Title of Project: State of the Science on Safe Medication Administration

Principal Investigator and Team Members:

Principal Investigator: Jane H. Barnsteiner, RN, PhD, FAAN

Co-investigators: Mary C. Alexander, RN, MA; Kathleen Burke, RN, PhD; Diana J. Mason, RN, PhD, FAAN; Victoria Rich, RN, PhD

Organization: University of Pennsylvania School of Nursing, Hospital of the University of Pennsylvania, Infusion Nurses Society, *American Journal of Nursing*, Lippincott Williams and Wilkins, publishers

Inclusive Dates of Project: May 10, 2004 – May 9, 2005

Federal Project Officer: Anna Hahn

Acknowledgment of Agency Support: Agency for Healthcare Research and Quality

Grant Award Number: 1 R13 HS14836-01

State of the Science on Safe Medication Administration

Purpose: To develop research priorities and clinical care and policy recommendations addressing the state of the art and science of safe medication administration.

Scope: The objectives were to 1) describe the state of the science in safe medication administration; 2) describe barriers to safer medication administration; 3) identify approaches to overcoming these barriers; 4) provide recommendations for clinical education, research, and policy priorities for best practices for safe medication administration in a variety of settings, including pediatric and geriatric settings; and 5) disseminate the analysis and recommendations to nurse researchers, nurse educators, healthcare professionals, policymakers, industry, and advocacy groups.

Methods: A symposium was held on July 16 and 17, 2004, on safe medication administration that brought together leading nursing experts and thought leaders in clinical practice and education, researchers, and representatives from industry and consumer and regulatory sectors.

Results: Dissemination of the proceedings and recommendations were published in a supplement to the March 2005 *American Journal of Nursing (AJN*), the official journal of the American Nurses Association, and co-published in a supplement to the *Journal of Infusion Nursing (JIN)*, the official publication of the Infusion Nurses Society. The supplement was mailed to 90,000 *AJN* subscribers and all members of the Infusion Nurses Society. Access to the supplement continues to be available on http://www.ajnonline.com, a website owned by Lippincott Williams and Wilkins that features *AJN* online.

The executive summary of the report was published within the March issue of *AJN*, which went to 344,000 registered nurse subscribers. Other dissemination included internet, mass media, professional publication, and presentations to regional and national audiences.

Key Words: medication safety, medication administration

The University of Pennsylvania School of Nursing, Hospital of the University of Pennsylvania, Infusion Nurses Society, *American Journal of Nursing*, Lippincott Williams and Wilkins, publishers held a 2-day symposium on the State of the Science of Safe Medication Administration that brought together leading nursing experts and thought leaders in clinical practice and education, researchers, and representatives from industry and consumer and regulatory sectors.

Purpose: The purpose of the symposium was to develop research priorities and clinical care and policy recommendations addressing the state of the art and science of safe medication administration. The specific objectives were to:

1. Describe the state of the science in safe medication administration
2. Describe barriers to safer medication administration
3. Identify approaches to overcoming these barriers
4. Provide recommendations for clinical, education, research, and policy priorities for best practices for safe medication administration in a variety of settings, including pediatric and geriatric settings
5. Disseminate the analysis and recommendations to nurse researchers, nurse educators, healthcare professionals, policymakers, industry, and advocacy groups.

Scope and Methods: One out of every three adverse drugs events precipitated by a medication error occurs when nurses are administrating medications to patients. IV medications and infusion pump safety issues have been identified as a growing concern and a source of medication errors for nurses. It has been estimated that 46% to 56% medication errors occur at the key transition points of patient care when nurses play a key role, such as admission to a hospital, transfer from critical care to general care, or at discharge to home or another facility; but the transfer of medication information is rarely systematic and often problematic. Though industry has developed myriad technical solutions to reduce medication errors, they continue to occur, necessitating better science and its application to practice to have a significant impact on patient safety.

In July 2004, the ***University of Pennsylvania School of Nursing and the Center for Professional Development, the Hospital at the University of Pennsylvania, the Infusion Nurses Society,*** and the **American Journal of Nursing (AJN)**, collaborated to bring together leading nurse researchers; nurse experts in clinical practice, education, and administration; pharmacists; representatives of consumer and national advocacy groups; and industry stakeholders for a symposium to develop research priorities and clinical practice and policy recommendations addressing safer medication administration. (See Appendix A for list of attendees.)

