

Advanced Improvement Methods (AIM) Course Plan

Class 18

Purpose

To enhance knowledge and skills to apply the science of improvement to the design, implementation, and study of quality improvement initiatives in clinical settings, and to apply improvement theory and methods to the leadership of projects involving research, clinical care, and operations

Target Audience

Faculty who lead improvement projects and already know the basics of quality improvement and clinical epidemiology and/or research methods.

Instructional Methods

Lectures, discussions, case studies, application exercises, computer simulation, conference calls.

Pre-Work

Read and have working knowledge of information contained in the following text:

1. *The Improvement Guide: A Practical Approach to Enhancing Organizational Performance: (2nd Edition)* by Langley, Nolan, Nolan, Norman & Provost (**please purchase a copy of this book, if you do not already have one**).
2. Identify an improvement project to be completed through use of the theory and methods acquired in this course.
3. Obtain any necessary training in Microsoft Excel in order to reach a comfort level in working with intermediate spreadsheets, graphs, and charts.

NOTE: Each session will involve sharing progress on your project and students will report on project progress between sessions.

Additional Textbooks (these will be distributed before the first workshop)

The Health Care Data Guide, Learning from Data for Improvement: Lloyd Provost and Sandy Murray, Jossey-Bass, CA, 2011

Reading:

- Before Workshop 1 – Chapter 1 (overview of Improvement Guide, and Chapter 2)
- At Workshop 1: Chapters 4, 5
- Before Workshop 2: Chapters 2 and 3
- Before Workshop 3: Chapters 7, 8, 9, 10, 13 (case studies)
- Before Workshop 4: Chapters 12

Quality Improvement through Planned Experimentation: 3rd edition. Moen, Nolan, and Provost, McGraw-Hill, 2012.

Reading:

- At Workshop 1: Chapter 2
- Before Workshop 2: Chapters 3, 4, 5, and 10
- Before Workshop 3: Chapter 9

Supplemental Book List

(Each student will read and review at least one of the following)

Book Title	Author
<i>The Toyota Way: 14 Management Principles from the World's Greatest Manufacturer</i>	Jeffrey Liker, McGraw-Hill; 1 edition (December 17, 2003)
<i>Intrinsic Inclusion: Rebooting Your Biased Brain</i>	Janet B. Reid Ph.D., Vincent R. Brown
<i>The Fifth Discipline</i>	Peter Senge, Doubleday, NY, 1990
<i>The Economic Control of Quality of Manufactured Product</i>	Walter Shewhart, 1931, reprinted by ASQC, Milwaukee, WI 1980
<i>Diffusion of Innovation</i>	Everett Rogers, The Free Press, New York, 5 th Edition, 2003
<i>Thinking, Fast and Slow</i>	Daniel Kahneman, 2011
<i>The New Economics for Industry, Government, and Education</i>	W. Edwards Deming, MIT, 1993 (Second edition, 1995)
<i>The Inmates Are Running the Asylum: Why High Tech Products Drive Us Crazy and How to Restore the Sanity</i>	Alan Cooper, 1 st Edition
<i>The Visual Display of Quantitative Information</i>	Edward Tufte, Graphics Press, Cheshire, Connecticut, 1998

Articles (posted on Blackboard):

Prior to Workshop 1

- *The Ethics of Using Quality Improvement Methods in Health Care, Annals of Internal Medicine, Vol. 146, No. 9, pp. 666-673.*
- *Journal Venues for Safety and Quality Improvement Publications, Adolfo Pena, MD, Benjamin Taylor, MD, MPH, Pat Patrician, RN, PhD, Carlos A. Estrada, MD, MS, Society of General Internal Medicine Newsletter, Jan 2012.*
- *Study Designs for PDSA Quality Improvement Research, Jean Gayton Carroll, Quality Management in Health Care, Vol. 13, No. 1, pp. 17-32.*
- *Quality Improvement, Clinical Research, and Quality Improvement Research – Opportunities for Integration, Peter Margolis, MD, PhD, Lloyd P. Provost, MS, Pamela J. Schoettker, MS, Maria T. Britto, MD, MPH, Pediatric Clinics of North America, Vol. 56, No. 4 (August, 2009): pp. 831-841.*
- *The SQUIRE (Standards for Quality Improvement Reporting Excellence) Guidelines for Quality Improvement Reporting: Explanation and Elaboration, G. Ogrinc, S. E. Mooney, C. Estrada, T. Foster, D. Goldmann, L. W. Hall, M. M. Huizinga, S. K. Liu, P. Mills, J. Neily, W. Nelson, P. J.*

Pronovost, L. Provost, L. V. Rubenstein, T. Speroff, M. Splaine, R. Thomson, A. M. Tomolo and B. Watts, *Qual. Saf. Health Care* 2008; 17; i13-i32-DOI: 10.1136/qshc.2008.029058.

