Preventing Healthcare-Associated Infection; a Worldwide Strategy

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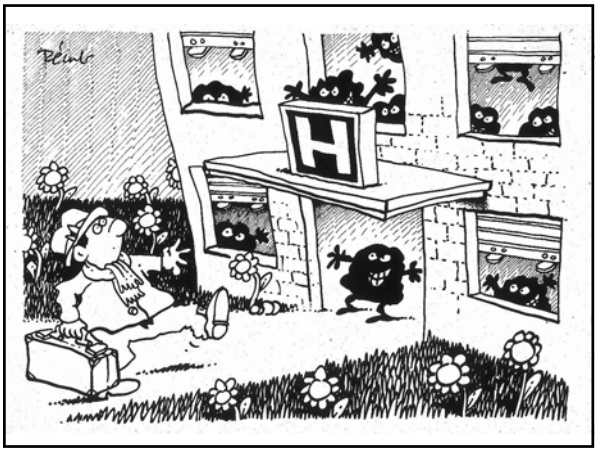

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Nosocomial infections

Every year in the US,
preventable hospital-acquired diseases,
including nosocomial infections,
are responsible for 44'000-98'000 deaths

Kohn Institute of Medicine 1999

In UK, nosocomial infections may be responsible for > 5'000 deaths/year

BMJ 2.12.2000

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Nosocomial infections

Every year in the US,
preventable hospital-acquired di es,
includi
98 000 deaths

US$17 to US$29 billion / year

Kohn Institute of Medicine 1999

In UK, nosocomial
responsible for > 5'000 deaths/year

at least £ 1 billion / year

BMJ 2.12.2000

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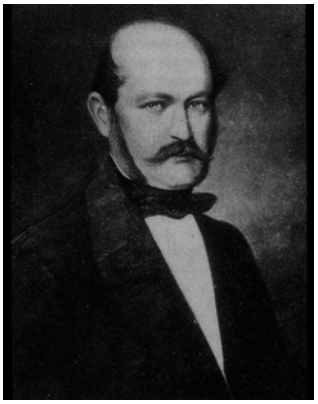

Ignaz Philipp Semmelweis

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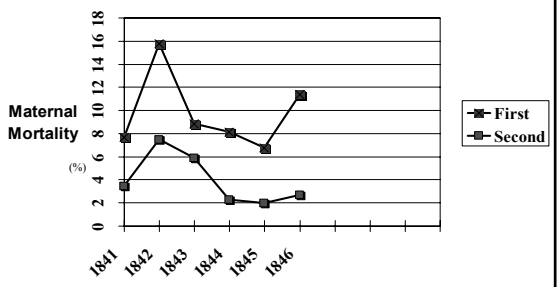
Maternal mortality rates,
First and Second Obstetric Clinics,
GENERAL HOSPITAL OF VIENNA, 1841-1846



Semmelweis IP, 1861

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Intervention

May 1847

- Students and doctors were required to:
  - clean their hands with a chlorinated lime solution when entering the labor room
  - in particular when moving from the autopsy to the labor room

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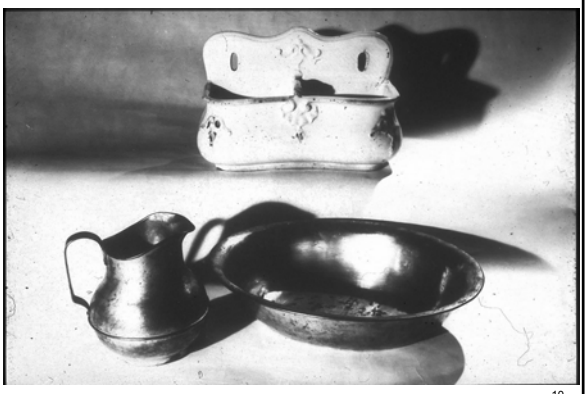

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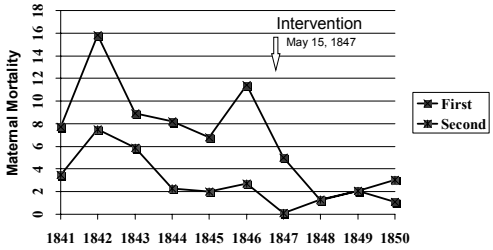
Maternal mortality rates,
First and Second Obstetrics Clinics,
GENERAL HOSPITAL OF VIENNA, 1841-1850



Semmelweis IP, 1861

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Florence Nightingale, 1820 - 1907