The invitational symposium was the forum for examining past and current research findings on medication errors, developing an agenda for nursing research, and making

recommendations for immediate implementation and for future directions in nursing education, clinical practice, and policy development. (See Appendix B for program.)

Results: The main outcome from this symposium is the identification of research priorities to catalyze changes in practice and systems. Another major outcome is a set of recommendations for nursing practice, nursing education, professional and public education, and public and private sector policy. Table 1 lists the common barriers to safe medication administration that were identified. Table 2 lists the seven most common barriers to safe medication administration and the strategies identified by participants to address the barriers. Table 3 lists the priorities for research for safe medication administration. The recommendations are in the Executive Summary published in the *AJN* Supplement of March 2005. They may be found at http://nursingcenter.com and at www.ajnonline.com.

TABLE 1. Some Common Barriers to Safe Medication Administration
Symposium participants identified specific barriers in five areas.

Research

- Research outcomes that are not easily transferable to clinical practice
- Difficulty understanding the impact and limitations of technology
- Lack of funding for research

Education

- Lack of current knowledge of safe medication administration in nursing school curricula
- Insufficient time in clinical practice to teach and learn new and changing technologies
- Not identifying the best ways to teach new practices to ensure learning
- Not teaching the full medication system: prescribing, dispensing, and administering

Practice

- Not determining what best practice is
- Lack of standardization of practices
- Too much time spent on nonnursing duties (prevents focus on safety)
- Problems with interdisciplinary communication
- Incomplete and inconsistent reporting of medication errors
- Lack of connection between research and practice
- Not knowing how to proceed when technology fails

Policy

- Lack of nurse participation in setting policy
- Lack of standardization of policies
- Mismatch between written policy and actual practice

Administration

- Lack of demonstrable support for patient safety by administration

- Failure of administration to stay abreast of best practices and research
- Difficulty integrating new or changing technologies into nursing practice
- Lack of involvement by nurses in implementing new technologies and safety innovations
- Poor allocation of financial resources

TABLE 2. The Seven Most Significant Barriers to Safe Medication Administration and Strategies to Address Them

Lack of a "just culture of safety"

- Partner with professional and educational groups and organizations to ensure that both undergraduate and continuing education curricula promote safety at all levels of nursing
- Make sure "near misses" and errors are quickly reported and disseminated
- Collaborate with state boards to develop standardized error analyses that distinguish between human error and negligent, incompetent practice
- Create a consistent national taxonomy of error
- Eliminate the use of abbreviations and acronyms
- Analyze safety initiatives that have succeeded in other industries
- Create policies and procedures that include patient education on safety
- Have consumer representation on safety committees
- Give patients "smart" cards containing extensive data, including their medications and history
- Hold workshops to educate consumers on patient safety

Lack of interdisciplinary collaboration and communication

- Educate nurses, physicians, and pharmacists together; create interdisciplinary peer review teams for collaborative learning from errors
- Use inter- and intradisciplinary models to change team cultures
- Speak a common language; use definitions agreed on by the majority
- Have multidisciplinary panels create standardized practice guidelines

Nurses' working environment does not support safety

- Create staffing patterns that allow flexibility in responding to unanticipated changes in patient acuity and volume
- Return clinical nurse specialists to the bedside
- Redesign nurses' jobs in ways that make it harder to make errors
- Allow staff nurses the time to participate in safety initiatives
- Demonstrate improved patient outcomes related to safety initiatives
- Demonstrate the cost-effectiveness of safety

Voices of front-line nurses missing in decision making and systems design

- Provide a means for direct caregivers' input in reporting errors and identifying areas for change
- Identify and develop qualified nursing safety experts
- Appoint nurses to practice policy positions within institutions
- Put nurses on product design teams, and consult with nurses on new construction and redesign for safer environments
- Encourage comments from staff nurses
- Invite administrators and policymakers to observe bedside care

Difficulties in translating research into practice

- Involve front-line nurses in well-funded, high-quality, multidisciplinary, multisite studies
- Test research and pilot projects to see how well new approaches work before putting them into practice
- Use evidence-based policies and procedures in creating standards of practice
- Give all clinicians computer access to the most recent information
- Develop a compendium of databases related to safety and best practices

