


# A Human Factors Approach to Reducing Barriers to Hand Hygiene

## Anjum Chagpar, University of Toronto

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 Centre for Global eHealth Innovation  
University Health Network

**A Human Factors Approach to Reducing Barriers to Hand Hygiene**

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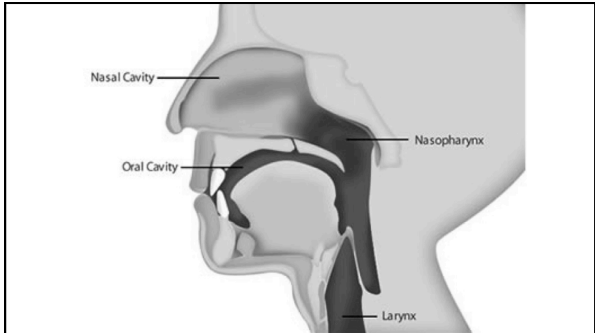
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### Session Goals

- 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

5-Fluorouracil 5,250 mg (at 4,000 mg/m<sup>2</sup>) Intravenous once continuous over 4 days  
 Cis\_5FU\_Part2-HN-CC - Cycle - 1, Day - 1  
 Substitutions Allowed

Administration Instructions:  
 Continuous infusion via ambulatory infusion pump  
 (Baseline regimen dose = 1000 mg/m<sup>2</sup>/day = 4000 mg/m<sup>2</sup>/4 days)

*5477.26ml*

Calculation  
 mg/4days -> ml/hr  
 mL/hour

Dose per day = Total Dose /4  
 = 5250 mg/4  
 =1312.5 mg/day

~~Dose per hour = Dose per day/24  
 =1312.5/24  
 =54.6875 mg/hour~~

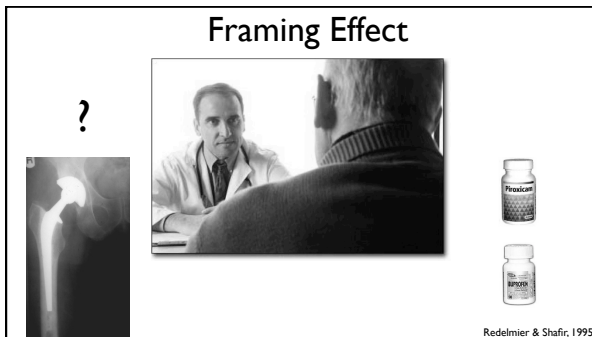
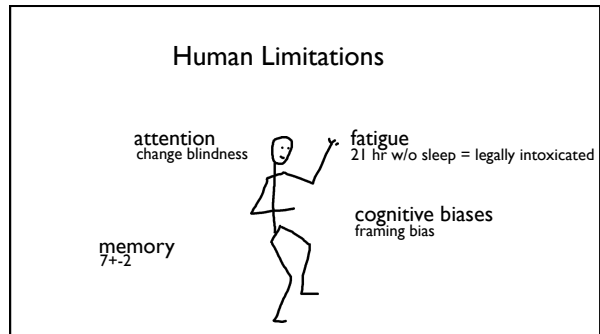
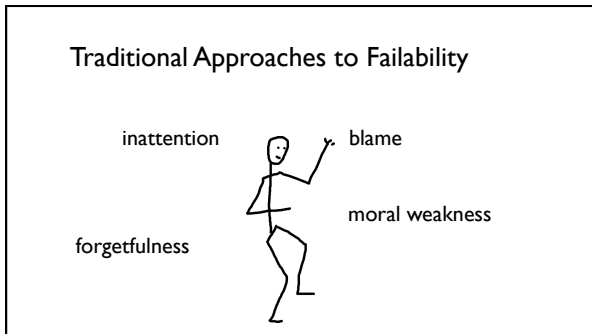
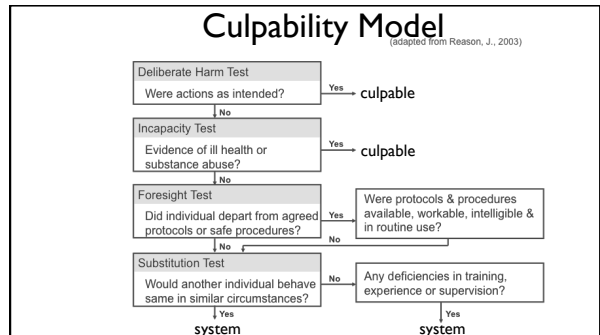
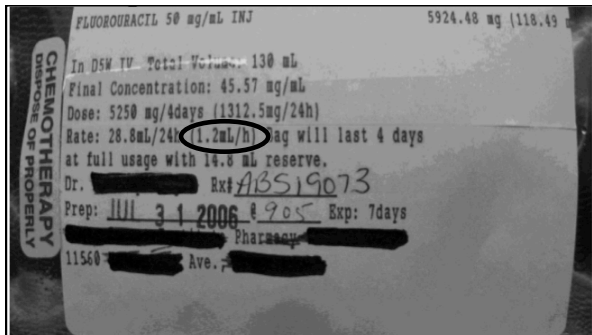
Hourly Rate = Dose per hour/concentration  
 =54.6875/45.57  
 =1.2 ml/hour

