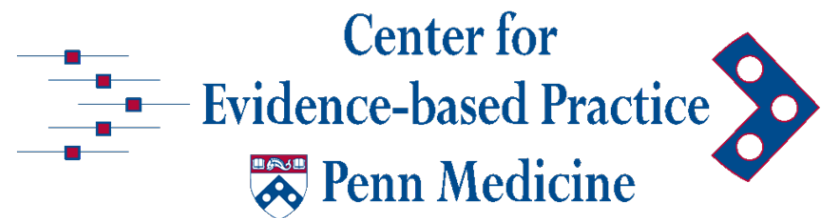


Integrating Guidelines into Local Clinical Practice and Policy Using Hospital-based HTA

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Guidelines International Network

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G-I-N Conference
Berlin 2012

Disclosure of Interests (last 3 years)

Matthew D. Mitchell

Employment: Center for Evidence-based Practice,
University of Pennsylvania Health System

I certify that, to the best of my knowledge, no other aspects of my current personal or professional situation might reasonably be expected to affect significantly my views on the subject on which I am presenting.

◆ Penn Medicine ◆ Blueprint for Quality and Patient Safety

Penn Medicine will eliminate preventable deaths and preventable 30-day readmissions by July 1, 2014



Imperatives	Priority Actions
Accountability For Perfect Care	<ul style="list-style-type: none"> ◆ “Always” events - strive to provide perfect care ◆ Implement clear lines of accountability that span inpatient and ambulatory environments
Patient And Family Centered Care	<ul style="list-style-type: none"> ◆ Provide consistent and thorough communication with families & patient regarding plan of care ◆ Increase patient and family involvement in UPHS forums that address issues relevant to quality, safety and service excellence ◆ Enhance patient-provider partnership through better exchange of information
Transitions In Care/Coordination Of Care	<ul style="list-style-type: none"> ◆ Ensure all UBCLs implement redesign care processes related to: <ul style="list-style-type: none"> – Risk stratification – Interdisciplinary rounding – Discharge hand-off to outpatient care
Reducing Unnecessary Variations In Care	<ul style="list-style-type: none"> ◆ Eliminate variations in care processes where evidence exists ◆ Balance conformity in practice with needs for personalized care ◆ Set goals that are positive and proactive
Provider Engagement, Leadership, And Advocacy	<ul style="list-style-type: none"> ◆ Strengthen organizational capacity and capability for continuous improvement ◆ Increase involvement of house staff in quality, safety and service excellence efforts