Policy not driven by evidence

- Disseminate research in ways that make it accessible to both clinicians and policymakers
- Require that evidence drive policy
- Have clinical experts review proposed policies before implementing them
- Increase representation of practicing clinical nurses, consumers, and professional nursing organizations on regulatory and policymaking boards

Insufficient funding for research

- Develop consumer leadership within the community to convince legislators of the need for appropriate research
- Designate a fixed cost per bed for government reimbursement that will be earmarked for research
- Obtain third-party reimbursement for projects identified in the literature as effective protocols
- Form research consortiums with nonclinical groups, such as insurance companies, drug manufacturers, consumer groups, and Fortune 500 companies
- Approach philanthropic organizations
- Create consulting practices for faculty and others with research expertise, in order to generate revenue for schools and healthcare agencies

TABLE 3. Priorities for Research On Safe Medication Administration
Symposium participants suggested questions researchers should ask.

How do safety climate, error reporting, and root cause analysis affect patient safety, quality of care, and both patient and clinician satisfaction?

- What factors and approaches support creating and maintaining blame-free environments?
- What are best practices for identifying errors?
- How do differing definitions of "error" among providers and administrators affect error reporting, root cause analysis, and patient safety?
- Can a taxonomy of errors improve error reporting?
- What is the relationship between nurse fatigue and error rate?
- What are the impacts of fatigue and extended work hours on clinicians' response to equipment alarms and on error reporting?
- What are the root causes of staff not following safe practices for medication administration?
- Does the dissemination of error reports influence subsequent error reporting and rates?

How can individuals and organizations integrate and sustain best practices to detect, reduce or eliminate, and mitigate the errors that occur?

- What teaching strategies are most effective in disseminating standards of practice in nursing schools and practice settings?
- Why aren't nurses fully engaged participants on multidisciplinary teams addressing patient safety? How does team participation affect medication errors?
- How do staffing ratios and staff stability (turnover rate) affect error rates?
- Do nurses change their practices when given brief, easy-to-read reports of research into errors and their prevention?
- What are cost-effective ways to manage the dissemination of knowledge, and what are new clinical approaches to reducing medication errors?
- How do 12-hour shifts affect patient safety, both favorably (continuity of care can reduce errors) and adversely (fatigue can increase errors)?
- How can feedback from pharmacists and nurses be used to prevent errors?
- What are effective methods of encouraging patients to ask questions about the medications they are being given?
- Can errors be reduced by training providers to question and discuss medication orders and dispensing procedures?
- What are effective approaches to changing the practices of physicians, nurses, and other providers in order to foster safer medication administration?
- What is the impact of "workarounds" (time-saving practices developed by nurses and others), particularly in relation to new technologies designed to improve safety?
- Does standardization of medication administration practices and equipment result in fewer errors?
- Do magnet hospitals have lower rates of medication errors?
- What tools do nurses need to prevent or mitigate medication errors?
- Does a nurse's level of experience or education correlate with her medication error rate?

- What kinds of errors are associated with "smart" IV pump systems and automated dispensing cabinets?
- What modifications in the work environment and organization best maximize the benefits and minimize the risks of new technologies?
- Can personal digital assistants make medication administration safer by making information available at the point of care?

What patient-centered approaches result in medication error reduction in ambulatory or outpatient and long-term care settings?

- What technologies can make medication administration safer in each of these care settings?
- What factors contribute to medication errors in each of these care settings?
- How are medication errors reported in each of these care settings, and how is information disseminated?

How do current practices and near misses make medication administration safer?

- What systems, environmental, and individual factors can eliminate or reduce errors in acute care settings?
- What are best practices to reduce interruptions of nurses during medication administration? How do such interruptions affect the frequency and type of medication errors?
- Does nurses' questioning of the accuracy and appropriateness of medication orders result in fewer errors? What factors contribute to nurses' questioning or not questioning medication orders?
- To what extent is safety increased by daily or regular monitoring of patients' compliance with medication regimens?
- What are the barriers to standardizing medication dosages, forms, and computerized entry of physicians' orders?
- What are the most common causes of near misses in medication administration?
- What factors in the work environment promote or inhibit nurses' reporting of near misses?

What is the impact of safer medication administration practices on healthcare costs and patient outcomes?