**28.8 ml/hour**

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### Confirmation Bias

Tendency to seek out or interpret information that confirms your preconception

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**In Group Bias**

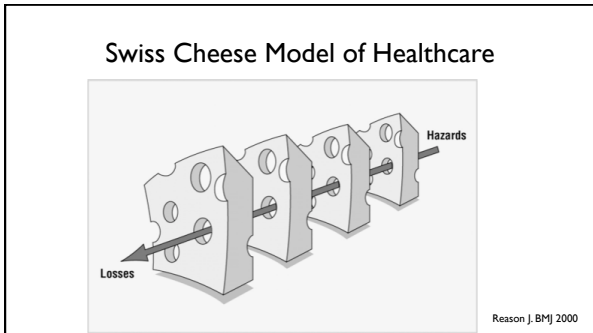
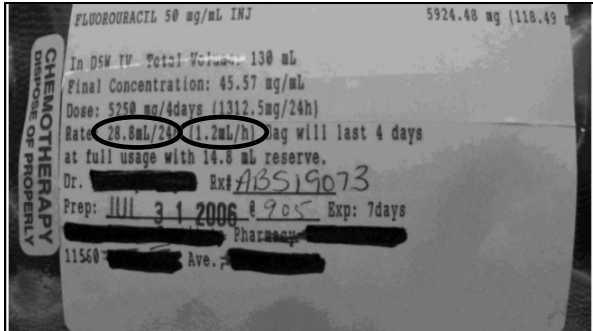
Tendency to believe that those that are like us are good (competent, moral, etc.)

**Omission Bias**

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

**Posterior Probability Error**

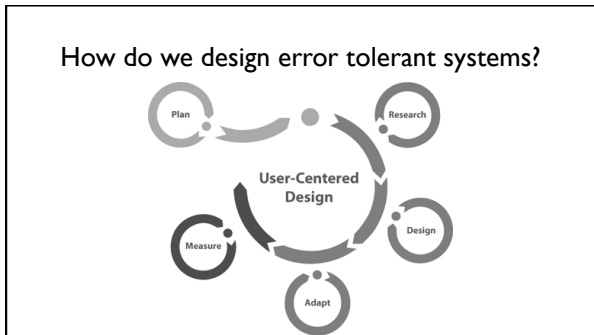
Tendency to believe that outcomes will be the same as they always have been



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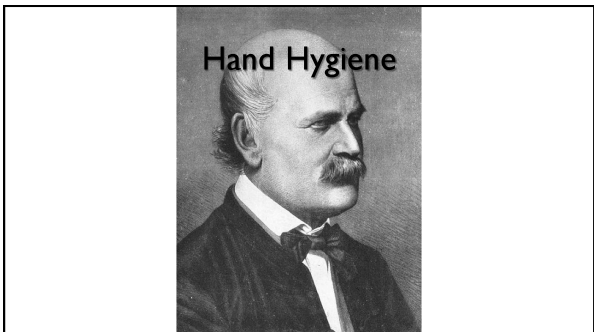
Hierarchy of Effectiveness

