

Translating Research into Practice: Preventing Device-Related Infections

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IOM's Final Recommendation:

Create safety programs within
healthcare organizations

Patient Safety Enhancement Program



Research Component

- Provide the necessary scientific rigor to guide decision making
- Use epidemiological tools to synthesize & evaluate methods for reducing adverse events
- Built from intramural and extramural support

Research Areas

- Infectious complications
 - Vascular catheter-related infection
 - Catheter-related UTI
- Non-Infectious complications
 - Venous thromboembolism
- Medication misadventures
 - Wrong drug
- Discontinuity issues
 - Outpatient-Inpatient-Outpatient
 - During hospitalization

Systematic Approach to Each Complication

- Review epidemiology and burden-of-illness
- Delineate risk factors
- Evaluate preventive methods: primary data collection, meta-analysis, economic analysis
- Implement and evaluate

Patient Safety Enhancement Program



Operational Component: “Bench to Bedside”

- Implementing the interventions suggested by the research component
- Research findings will be “translated” into improved clinical care using the resources already in place at the UMHS
 - ▶ UMHS Patient Safety Committee
 - ▶ Continuous Quality Improvement
 - ▶ Office of Clinical Affairs

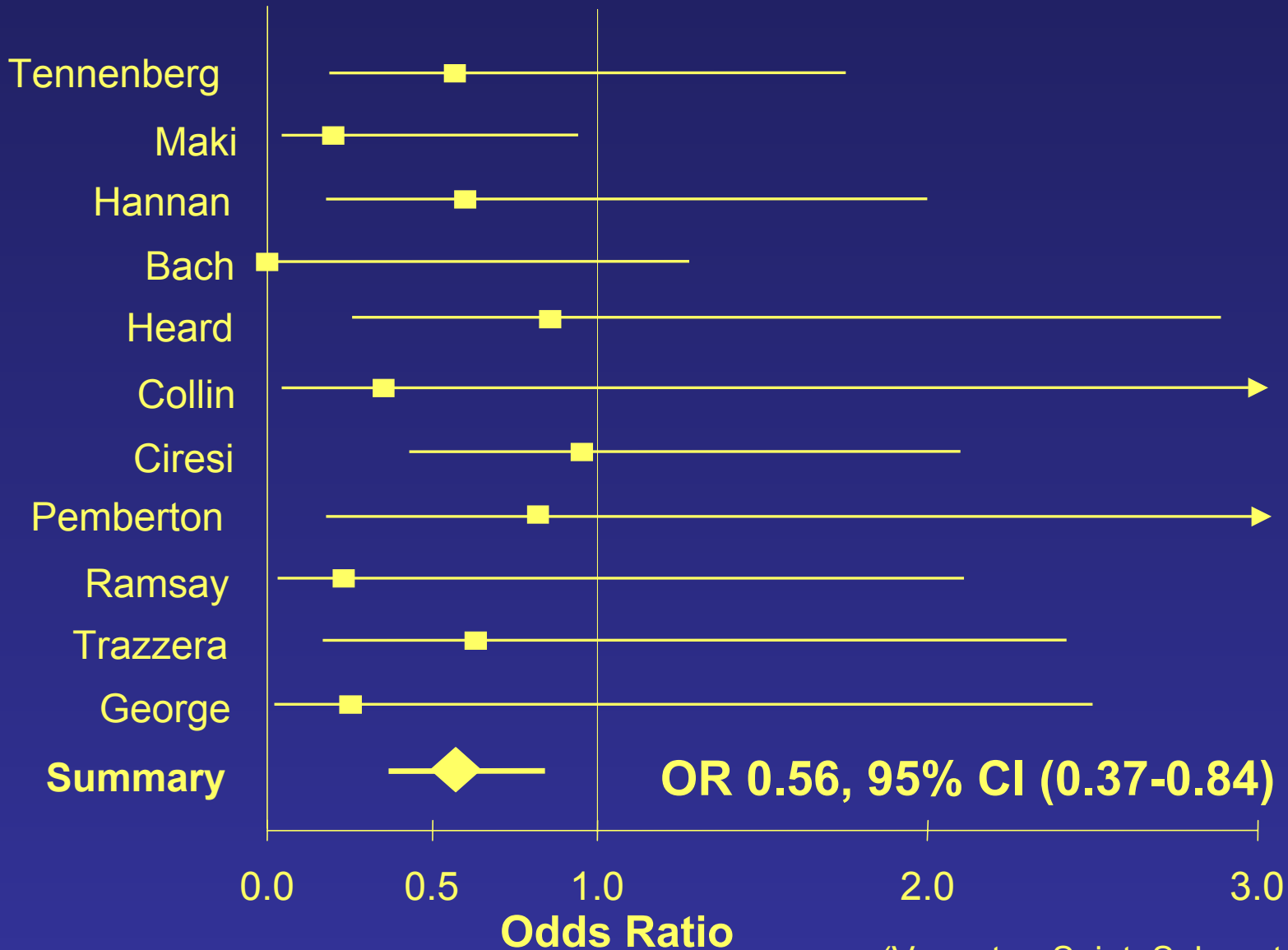
Catheter-related Bloodstream Infection (CR-BSI): Background