- How cost-effective are various technologies developed to promote safer medication administration, with regard to errors, patient compliance, hospitalization, and ED visits?
- How do best practices in medication administration affect costs?
- Does standardization of a reconciliation process and format across settings make medication administration safer?
- Can barcoding support medication reconciliation?
- What is the impact of educational programs for consumers about their roles in preventing errors?
- What is the financial impact of errors caught or prevented by nurses?

List of Publications and Products:

Original Publication of the Report of the Symposium

Jane H. Barnsteiner, K. G. Burke, & V.L. Rich. (Eds.) State of the Science on Safe Medication Administration. *American Journal of Nursing*, March, 2005, 105(Suppl) (3), S1- 55.

Jane H. Barnsteiner, K. G. Burke, & V.L. Rich. (Eds.) State of the Science on Safe Medication Administration. *Journal of Infusion Nursing*, March/April 2005, 28(Suppl) (2S), S2-55.

Available at www.NursingCenter.com/AJNmedsafety and www.AJNonline.com. As of April 2005, over 2,500 viewers had accessed the report.

Also, 195 readers received six continuing education contact hours for reading the report and taking the CE test.

Distribution list for March AJN Medication Safety supplement

All libraries at schools of nursing and hospitals	2,000
All hospital Directors of Nursing and Nurse Education	5,125
All hospital clinical specialists and NPs	6,863
All nursing home RNs	5,800
All community health RNs in CATs	3,394
All nurse education RNs	9,770
All ICU, ER, OR, and oncology RNs	31,290
Random select RNs	15,000
Subtotal for polybagging & mailing w/AJN	**79,242**

Mailing with Journal of Infusion Nursing 7,800 (INS membership)

Sponsor copies

Janet Harris 200 copies
103 Hickory Cove
Brandon, MS 39047

Chris Gorz 500 copies
Hospital Rylander
1050 East Business Center Drive
Mt. Prospect, IL 60056

John Bond — 500 copies
MEDEX
2231 Rutherford Road
Carlsbad, CA 92008

Erin Curtis — 500 copies
Alaris Products
Cardinal Health
10221 Wateridge Circle
San Diego, CA 92121-2772

Michael Marinello — 500 copies
BD
1 Becton Drive, MC 379
Franklin Lakes, NJ 07417

Reprint Publication of the *Executive Summary: The State of the Science on Safe Medication Administration*

American Journal of Nursing, March 2005, 105(3), 73-79.

Journal of Infusion Nursing, March/April, 2005 (8,000 subscribers)

Other Related Print Presentations

Hicks, R., & Wolf, Z. (in press) Nursing student medication errors. *Journal of Professional Nursing.*

Mason, D.J. Making it Safer (editorial), *American Journal of Nursing* (March 2005): 105(3), 11.

Paper Presentations

Jane Barnsteiner, Medication Reconciliation. Infusion Nurses Society, Fort Lauderdale, FL, May 2005

Jane Barnsteiner, Transforming Practice in Healthcare: Applying the Evidence
Penn Homecare, UPHS, Philadelphia, PA, May 2005
Beta Xi Chapter, STTI, University of Delaware April 2005
Reading Hospital School of Nursing, Reading, PA, April 2005
Visiting Nurse Service of New York City, NY, February 2005
Kaiser Permanente Southern California Nursing Research Conference, December 2004

Kathleen Burke, PhD, RN, Presented the conference summary and outcomes at the 2nd Annual National Patient Safety Conference: Evidence-Based Nursing Practice New Technology and the Prevention of Errors, November 18, 2004, sponsored by the University of Pennsylvania School of Nursing Center for Professional Development and the Hospital of the University of Pennsylvania.

Poster Presentations

Gina Pugliese, Victoria Rich, Beth Duthie, Diana Mason, "State of the Science on Safer Medication Administration" (poster). National Patient Safety Foundation's 7th Annual Congress, Orlando, FL, May 4-6, 2005.

Debbie Benvenuto and Mary Alexander, "State of the Science on Safer Medication Administration" (poster). Presented at the 2005 Infusion Nursing Society Annual Meeting, Ft Lauderdale, FL, May 2005.

Nursing School Curricula

We have received reports that the work of the symposium and the report is being used in numerous healthcare education programs.

Jane Barnsteiner and Kathy Burke (2005) distributed supplement to nursing students in the course N337/537 Foundation of Patient Safety at University of Pennsylvania School of Nursing.