Chlorhexidine to Reduce Surgical Site Infections



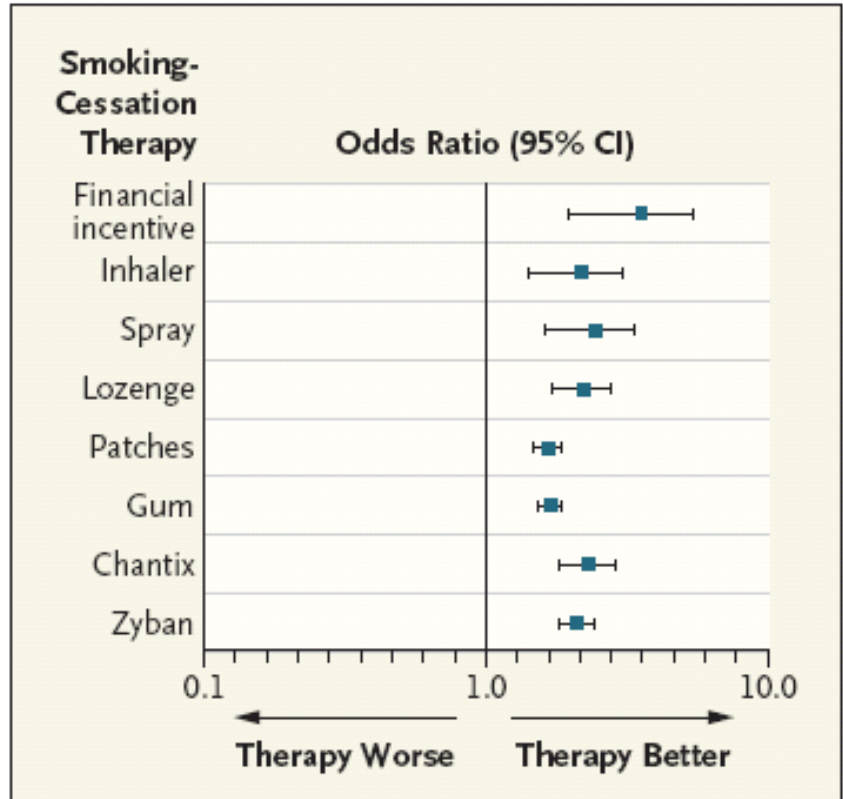
Chlorhexidine:
\$13.00 per patient



Betadine:
\$0.60 per patient

Comparative Effectiveness Research

- ◆ Comparison of two approaches to care
- ◆ Comparison based on “effectiveness” (i.e. how well an approach works in real world settings)



Odds Ratios of 12 Months of Continuous Abstinence from Smoking for Groups Using Smoking-Cessation Therapy, as Compared with Control Groups.

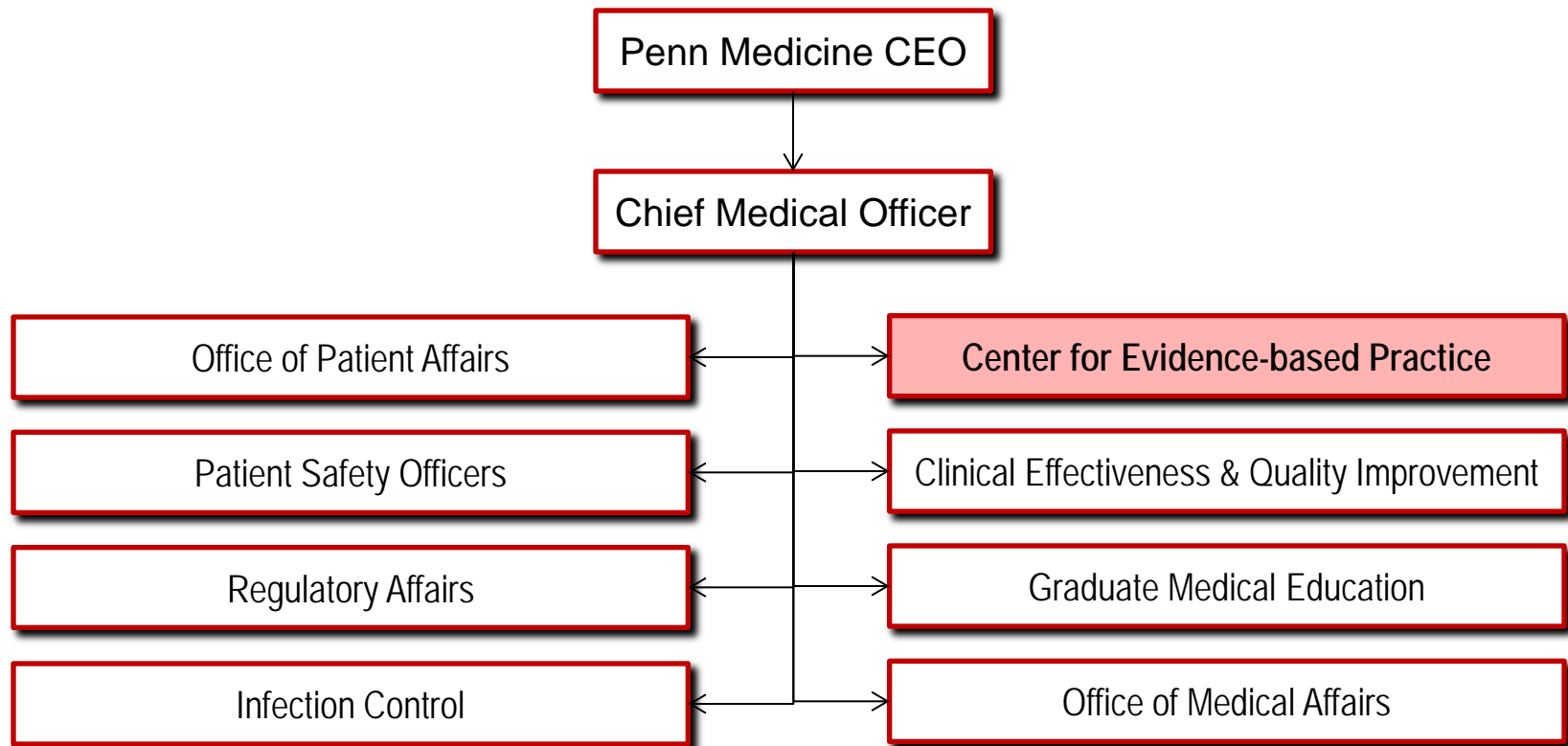
N ENGL J MED 361;4 NEJM.ORG JULY 23, 2009