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

ISMP

People Propose  
Science Studies  
Technology Conforms

2001 Don Norman The Invisible Computer



**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

Boyce, 1996

**<40%**

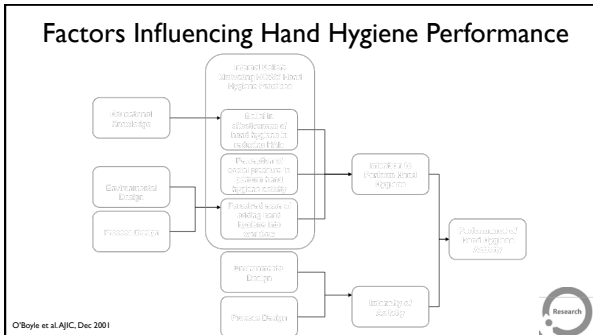
Rate of Hand Hygiene Compliance

WHO, 2005



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**




**Inconsistent placement**

**Sink at the Back of Room**



**No Sink in Room**



**Equipment Blocks Hand Hygiene Products**



**Difficulty Performing Hand Hygiene While Carrying Things**

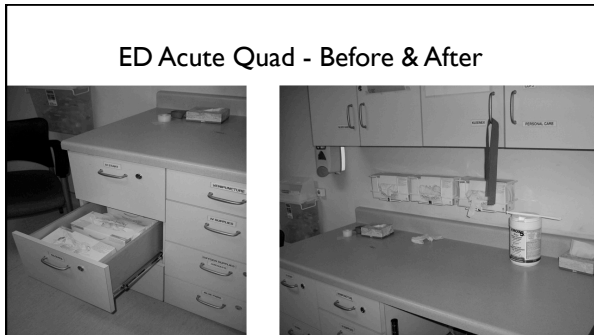
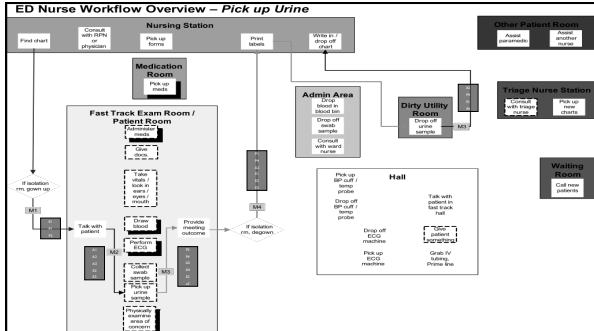
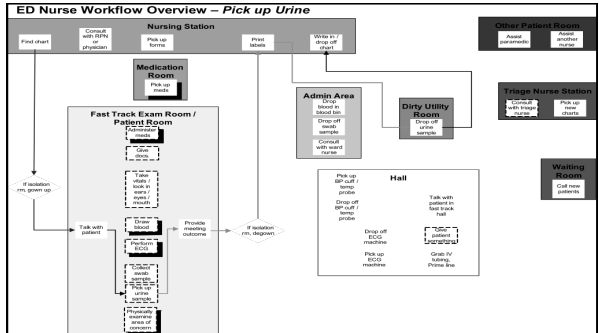


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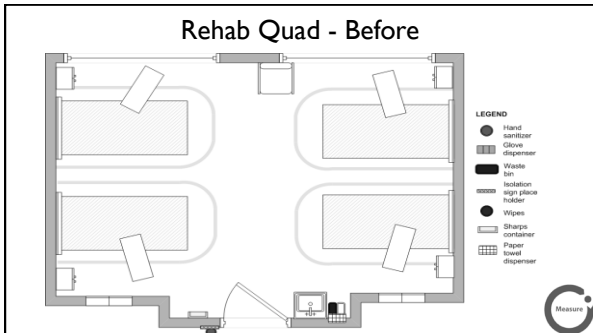
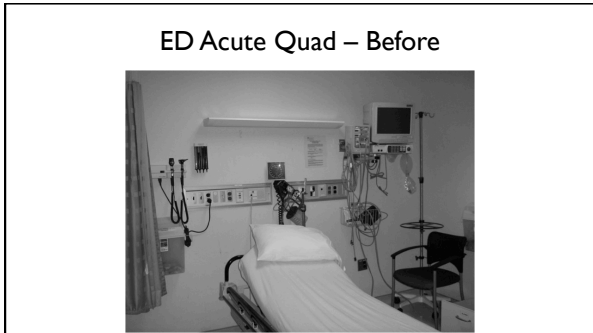
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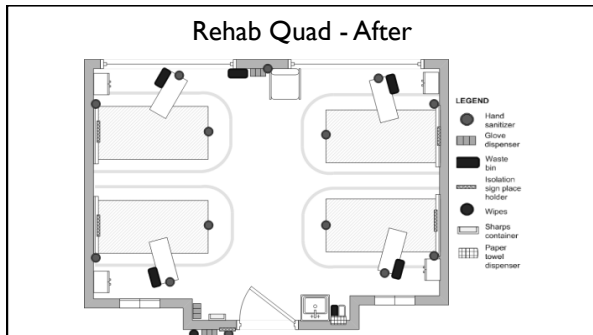
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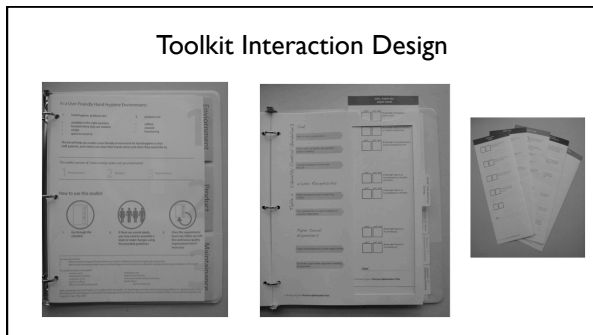
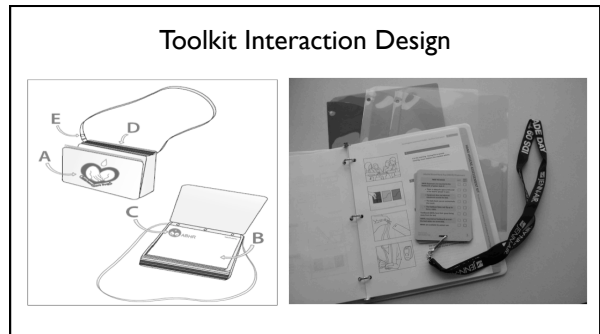


### Toolkit Development

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

### Toolkit Content Reviewers

Bridgepoint 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 Launch

- <http://www.saferhealthcarenow.ca/EN/HandHygiene/Pages/HumanFactorsToolKit.aspx>

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## Toolkit Examples

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



## Acknowledgements

- Canadian Patient Safety Institute
- Staff of TGH MSICU, TGH ED, TWH Family Medicine Clinic, Bridgepoint Health 5W Rehabilitation Unit
- Toolkit IPAC Content Reviewers
- OCAD Design of Flow Spaces class



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