Debra Thompson incorporated recommendations and state of science articles in undergraduate, graduate, and continuing education courses.

Public Media Reports

An audioconference with local and national reporters was organized by Emily Philquist, Assistant Vice-President, Makovsky and Co., and held March 24, 2005.

This teleconference was heard by Madge Kaplan, Senior Communications Strategist for the Institute for Healthcare Improvement. Other public and trade journalists who participate in the audioconference, viewed the press release online, or showed consistent interest in covering the topic included representatives from *Reuters, The New York Times, Time, USA Today, Parade, Newsweek, Self Magazine, Parenting Magazine, iParenting, AORN Newsletter, Pharmacy Purchasing & Products, Managed Care Outlook, HealthVision,* and *COR Health*.

- Public media coverage of the report and teleconference included the following:
- **Health News Digest, 28 March 2005**
- **Yahoo Finance, 24 March 2005**

- **MarketWatch, 24 March 2005**
- **Forbes, 24 March 2005**
- **Ft.com, 24 March 2005**
- **Hoover's Online, 24 March 2005**
- **Lycos, 24 March 2005**
- **Morningstar, 24 March 2005**
- **Finance.com, 24 March 2005**
- **VantageLink, 24 March 2005**
- **Connecticut Post Online Edition, 24 March 2005**
- **Delta Dental, 24 March 2005**
- **Fair Search, 24 March 2005**
- **FML Exchange, 24 March 2005**
- **Houston Medicine, 24 March 2005**
- **MCOL, 24 March 2005**
- **DentalPlans.com, 25 March 2005**
- **Biotech Business Week, 25 April 2005**
- **Managed Care Weekly Digest, 25 April 2005**
- **Health & Medicine Week, 25 April 2005**
- **Science Letter, 26 April 2005**
- **Biotech Week, 27 April 2005**
- **Obesity, Fitness & Wellness Week, 30 April 2005**
- **Medical Device Law, 1 May 2005**
- **Prevention Medicine, 1 May 2005**
- **Law & Health Weekly**, **1 May 2005**
- **Lab Law Weekly, 1 May 2005**
- **Elder Law Weekly, 1 May 2005**
- **Medscape, April 2005**

Other Reprint Distribution

Rodney Hicks, *AJN* supplement shared the with subscribers to MEDMARX of the US Pharmacopeia.

Debra Thompson, *AJN* supplement web link placed on Pittsburgh Regional Healthcare Initiative and the University of Pittsburgh School of Nursing websites.

Jane Barnsteiner, AJN supplement shared with Dr. Sandra Land, PAHO/WHO Regional Advisor.

100 copies of the report to the University of California at San Francisco, School of Nursing.

80 copies to Penn Care at Home.

100 copies to Macomb Community College, Nursing Program.

Other Dissemination

Erin Sparnon, ECRI, used conference findings to guide criteria for evaluation of general purpose medication administration pumps and increased used of nurses in evaluating use of PCA pumps.

Debra Thompson developed a Nurse Navigator Fellowship supported by the Jewish Healthcare Foundation to provide practicing nurses with skills in using measurement and outcome data at the point of care.

Appendix A. Participants at State of the Science Meeting on Safe Medication Administration