Center for Evidence-based Practice: Mission and Approach

- **Mission: to support the quality, safety, and value of patient care at UPHS through evidence-based practice.**
- Perform reviews of the medical literature to inform clinical practice, policy, purchasing and formulary decisions.
- Help translate evidence into practice at UPHS through computerized clinical decision support (CDS).
- Offer education in evidence-based decision making to trainees, staff, and faculty within and outside of Penn

Office of CMO Organizational Chart





CEP Staffing

◆ Director & Co-director

- Physicians in hospital practice
- Expertise in epidemiology

◆ Physician and nurse liaisons

- Represent all three hospitals plus outpatient practices
- Identify topics
- Disseminate results

◆ 5.5 FTE

◆ Three research analysts

- Full-time at CEP
- Diverse backgrounds
- Doctoral training

◆ Clinical liaison librarians

◆ Consulting partners

- Biostatistician
- Health economist



CEP Evidence Report Products

◆ Evidence Review

- Systematic review and analysis of primary literature

◆ Evidence Advisory

- Summary of evidence, mostly from secondary sources

◆ Evidence Inventory

- Annotated literature search: quantity and nature of evidence

◆ Standalone guideline projects and other custom reports



CEP Evidence in Practice

- ◆ **Medical practice guidelines**
- ◆ **Nursing practice guidelines**
- ◆ **Purchasing decisions**
- ◆ **Formulary decisions**
- ◆ **Prioritizing practice improvement programs**
- ◆ **Health system policy**



Evidence-based Guideline Process

- ◆ Identify the issue of concern (clinical department or task force)
- ◆ Define the research question (requestor and CEP)
- ◆ Systematic review (CEP)
- ◆ Decide on practice standard (requestor)
- ◆ Disseminate and implement findings (requestor, CEP, CDS, clinical staff)
- ◆ Monitor the impact (requestor and CEP)

Evidence Review

RISK FACTORS FOR HOSPITAL READMISSION

An Evidence Review from the Penn Medicine Center for Evidence-based Practice
February 2011

Authors: Brian Leas, MS, MA; Craig A. Umscheid, MD, MSCE

Keywords: hospital readmission; risk factors; predictive models

EVIDENCE SUMMARY

1. Systematic reviews and primary studies of 30-day readmission rates have identified several elements of healthcare resource utilization and patient characteristics that are predictive of risk for rehospitalization.
2. Utilization factors associated with readmission include length of stay, number of prior admissions, and previous emergency department visits. Studies have not consistently identified threshold values for these indicators.
3. Patient characteristics associated with readmission include comorbidity, living alone, discharged to home, and payor. Evidence is mixed regarding other factors, including age and gender.
4. Several algorithms for predicting readmission risk have been successfully designed and tested. One of these prediction rules relied solely on an electronic medical record to populate its model.
5. No studies were identified that successfully used electronic medical records to both identify patients at higher risk for readmission and support an intervention to manage high risk patients.