- Vascular catheters are the leading cause of nosocomial bacteremia; most due to central venous catheters
- 150,000 cases of CR-BSI annually in U.S.
- 4% to 25% attributable mortality rate
- Annual cost between \$300 million and \$2 billion

Antimicrobial Central Venous Catheters

- Different types of antimicrobial-coated catheters: antibiotic vs antiseptic
- Chlorhexidine/silver sulfadiazine catheters: best studied
- Efficacy of antiseptic catheters shown in meta-analysis of randomized trials

Meta-analysis of Antiseptic Catheters: CR-BSI



(Veenstra, Saint, Saha, et al. JAMA 1999)

Economic Evaluation of Antiseptic Catheters

- Is the benefit worth the extra \$25 per catheter?
- Decision model comparing antiseptic with standard catheters in patients at high-risk for CR-BSI (e.g. critically ill) using central lines for 2 to 10 days

Results:

Antiseptic catheters saves money & lives

	Costs	CR-BSI	Death
Antiseptic Catheter	\$336	3.0%	0.45%
Standard Catheter	\$532	5.2%	0.78%
Difference	-\$196	-2.2%	-0.33%

(Veenstra, Saint, Sullivan. JAMA 1999)

Antiseptic Catheters: Implications

- Antiseptic catheters recommended in critically ill patients requiring central venous access for 2 to 10 days
- Should UM use these catheters?
- If so, how can we implement this new intervention?