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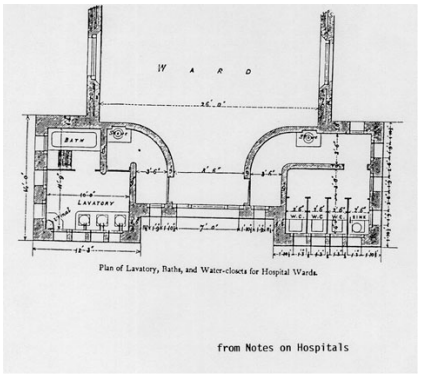

from *Notes on Hospitals* published in 1863

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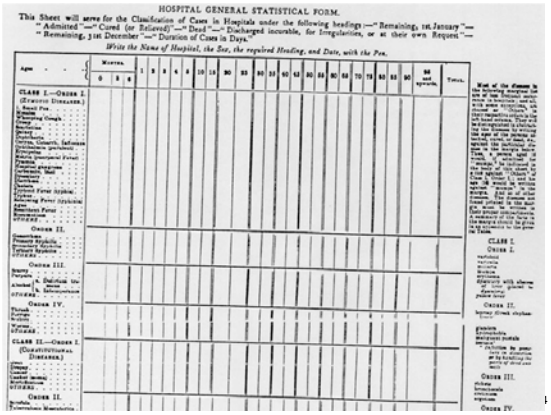
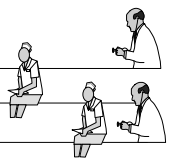


Early days of infection control

1847

1863



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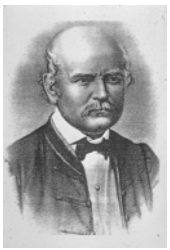
Infection Control and Quality Healthcare in the New Millenium

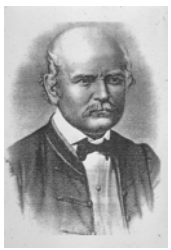
What did we learn from the early days ?



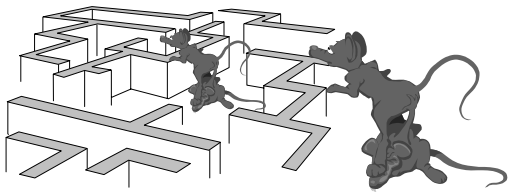
Infection Control and Quality Healthcare in the New Millenium

What did we learn from the early days ?

Recognize
Explain
Act



Does infection control



control infections ?

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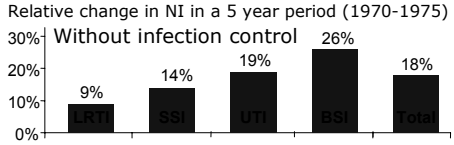
SENIC study

Haley RW et al. Am J Epidemiol 1985;121(2):182-205

Study on the Efficacy of Nosocomial Infection Control



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SENIC study

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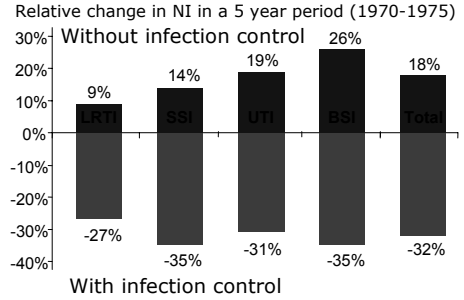

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SENIC

Study on the Efficacy of Nosocomial Infection Control

- 1 infection control nurse per 200 to 250 beds
- 1 hospital epidemiologist per hospital (1000 beds)
- Organized surveillance for nosocomial infections
- Feedback of nosocomial infection rates

Haley RW et al. Am J Epidemiol 1985;121(2):182-205

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SENIC

Study on the Efficacy of Nosocomial Infection Control

per 110 beds

- 1 infection control nurse per 200 to 250 beds
- 1 hospital epidemiologist per hospital (1000 beds)
- Organized surveillance for nosocomial infections
- Feedback of nosocomial infection rates

Haley RW et al. Am J Epidemiol 1985;121(2):182-205

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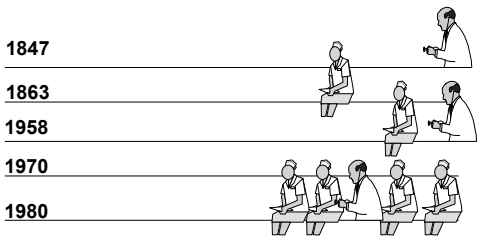
Approach to infection control



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1st principle of infection prevention

35-50% of all nosocomial infections are associated with only 5 patient care practices:

- Use and care of urinary catheters
- Use and care of vascular access lines
- Therapy and support of pulmonary functions
- Experience with surgical procedures
- Hand hygiene and standard precautions

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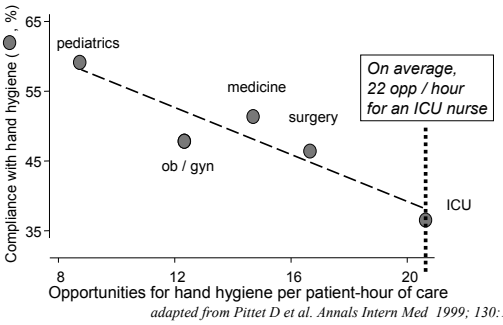
Relation between opportunities for hand hygiene for nurses and compliance across hospital wards



adapted from Pittet D et al. Annals Intern Med 1999; 130:126

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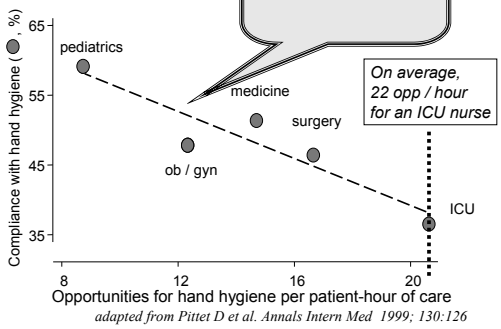
Relation between oppor iene for nurses and compliar ards

