Tao G, Giampino J, Dooley DA, Humphrey FE, Baron DM, *Bernacki EJ. "Description of an Influenza Vaccination Campaign and Use of a Randomized Survey to Determine Participation Rates." Journal of Infection Control and Hospital Epidemiology 31:2, 2010
 37. * Bernacki EJ, Tao X, Yuspeh L. "The Impact of Cost Intensive Physicians on Workers' Compensation." Journal of Occupational and Environmental Medicine 52:1:22-28, 2010.
 38. *Bernack EJ, Yuspeh L, Lavin R, Tao XG. "Increases in the Use and Cost of Opioids to Treat Acute and Chronic Pain in Injured Workers, 1999 to 2009." Journal of Occupational and Environmental Medicine, 54(2):216-223, February, 2012.
 39. Tao XG, Lavin RA, Yuspeh L, *Bernacki EJ. "Natural History of Opioid Dosage Escalation Post-Injury: A Cohort Study of Injured Workers in the State of Louisiana." Journal of Occupational and Environmental Medicine, accepted for publication, January 2012.
- D.2 Non-Peer Review Articles/Materials
1. Sharon GM, Bernacki EJ. "A Corporate Role for Nurse Practitioners." Business and Health 26-28, 1984
 2. Channell B, Bernacki EJ. "A PPO for Catastrophic Illness." Business and Health 22-23, 1985.
 3. Tsai SP, Bernacki EJ, Stewart AA. "Health Insurance Coverage and Health Care Utilization: A Corporate Perspective." Health and Human Resources Administration, 9:246-267, 1986.
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 9. <http://www.benefitsonline.pbg.com/pdfs/2010%20Summer%20maga%20HC%20FINAL.pdf>
 10. <http://www.pepsico.com/Purpose/Talent-Sustainability/Health-and-Safety.html>