Evidence Review Findings: Predictors of Readmissions

◆ Patient characteristics

- Comorbidities, living alone, discharged to home, and payor
- Evidence is mixed regarding other factors, including age and gender

◆ Healthcare resource utilization

- Length of stay, number of prior admissions, previous ED visits
- Studies have not consistently identified threshold values for these predictors

Implementation: Readmission Risk Flag

Eclipsys Gateway | My Applications | Acute Care

My Applications ▶ Acute Care ▶ Patient List

File Registration View GoTo Actions Preferences Tools

KAROLINA HAZEM 16069387 / 53023219 48y (27-Oct-1963) Male
A Garin, Matthew Thomas CONTACT OTHER BMI: 34.1

Allergies: cefepime (84725)

Patient List Orders Results Patient Info Documents Clinical Summary Flowsheets MedView Med Summary CDS

Current List: Silver 11 32 Visit(s) Save Selected Patients...

Patient Name	Assigned Location	Provider	Visit Reason	Visit Status	Covering Provider	Covering Nurse	VTE Prophylaxis Status	Readmit Risk	New Orders	To Verify	To Sign
S11-1106-A		Garin, Matthew Thomas	LOWER GASTROINTESTI...	ADM	Garin, Matthew Thom...		✓	■			✓
S11-1113-A		Hecht, Todd E	DECOMPENSATED CHF...	ADM	Hecht, Todd E (MD)		✓	■			✓
S11-1104-A		Miller, Jean C	ABDOMINAL PAIN1091	ADM	Miller, Jean C (MD)		✓				✓
S11-1101-A		Miller, Jean C	ALTERED MENTAL STAT...	ADM	Miller, Jean C (MD)		✓				✓
S11-1116-A		Hecht, Todd E	CHEST PAIN/DIARRHEA...	ADM	Hecht, Todd E (MD)		✓	■			✓
S11-1118-A		Reinert, Kristy L	CHEST PAIN1027	ADM	Reinert, Kristy L (MD)		✓				✓
S11-1104-B		Garin, Matthew Thomas	HYPERTENSICE EMERGE...	ADM	Garin, Matthew Thom...		✓				✓
S11-1124-A		Miller, Jean C	UTI , CELLULITIS 0980	ADM	Miller, Jean C (MD)		✓				✓
S11-1108-B		Hecht, Todd E	COPD EXACERBATION1...	ADM	Hecht, Todd E (MD)		✓				✓
S11-1119-A		Crooks, Gary W	PYELONEPHRITIS1082	ADM	Marandola, Elizabeth...		✓				✓
S11-1129-B		Garin, Matthew Thomas	HYPERGLYCEMIA	ADM	Garin, Matthew Thom...		✓				✓
S11-1123-B		Reinert, Kristy L	DEHYDRATION1118	ADM	Reinert, Kristy L (MD)		✓				✓
S11-1105-A		Reinert, Kristy L	RENAL FAILURE PULMO...	ADM	Reinert, Kristy L (MD)		✓				✓
S11-1109-A		Reinert, Kristy L	FEVER	ADM	Reinert, Kristy L (MD)		✓				✓
S11-1120-A		Giantonio, Bruce J	ESOPHAGEAL CANCER	ADM	Turowski, Jason B (MD)		✓				✓
S11-1129-A		Reinert, Kristy L	ATRIAL TACHYCARDIA0...	ADM	Reinert, Kristy L (MD)		✓				✓
S11-1117-A		Reinert, Kristy L	MENINGITIS,STREP PHA...	ADM	Reinert, Kristy L (MD)		✓				✓
S11-1103-B		Garin, Matthew Thomas	ETOH CHEST PAIN1040	ADM	Garin, Matthew Thom...		✓				✓
S11-1110-A		Hoteit, Maarouf A	HEPATIC ENCEPHALOP...	ADM	Mecoli, Christopher (...)		✓				✓
S11-1112-A		Miller, Jean C	SYNCOPE ,CVA, HTN0960	ADM	Miller, Jean C (MD)		✓				✓
S11-1115-A		Garin, Matthew Thomas	MENTAL STATUS CHAN...	ADM	Garin, Matthew Thom...		✓	■			✓
S11-1105-B		Hecht, Todd E	CONGESTIVE HEART FAI...	ADM	Hecht, Todd E (MD)		✓				✓
S11-1128-B		Hecht, Todd E	ANEMIA1054	ADM	Hecht, Todd E (MD)		✓				✓
S11-1125-A		Hecht, Todd E	DECONDITIONING0985	ADM	Hecht, Todd E (MD)		✓				✓
S11-1102-B		Dagli, Mandeep S	PRIMARY LIVER CA RIM...	ADM			✓				✓
S11-1121-A		Gabriel, Courtney A	LYMPHOMAS	ADM	Lee, Lindsay M (CRNP)		✓	■			✓
S11-1130-A		Barton, Todd D	ABDOMINAL PAIN, HIV...	ADM	Whittaker, Stacey-Ann...		✓	■			✓