Name	Title/Job Association
Christine R. Agius, MSN, RN, RNC	Brigham & Women's Hospital Cardiology Service
Mary Alexander, BS, CRNI	Chief Executive Officer Infusion Nurses Society
Geri Amori, PhD, ARM, DFASHRM, CPHRM	Principal, Communicating Healthcare Past President, American Security for Health Care Risk Management Partners for Patient Safety, Advisory Board
Mitzi Baker	B.Braun
Jane Barnsteiner, PhD, RN, FAAN	Director of Nursing for Translational Research, Hospital of the University of Pennsylvania Professor of Pediatric Nursing University of Pennsylvania School of Nursing
Deborah Benvenuto, BS, CRNI	Education Manager Infusion Nurses Society
John Bond	Marketing Manager-Infusion Systems MEDEX, Inc.
Laura Brennan	Hospira Worldwide
Kathleen G. Burke, PhD, RN	Director, Center for Professional Development University of Pennsylvania School of Nursing
Sean Clarke, RN, PhD, CRNP, CS	Assistant Professor Associate Director, Center for Health Outcomes and Policy Research University of Pennsylvania School of Nursing
Hedy Cohen, MS, BSN	Vice President Institute for Safe Medication Practices
llene Corina	President, Pulse, New York Co-founder, PULSE, America
Mark Crawford, BA	Director, Concept Development Becton Dickinson and Company
Felicia Duffy, BSN, RN	Safety Evaluator FDA, Division of Medication Errors & Technical Support
Beth Duthie, RN, MS	Director of Nursing for Patient Care Systems New York University Hospital Center
Mary Foley, MS, RN	Associate Director, Center for Research Innovation in Patient Care University of California, San Francisco
Michael Gibney, MA, RN, CDE	Clinical Marketing Manager Becton Dickinson and Company
Janet Y. Harris, MSN, RN, CNAA	National Director of Professional Services Cardinal Health/Pyxis Products
Rodney Hicks, RN, MSN, MPA	Research Coordinator Center for the Advancement of Patient Safety U.S. Pharmacopeia
Amber Hogan	Manager, Worldwide Safety Advocacy Government Relations & Public Policy Becton Dickinson and Company
Ronda Hughes, PhD, MHS, RN	Senior Health Scientist Administrator & Senior Advisor on End-of-Life Care Center for Primary Care, Prevention, & Clinical Partnerships Agency for Healthcare Research and Quality
Rita Jew, PharmD	Pharmacy Clinical Coordinator, Clinical Specialist in Neonatology The Children's Hospital of Philadelphia
Amy Karch, RN, MS, ANP	Assistant Professor of Clinical Nursing University of Rochester Column Coordinator, AJN
Bruce A Kehr, MD	Chairman and Executive Officer InforMedix
Maureen Shawn Kennedy, MA, RN	News Director & Special Programs American Journal of Nursing
Kathy Ketchum, PhD, RN	Assistant Professor Southern Illinois University, Edwardsville

Name	Title/Job Association
Ellen Kinnealey, BSN, RN	Advanced Systems Specialist, Infusion Systems Specialist Massachusetts General Hospital Biomedical Engineering
Ross J. Koppel, PhD	Sociologist & P.I., Study of Medication Errors University of Pennsylvania
Laurie Lewis	Medical Writer & Editor
Diana J. Mason, PhD, RN, FAAN	Editor in Chief American Journal of Nursing
Kathleen McCauley, RN, PhD, CS, FAAN	President American Association of Critical Care Nurses
Pam Malloy, RN, MS, OCN	Director, Special Projects American Association of Colleges of Nursing
Janet Mullan, RN, BSN, DDS, CCRN	Clinical Communications Manager Baxter Healthcare Corporation
Michael Marinello	Manager, Global Public Relations Becton Dickinson and Company
Ginnette A. Pepper, PhD, RN, FAAN	Professor & Colby Endowed Chair in Gerontological Nursing Utah College of Nursing
Roxanne Perucca, MSN, CRNI	Past President Infusion Nurses Society
Debra Matsen Pettit, PhD, RN	Advanced Practice Nurse Research Specialist, Quality Assurance University of Iowa Hospitals & Clinics
Emily Pihlquist	Assistant Vice President Health Practice Makovsky& Company, Inc.
Gina Pugliese, RN, MS	Vice President Premier Safety Institute
Kathy Rapala, JD, RN	Director, Risk Management and Patient Safety Clarian Health Partners
Victoria L. Rich, PhD, RN	Chief Nursing Officer, Hospital of the University of Pennsylvania University of Pennsylvania Health System
Joyce Saxton	Professor of Nursing & Associate Chair Los Angles Harbor College
Patricia C. Seifert, MSN, RN, CNOR, CRNFA, FAAN	Chair, AORN Patient Safety Commission Cardiac Care Coordinator, Inova Fairfax Hospital
Kathleen Rice Simpson, PhD, RNC, FAAN	Perinatal Clinical Nurse Specialist St. John's Mercy Medical Center
Judy Smetzer, RN, BSN	Vice President Institute for Safe Medication Practice
Erin Sparnon, BSE	Project Engineer, Health Devices ECRI
Anne Swanson, MSN, RNC	Clinical Education Manager MEDEX, Inc.
Brian Swift, PharmD, MBA	Director Jefferson Home Infusion Jefferson Health System
Debra Thompson, MSN, RN	Pittsburgh Regional Healthcare Initiative Team Leader, Perfecting Patient Care System
Tim Vanderveen, PharmD, MS	Executive Clinical Director ALARIS Medical Systems, Inc.
Katherine Werner, MHA, RN, CRNI	Vice President, Professional Affairs National Home Infusion Association
Penny Williams, MS, CRNI	Clinical Communications Manager Baxter Healthcare
Marcia Wise	Becton Dickinson & Company
Zane Wolf, PhD, RN	Dean and Professor La Salle College School of Nursing