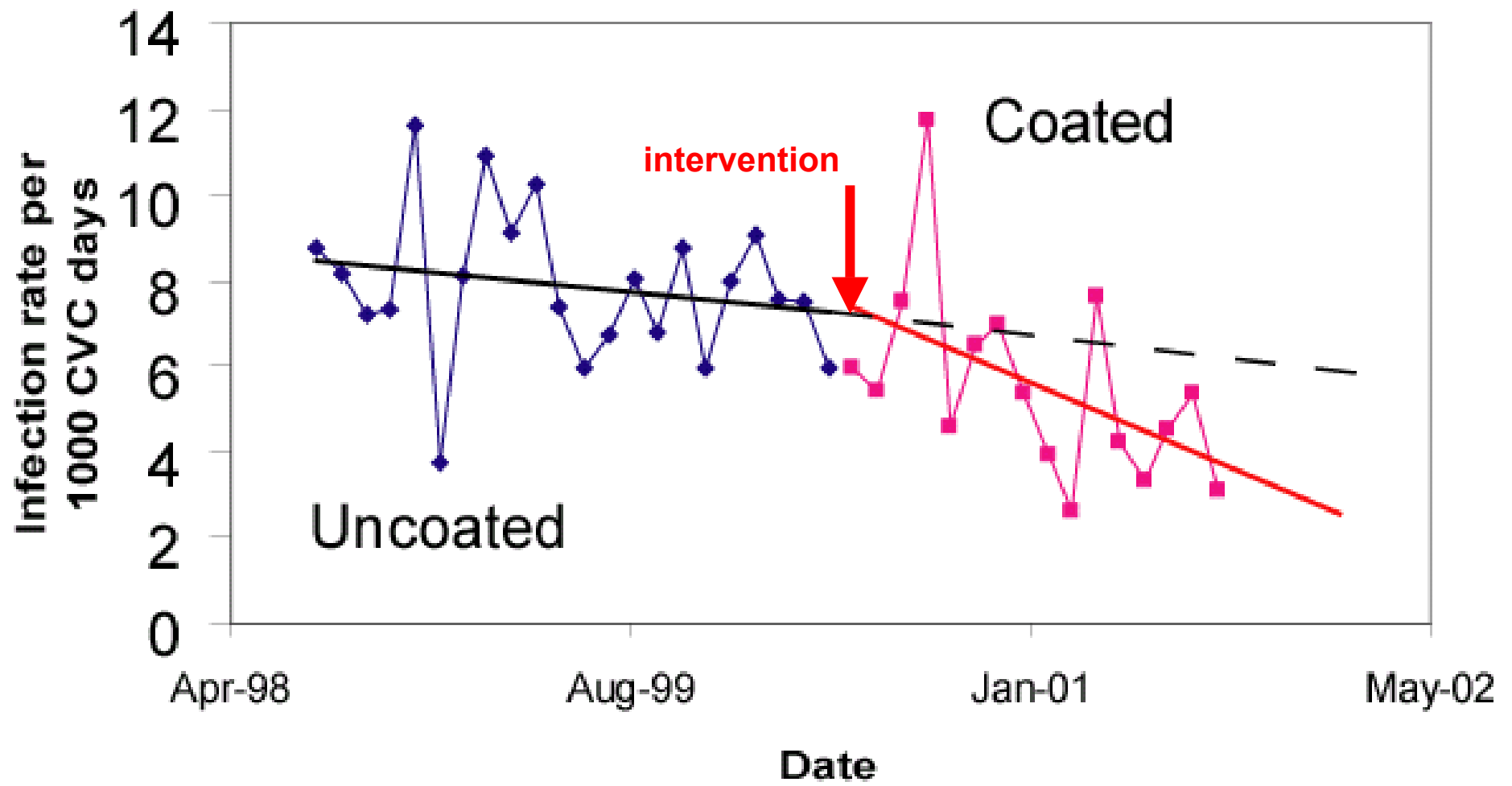
Antiseptic Catheters: Effecting Change

- Shared data with key decision-makers: head of Infection Control, head of Critical Care Committee, Chief of Staff
- Discuss the costs and benefits with other key individuals in the organization: EVPMA, Nursing Chief and QI Chief

Antiseptic Catheters: Effecting Change

- Deciding to pilot the intervention in ICUs
- Evaluated the intervention and disseminated the findings
- Clinical and economic outcomes important

CRBSI Rates



“Back of the Envelope” Economic Analysis

Annual Cost Savings for the University of Michigan

Base Case	\$ 110,000
Best Case Scenario	\$ 423,000
Worst Case Scenario	\$ 41,250

Translating Central Venous Catheter-related Infection Prevention Recommendations into Practice

- Patient safety: “Trojan Horse”
- Buy-in is critical
- Overcoming the “silo mentality” can be done
- The data will set you free



Future Directions

- U-M's Patient Safety Enhancement Program
 - Build the infrastructure to approach the prevention of *other* common adverse events
 - Evaluate why evidence-based interventions are used in some hospitals but not in others (translation failure)

Future Direction: AHRQ/VA HSR&D “Translating Research Into Practice” (TRIP) Grant

- Dissemination of new medical information is complex and often faulty
- We hope to elucidate factors that optimize the chance for successful implementation of research findings within nosocomial infection prevention

Future Directions: AHRQ/VA HSR&D “Translating Research Into Practice” (TRIP) Grant

- A survey of decision-makers at VA and non-VA hospitals nationwide to understand which methods are used to prevent common nosocomial infections
- Written questionnaire followed by semi-structured phone interviews and site visits

AHRQ/VA HSR&D “Translating Research Into Practice” (TRIP) Grant

Potential reasons for not using recommended interventions:

- 1) Not being aware of the research findings
- 2) Not believing the research findings
- 3) The particular nosocomial infection is not a problem at their hospital
- 4) Being unable to use the intervention because the long-term savings flow into an account that is different from the one funding the short-term costs (i.e., different silos)

AHRQ/VA HSR&D “Translating Research Into Practice” (TRIP) Grant

What factors allowed for the implementation of new interventions:

- Were different cost accounting schemes used that ameliorated the “silo” mentality?
- Did decision-makers receive financial bonuses for decreasing the risk of nosocomial infection?

Goal: How to better translate research into practice