Sample CEP CDS Interventions

- ◆ **Venous thromboembolism prophylaxis**
- ◆ **Foley catheter removal alert**
- ◆ **Readmission risk flag**
- ◆ **Albumin order set**
- ◆ **Early warning system for sepsis**
- ◆ **Delirium management order set**
- ◆ **Red blood cell transfusion order set**



CEP in 2013

- ◆ **More than 200 reports in our first seven years**
- ◆ **Nearly 40 reports integrated into CDS system**
- ◆ **Local practice guidelines based on CEP reviews**
- ◆ **AHRQ-designated EPC, in partnership with ECRI**
- ◆ **Major guideline projects for CDC**



Clients Served

Requester of Reports	N=220 reports
Clinical Departments	23%
Chief Medical Officers	21%
Quality/Safety Committees	15%
Purchasing Committees	14%
Pharmacy and Therapeutics (P & T) Committees	9%
Administrative Departments	7%
External Organizations	6%
Nursing	5%



Report Topics

◆ Drug	22%
◆ Device	24%
◆ Diagnostic test	6%
◆ Process of care	45%
◆ Policies, other topics	3%



Report topics

◆ Drugs

- Celecoxib versus other NSAIDs for post-op pain control
- Intravenous acetaminophen

◆ **Devices**

◆ **Diagnostic tests**

◆ **Processes of care**

◆ **Policy, miscellaneous topics**

Report topics

- ◆ **Drugs**
- ◆ **Devices**
 - Robot-assisted surgery in OB/GYN
 - Antimicrobial sutures
- ◆ **Diagnostic tests**
- ◆ **Processes of care**
- ◆ **Policy, miscellaneous topics**



Report topics

- ◆ **Drugs**
- ◆ **Devices**
- ◆ **Diagnostic tests**
 - Screening tests for risk of aspiration
 - Early warning systems for pregnant patients
- ◆ **Processes of care**
- ◆ **Policy, miscellaneous topics**