- *Controlling Variation in Health Care: A Consultation from Walter Shewhart*, Donald M. Berwick, MD, MPP, *Medical Care*, Vol. 29, No. 12, (December 1991): pp. 1212-1225.
- *Framework for Design and Evaluation of Complex Interventions to Improve Health*, Michelle Campbell, Ray Fitzpatrick, Andrew Haines, Ann Louise Kinmonth, Peter Sandercodk, David Spiegelhalter and Peter Tyrer, *BMJ*, 2000; 321; 694-696-DOI: 10.1136/bmj.321.7262.694.
- *Clinicians in Quality Improvement: A new Career Pathway in Academic Medicine*, Kaveh G. Shojania; Wendy Levinson, *JAMA* 2009; 301(7):766-768 (doi:10.1001/jama.2009.140).

Prior to Workshop 3

- *The One-Person Randomized Controlled Trial*, Jesper Olsson, et al, *Quality Management in Health Care* Volume 14, Issue 4, Oct-Dec, 2005.
- *N-of-1 Trials: A New Future?*, Larson Eric, J. *Gen Intern med* 25(9), p891-2, July 2010
- *Using N-of-1 trials to improve patient management and safe costs*, Shuffham, P.A. et al, *J. Gen. Intern Med*, 2010
- *Improving the Reliability of Health Care*, Thomas Nolan, PhD, Roger Resar, MD, Carol Haraden, PhD, Frances A. Griffin, RRT, MPA, Institute for Healthcare Improvement Innovation Series 2004; www.ihl.org.

Prior to Workshop 4

- *A Framework for Spread: From Local Improvements to System-Wide Change*. Massoud MR, Nielsen GA, Nolan K, Nolan T, Schall MW, Sevin C. IHI Innovation Series white paper. Cambridge, Massachusetts: Institute for Healthcare Improvement; 2006. Available on www.IHI.org
- *Execution of Strategic Improvement Initiatives to Produce System-Level Results*. Nolan, TW. IHI Innovation Series white paper. Cambridge, Massachusetts, Institute for Healthcare Improvement; 2007 (available at www.IHI.org)
- Planned Experimentation for Airline Boarding handout

Workshop 1

September 7 & 8, 2023

- Overview of the AIM Program
- The Science of Improvement
- Using the Model for Improvement
- Project Overviews
- Understanding Variation and Shewhart Control Charts
- Planned Experimentation
- Assignments

Mini-Workshop 1

October 6, 2023

- Agenda customized to the class need.
- Assignments
- Project Presentations
- Book Review

Mini-Workshop 2

November 1, 2023

- Agenda customized to the class need.
- Translation of Planned Experiment to Projects
- Project Presentations
- Book Reviews

Workshop 2

Nov. 30 & Dec. 1, 2023

- One-Factor Experiments
- Project Presentations
- Computer Simulation
- Factorial Experiments
- Fractional Factorial Designs
- Advanced Experimental Designs
- Assignments

Mini-Workshop 3

January 4, 2024

- Agenda customized to the class need.
- Translation of Planned Experiment to Projects
- Project Presentations
- Book Reviews

Mini-Workshop 4

February 6, 2024

- Agenda customized to the class need.
- Translation of Planned Experiment to Projects
- Project Presentations
- Book Reviews

Workshop 3

March 7 & 8, 2024

- Applications of Planned Experimentation
- Project Presentations
- Conjoint Analysis
- Control Chart Selection
- Book Reviews
- Control Chart Applications
- Change Concepts – reliability
- Assignments

Mini-Workshop 5

April 5, 2024

- Agenda customized to the class need.
- Assignments
- Project Presentations
- Book Reviews

Workshop 4

May 9 & 10, 2024

- Advanced Control Charts
- Project Presentations
- Spread of Improvements
- Airline Loading Case Study
- Book Reviews
- Leadership of Improvement
- Closing