Evidence-Based Quality Improvement: The First Six Years of a Hospital-Based Health Technology Assessment Center

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Introduction

There is a need to strengthen the quality and safety of patient care by bringing evidence to bear on clinical practice and, in the process, reduce unnecessary variations in care and maximize the value of each dollar invested in patient care. Health Technology Assessment (HTA), a systematic interdisciplinary process based on scientific evidence, can inform policy and practice. HTA centers in Canada and Europe primarily work on national health questions, but HTA centers can also support hospital-level decisions. Our academic medical center created a Center for Evidence-based Practice (CEP) in 2006 for the specific purpose of gathering scientific evidence and applying it to decisions regarding clinical practice, formularies, and purchases.

CEP Information Products

- Evidence Reviews: Systematic reviews of published clinical studies on a well-defined topic, with meta-analyses of data when appropriate. These are similar to evidence reports published by other comparative effectiveness organizations. Local utilization and cost data are incorporated so reports are tailored to our medical center’s needs.
- Evidence Advisories: Concise reports typically based on limited searches of guidelines and systematic reviews. An advisory can often answer a question more efficiently than a full evidence review.
- Evidence Inventories: Summaries of the quantity and type of published evidence for a particular topic. Inventories offer a snapshot of the research landscape and can help determine the need for a full review.
- Clinical Practice Guidelines: Developed alongside task force of key stakeholders. An Evidence Review is completed as part of the guideline.

CEP Organization and Staffing

The center is led by a Director and a Co-Director who report to the Chief Medical Officer (CMO) of the health system. Both are physicians with training in clinical epidemiology and have regular clinical duties in UPHS hospitals. Three full-time analysts produce the majority of the center’s evidence reports. CEP is guided by an advisory board, and is one of several departments reporting to the CMO that are dedicated to improving quality and safety.

CEP Faculty and Staff:

- Director and Co-Director
- 3 full-time Analysts
- 1 full-time Admin. Asst.
- Biomedical Librarian
- Health Economist
- Biostatistician
- Physician and Nurse liaisons to UPHS hospitals and ambulatory care sites

- Total FTE: 5.5
- Annual budget: ~$750,000

CEP Clients Served

Throughout the six-year evolution of our center, the mix of clients has expanded significantly.

Academic years 2006 – 2009

- More than half of the reports were commissioned by hospital and health system CMOS or Purchasing Committees
- Most clients were from the UPHS flagship hospital

Academic years 2009–2012

- Major growth in requests from Clinical Departments, P&T Committees and Administrative Offices
- Individual Clinical Departments now represent the most frequent consumer of CEP reports
- Clients are from all health system hospitals and many outpatient practices
- New opportunities emerging with the introduction of computerized clinical decision support systems across the health system
- Our work is not limited to UPHS.
- CEP has also undertaken projects on a contract basis for outside agencies such as the Healthcare Infection Control Practices Advisory Committee of the CDC, Association of American Medical Colleges, and the Children’s Hospital of Philadelphia.

Sample CEP report topics

- Process of care
  - Guidelines for admission to long-term acute care hospitals (A)
  - One to one nursing care for patient safety (R)
  - Telemedicine in follow-up of chemotherapy patients (R)
  - Best practices for preventing aspiration pneumonia (A)
- Selection and initiation of specialized nutritional therapy (G)
- Prevention of catheter-related bloodstream infections in home infusion patients (R)
- Management of acute lower GI bleeding (G)
- Management of retroperitoneal bleeding in coronary cath pts (R)
- Management of the second stage of labor (A)
- Symptom-triggered vs. fixed schedule treatment in alcohol withdrawal syndrome (R)
- Cognitive behavioral therapy for insomnia (R)
- Comparative effectiveness of devices for detection of respiratory distress in post-op patients (R)
- Thermometers for pediatric use (A)
- Tunned vs. non-tunned catheters for acute hemodialysis (R)
- Antimicrobial sutures for preventing surgical site infections (R)
- Portable intermittent compression devices to prevent VTE (A)
- ECMO for patients with influenza-related respiratory failure (R)
- Indications for robotic-assisted surgery (I)
- Mucositis and sodium bicarbonate for the prevention of contrast-induced nephropathy (R)
- Hyperthermic intraperitoneal chemotherapy (A)
- Gastrointestinal bleeding risks with celecoxib (R)
- Safety and effectiveness of rHBMP-2 for spinal fusion (R)
- Celecoxib dosing for pregnant patients (A)
- Recombinant factor VIIa for reduced bleeding (G)
- Diagnostic Test
  - Tests for early diagnosis of sepsis (R)
  - Brief screening tests for depression in ED patients (R)
  - Ultrasound for diagnosis of DVT in asymptomatic patients (G)
- Drug
  - Physician compensation and medical professionalism (R)
- Risk factors for hospital readmission (R)
- Defining preventable readmission (Special Report)
- Defining preventable mortality (Special Report)
- Examining the evidence in HCRN practice guidelines (Special Report)
- Other
  - Evaluation of evidence-based HTA centers within an academic medical center can:
    - enhance the quality and safety of patient care
    - serve as a mechanism to educate clinicians
    - support a culture of evidence-based decision-making

Conclusion/Implications

An evidence-based HTA center within an academic medical center can:

- Details of all projects are entered into a single database that serves both administrative and research functions.
- Impact outcomes include:
  - presentations to decision-makers
  - incorporation of reports into computerized clinical decision support systems
  - publication in HTA database
  - publication in peer-reviewed journals

More than 180 reports have been completed to date, with a median length of time of 4 weeks from project opening to circulation of the first draft of the report.