Report topics

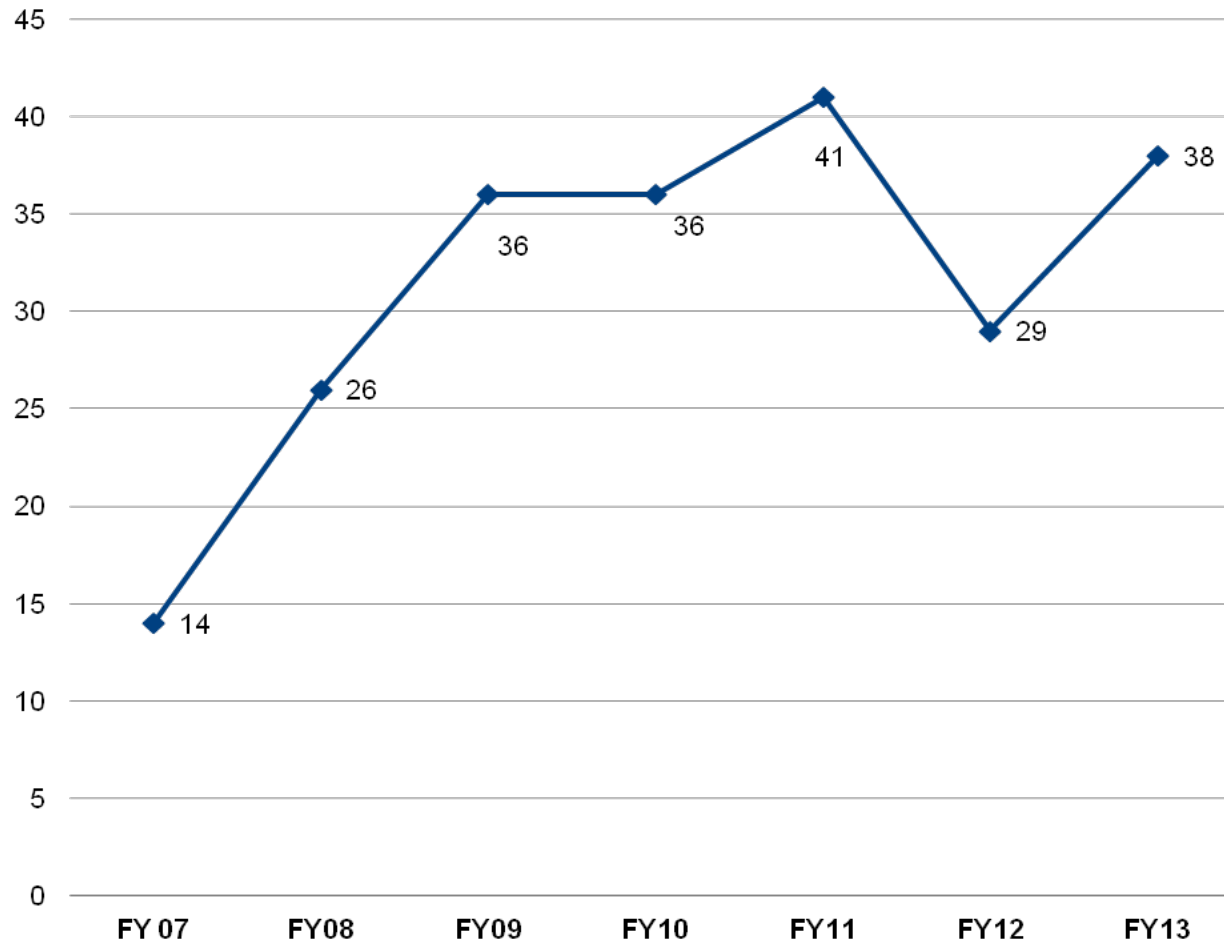
- ◆ **Drugs**
- ◆ **Devices**
- ◆ **Diagnostic tests**
- ◆ **Processes of care**
 - Routine replacement of peripheral IVs versus replacement only “as needed”
 - Post-discharge telephone calls to reduce readmissions
 - Thresholds for blood transfusion
 - Discharge criteria for infants with bronchiolitis
 - Fixed-schedule treatment for alcohol withdrawal
- ◆ **Policy, miscellaneous topics**



Report topics

- ◆ **Drugs**
- ◆ **Devices**
- ◆ **Diagnostic tests**
- ◆ **Processes of care**
- ◆ **Policy, miscellaneous topics**
 - Cognitive and procedural skills of aging physicians
 - Frequently-overused technologies
 - Credentialing of physicians performing robotic surgery
 - Medical care costs associated with smoking

CEP Reports by Academic Year





Rapid turnaround time

- ◆ **Evidence advisory: 2 to 4 weeks**
- ◆ **Evidence review: 3 to 8 weeks**

- ◆ **Maintaining sound systematic review and analysis methods**



Rapid turnaround time

- ◆ **Narrowly focused topics**
- ◆ **Use best available evidence**
 - Summarize and update existing guidelines and systematic reviews when possible
- ◆ **Single analyst does study screening and data abstraction**
- ◆ **Background and discussion sections are brief**

