A Human Factors Approach to Reducing Barriers to Hand Hygiene
Anjum Chagpar, University of Toronto
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Session Goals

• To Define Human Factors as it applies to healthcare
• To Describe the Human Factors approach taken to address poor Hand Hygiene compliance
• To Highlight aspects of the Healthcare Human Factors toolkit and how it may be used to address barriers to Hand Hygiene
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Preventable Patient Deaths

44,000 - 98,000
Americans/year
IOM 1999

Preventable Patients Deaths

9,000 - 24,000
Canadians/year
Baker, Norton, 2004

Calculation
mg/4days -> ml/hr
mL/hour
Dose per day = Total Dose /4
= 1312.5 mg/day
= 54.6875 mg/hour
Hourly Rate = Dose per hour/concentration
= 28.8 ml/hour
= 1.2 ml/hour

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Culpability Model

Traditional Approaches to Failability
- inattention
- blame
- forgetfulness
- moral weakness

Human Limitations
- attention
- fatigue
- change blindness
- memory
- cognitive biases

Framing Effect

Confirmation Bias
Tendency to seek out or interpret information that confirms your preconception

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In Group Bias
Tendency to believe that those that are like us are good (competent, moral, etc.)

Omission Bias
Tendency to do nothing rather than do something that may potentially be harmful

Posterior Probability Error
Tendency to believe that outcomes will be the same as they always have been

Swiss Cheese Model of Healthcare
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How do we design error tolerant systems?

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People Propose  
Science Studies  
Technology Conforms  

2001 Don Norman The Invisible Computer

Hierarchy of Effectiveness

Forcing Functions
Automation & Computerization
Simplification & Standardization
Checklists & Double Checks
Policies & Procedures
Training & Education

5% -10%

Patients admitted into hospitals who contract at least on Hospital Acquired Infection

WHO 2005

90,000

Americans that die each year from HAI

CDC 2005

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20%-30%
HCWs that are colonized with MRSA at any one time
Bayne, 1996

<40%
Rate of Hand Hygiene Compliance
WHO, 2005

Factors Influencing Hand Hygiene Performance

Apply a HUMAN FACTORS approach to addressing low hand hygiene compliance

Identify barriers and enablers in order to create supportive environments and processes

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Field Study
- Shadowing, In-context Interviews, Focus Groups
- Diverse Clinical Units
- TGH MSICU, TGH ED, TWH Family Medicine Clinic, Bridgepoint Health Rehab Unit
- Diverse Staff
  - Nurses, physicians, allied health, personal support workers, housekeepers

Look-alike products

Sink at the Back of Room

No Sink in Room

Equipment Blocks Hand Hygiene Products

Difficulty Performing Hand Hygiene While Carrying Things

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Multiple Glove Sizes Not Available

ED Nurse Workflow Overview – Pick up Glove

Soap Dispenser

ED Acute Quad - Before & After

Family Medicine Clinic – Before

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Family Medicine Clinic – After

ED Acute Quad – Before

ED Acute Quad – After

Sanitizer Dispenser

Refilling Process

Rehab Quad - Before

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Rehab Quad - After

Toolkit Development

• 4 tools:
  • Initial Environment Assessment Tool
  • Product Selection Tool
  • Maintenance Process Tool
  • Ongoing Assessment Tool

Toolkit Content Reviewers

Bridgpoint Health Centre
Glenrose Rehabilitation Hospital
Hospital for Sick Children
Mount Sinai Hospital
Orillia Soldiers’ Memorial Hospital
Seaview Manor Continuing Care Facility
University Health Network
Vancouver Coastal Health
Vancouver Island Health Authority
Waterloo Wellington Infection Control Network

Toolkit Interaction Design

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Toolkit Examples

• Human factors rationale and tips for each recommendation
• Sticker placement activity

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