

## About CQPI

The Center for Quality and Productivity Improvement (CQPI) is an interdisciplinary research center at the University of Wisconsin–Madison's College of Engineering.

Our work applies the principles of human factors and systems engineering to improve the quality and safety of work processes, working life, and health care.

Specific areas of research include:

- Health care and patient safety;
- Computer and information security; and
- Job design and safety.

## How CQPI Works

CQPI is a true interdisciplinary center. Our faculty represent a variety of fields, including medicine, nursing, pharmacy, business, and engineering.



Through hands-on “action research” projects, we work with diverse groups throughout UW–Madison, the U.S., and the world.

We invite scientists and organizations interested in human factors and systems engineering research to contact us and discuss potential collaborations.

## History

Sparked by the international quality revolution, CQPI was founded in 1985 by Professor George E.P. Box and the late Professor William G. Hunter. Since then, we have led the development of new techniques for improving the quality of products and processes.

## Recognition

CQPI is a worldwide leader in human factors research applied to health care. Our widely published faculty have received many national and international awards.

Professor Pascale Carayon is a Fellow of the Human Factors & Ergonomics Society and the International Ergonomics Association. She also received the University of Wisconsin–Madison Ragnar E. Onstad Award for Service to Society.

Professor Ben-Tzion Karsh and then-doctoral student Richard Holden were awarded the Best Paper in Human Factors by the International Medical Informatics Association in 2008.

## Funding Support

CQPI's research support comes from such organizations as the National Science Foundation, the Agency for Healthcare Research and Quality, the National Institutes of Health, the National Institute for Occupational Safety and Health, the Robert Wood Johnson Foundation, and the State of Wisconsin.

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# CQPI



CENTER FOR QUALITY &  
PRODUCTIVITY IMPROVEMENT

•  
*Creating, integrating, and transferring knowledge to  
improve quality, safety, and performance.*



## DIRECTOR

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Procter & Gamble Bascom Professor in Total Quality  
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## Research Activities

### Health Care: Systems Engineering Initiative for Patient Safety

The Systems Engineering Initiative for Patient Safety (SEIPS), housed within CQPI, is a unique multi-disciplinary initiative that applies human factors and systems engineering to the patient safety challenge.

SEIPS was one of 18 patient safety developmental centers originally funded by the Agency for Healthcare Research and Quality (AHRQ), and was the only such center located in a college of engineering.

Examples of SEIPS research address:

- Computerized provider order entry implementation (see example at right);
- Workload of ICU nurses and physicians;
- Safe medication administration; and
- Health information technology implementation and workflow design

### Computer and Information Security

Computer and information security risks often are the result of how people interact with technology, not technology itself.

Research at CQPI investigates the human factors that affect computer information security, and ultimately aims to create more effective security solutions.

### Job Design and Safety

Improving the quality and safety of the work environment can result in greater employee satisfaction, less turnover, and increased productivity.

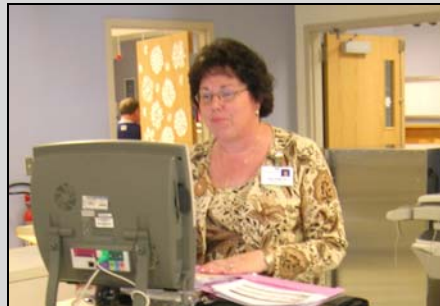
Research at CQPI focuses on the job, organizational, and human factors that influence workforce retention and help create safe, healthy, productive workplaces.

### >> SEIPS Research in Action

One SEIPS project partnered CQPI with Geisinger Health System in Pennsylvania to study the value, design, implementation, and impact of computerized provider order entry (CPOE) in ICUs.

CQPI's contributions to the project included:

1. **Results measurement.** CQPI created reporting tools to measure the safety, quality, and efficiency of CPOE implementation—tools that Geisinger still uses for ongoing monitoring.
2. **Prospective risk assessment.** CQPI taught Geisinger staff how to analyze workflows for potential risks—and improvements—before committing to changes. Geisinger redesigned many of its processes as a result.
3. **Usability training.** CQPI conducted on-site training sessions on usability methodologies. This enabled Geisinger to perform their own usability testing, which in turn influenced many configuration decisions throughout their CPOE implementation.



*"This has been an enormously productive collaboration—one that contributed to the success of this implementation as well as others. CQPI didn't just give us a set of tools. They really changed the way we think."*

*—James Walker, MD, Chief Health Information Officer,  
Geisinger Health System*

Learn more at: [http://cqpi.engr.wisc.edu/cpoe\\_home](http://cqpi.engr.wisc.edu/cpoe_home)

## Educational Opportunities

The Center draws on its expertise, research findings, and the scientific literature to develop and/or support educational programs on patient safety issues.

### Human Factors Engineering and Patient Safety Short Course

[http://cqpi.engr.wisc.edu/shortcourse\\_home](http://cqpi.engr.wisc.edu/shortcourse_home)

This course provides an understanding of human factors and systems engineering and how these approaches can improve performance, prevent harm when error occurs, help systems recover from error, and mitigate further harm. Audiences include clinicians, engineers, patient safety officers, chief information officers, and other professionals.



### Graduate Certificate in Patient Safety

<http://www.engr.wisc.edu/ie/current/patientsafety/>

The 15-credit Graduate Certificate in Patient Safety helps train scientists and practitioners to effectively reduce the likelihood of preventable patient harm.

Students learn how systems engineering and systems design can be used to identify, analyze, and solve patient safety research and applied problems.