Localized HTA

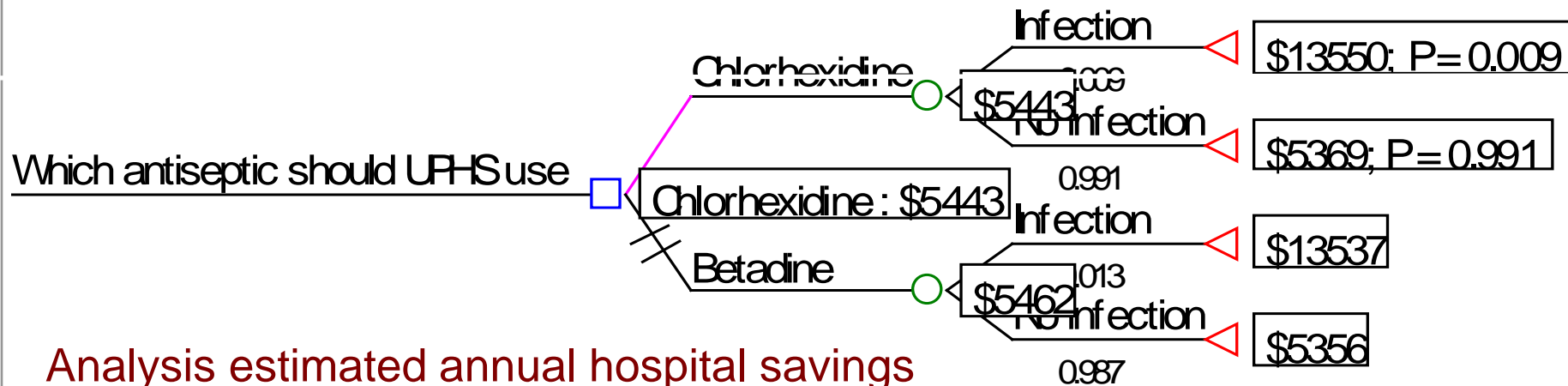
- ◆ **Addressing topics of local concern**
- ◆ **Compare local practice to published guidelines**
- ◆ **Use local utilization and cost data**

Mitchell et al. *Int J Health Tech Assessment*. 2010; 26(3): 294-300.

HUP Surgical Site Infection Data – FY07

Type of Cases	Number	Cost per case
Infected	285	\$13,537
Uninfected	21,584	\$5,356

Decision Analysis - Assume 25% reduction



Analysis estimated annual hospital savings of \$415,511 with chlorhexidine

Lee I et al. *Infection Control and Hospital Epidemiology*. 2010; 31(12): 1219-29.

Reviewing Guidelines

◆ CEP “Trustworthy Guideline” Appraisal Tool

- Based on IOM domains
- Designed for clinicians to understand and use
- See our poster at this meeting

Domain	Sample guideline 1	Sample guideline 2	Sample guideline 3	Sample guideline 4
1. Transparency	A	C	A	A
2. Conflict of interest	A	C	A	NR
3. Development group	A	B	A	A
4. Systematic review	A	B	A	A
5. Supporting evidence	A	B	A	A
6. Recommendations	A	B	A	A
7. External review	B	NR	A	A
8. Currency and updates	A	B	C	C



Dissemination of Reports: UPHS

- ◆ **CEP intranet site**
- ◆ **Clinical decision support**
- ◆ **In-person presentations to clients and stakeholders**
- ◆ **PROVE (Penn Reviews of Value & Effectiveness)
e-mails to clinical staff**



Dissemination of Reports: Worldwide

- ◆ **CEP internet site**
- ◆ **National Guideline Clearinghouse**
- ◆ **Health Technology Assessment database (searchable via Cochrane Library)**
- ◆ **Peer-reviewed publications**



Education Activities

- ◆ **Evidence-based medicine series for med students**
- ◆ **Participation in Clinical Investigator Toolbox and Healthcare Systems Leadership resident programs**
- ◆ **Systematic review and meta-analysis course for residents and fellows (in MSCE program)**
- ◆ **Critical appraisal course for fellows and junior faculty**
- ◆ **Local and national conferences and workshops**



Conclusions

- ◆ **Evidence-based decision making improves the quality, safety, and cost-effectiveness of care.**
- ◆ **Despite this, infrastructure to support such decision making in U.S. hospital & health care systems is not common.**
- ◆ **Penn Medicine's Center for Evidence Based Practice (CEP) is one of only a few academically-based centers in the US with internal and external funding to support such work.**
- ◆ **CEP is enthusiastic about collaborating in operations, research and education to improve the quality, safety and value of care thru a systems approach to evidence-based practice.**



Thank you!

Learn more online, and see a catalog of our reports

www.uphs.upenn.edu/cep

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