Appendix B Program

The American Journal of Nursing, The Children's Hospital of Philadelphia, The University of Pennsylvania School of Nursing Center for Professional Development, The Hospital of the University of Pennsylvania, and the Infusion Nurses Society

THE STATE OF THE SCIENCE ON SAFE MEDICATION ADMINISTRATION

July 16 and 17, 2004 - Philadelphia, PA

Symposium Agenda

Friday July 16, 2004

3:30-4:00pm **Registration**

4:00 **Welcome & Charge to the Group**
Diana Mason, PhD, RN, FAAN
Editor-in-Chief, American Journal of Nursing

Greetings
Afaf I Meleis, PhD, DrPS(hon), FAAN
Margaret Bond Simon Dean of Nursing
University of Pennsylvania

4:10-4:40 **State of the Science on Medication Safety: An Overview**
Victoria Rich, PhD, RN
Chief Nursing Officer, Hospital of the University of Pennsylvania

4:45-5:30 **A Personal Perspective**
Ilene Corina, President, Pulse
The National Patient Safety Foundation

5:30-7:00 **Networking reception**

Saturday July 17, 2004

8:00am **Breakfast**

8:30-9:00 **Welcome**
Diana Mason, PhD, RN, FAAN
Editor-in-Chief, American Journal of Nursing

Workgroup Orientation

Nancy Fritsche Eagan, MSW
People Potential

9:00-9:25 **Research Summary: Barriers to Safe Medication Administration**
Ronda Hughes, PhD, MHS, RN
Senior Health Scientist Administrator & Senior Advisor on End-of-Life Care
Center for Primary Care, Prevention, & Clinical Partnerships
Agency for Healthcare Research & Quality

Respondent *Beth Duthie, MS, RN*
Director of Nursing for Patient Care Systems
New York University Hospital Center, New York

9:25-9:50 **Barriers to Safe Administration of Infused Medications**
Christine R. Agius, MSN, RN, RNC
Women's Health Nurse Practitioner
Staff RN, Brigham & Women's Hospital Cardiology Service, Boston

Respondent *Kathy Rapala, JD, RN*
Director, Risk Management & Patient Safety
Clarian Health Partners

9:50-10:00 **Break**

10:00-10:25 **Medication Reconciliation Across Settings**
Jane Barnsteiner, PhD, RN, FAAN
Director of Nursing for Translational Research
Hospital of the University of Pennsylvania, Philadelphia

Respondent *Kathy M. Ketchum, PhD, RN*
Assistant Professor of Nursing
Southern Illinois University School of Nursing

10:30-11:30 **INS & Industry panel**

The Infusion Nurses Society will moderate a discussion with selected industry leaders surrounding IV medication errors; what current and new technology can/can't do; and system and human barriers to safer medication administration.

Moderator *Mary Alexander, CEO, Infusion Nurses Society*

Panelists *Mark Crawford, BA, Becton Dickinson & Co.*
Janet Mullan, RN, BSN, CCRN, DDS, Baxter Healthcare
Tim Vanderveen, PharmD, MS, ALARIS Medical System, Inc.

11:30 AM

Small Group Work

Participants will work in small groups to identify barriers and potential solutions to safer medication administration. Groups will then come together and, as a whole, develop a consensus on recommendations for the future.

11:30-12:30	Identify barriers to safe medication administration
12:30-1:15	**Lunch**
1:15-1:30	Small groups prioritize and vote on barriers
1:30-2:30	Small groups make recommendations to address top barriers
2:30-2:45	Small groups vote on recommendations
2:45-3:00	**Break**

Large Group Work

3:00-4:00	Reports from small groups w/discussion
4:00-5:00	Consensus
5:00-5:30	Dissemination & Evaluation
5:30	Adjourn