1. Recognize
2. Explain



adapted from Pittet D et al. Annals Intern Med 1999; 130:126

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Observed reasons for not washing hands
Time and system constraints

- High demand for hand hygiene is associated with low compliance
- Full compliance with conventional guidelines is unrealistic

Voss and Widmer - Inf Control Hosp Epidemiol 1997; 18:205
Pittet et al, Annals Intern Med 1999; 130:126

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Time constraint = major obstacle for hand hygiene

handwashing hand antisepsis	alcohol-based hand rub
1 to 1.5 min	*15 to 20 sec*

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Handwashing ...
an action of the past
(except when hands are visibly soiled)

Alcohol-based hand rub is standard of care

Handwashing ...
an action of the past
(except when hands are visibly soiled)

1. *Recognized*
2. *Explained*
3. Act

Alcohol-based hand rub is standard of care

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« Talking walls »

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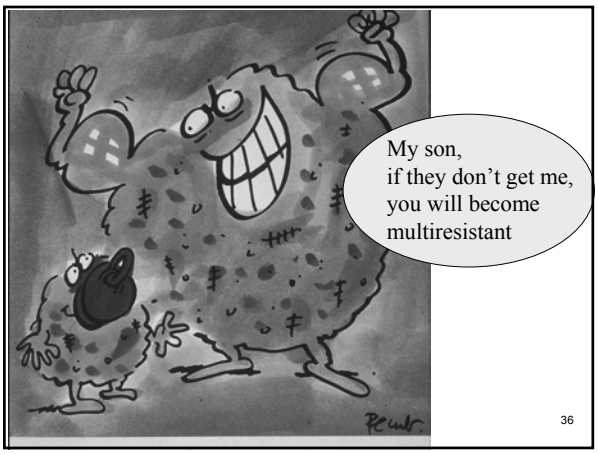

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Handrub
is the natural
killer
of cross
transmission

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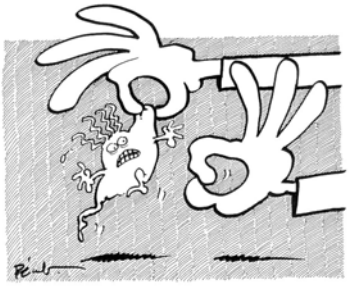
DIRTY STAPH
out of hospital



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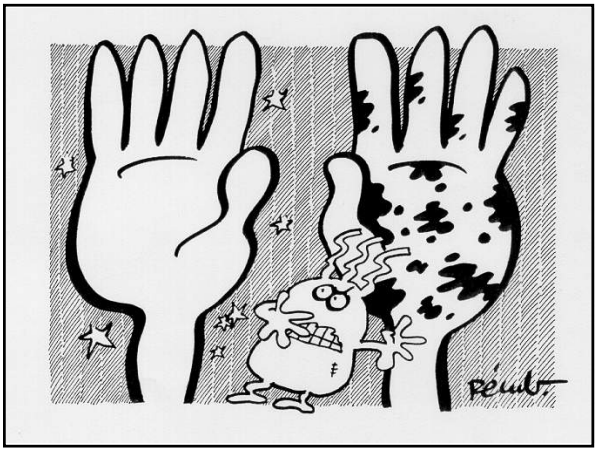

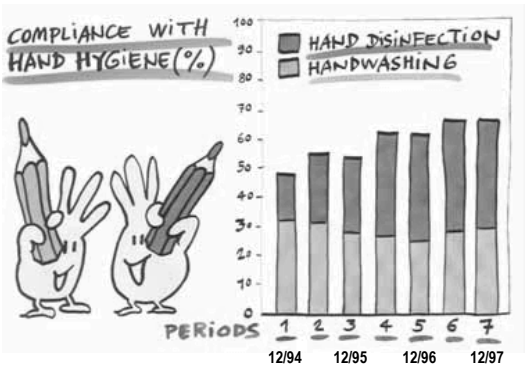

www.hopisafe.ch

Pittet D et al, *Lancet* 2000; 356: 1307-1312

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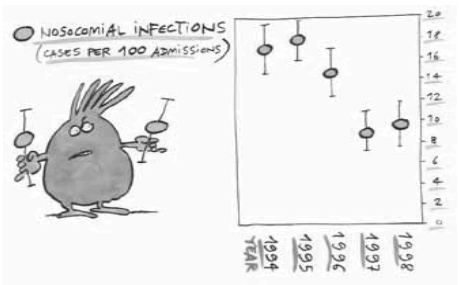
Hospital-wide nosocomial infections; trends 1994-1998



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Pittet D et al, *Lancet* 2000; 356: 1307-1312

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Key parameters for success

- System change
- Administrative support
- Education of healthcare workers
- Monitoring and feedback of performance
- Change in behavior
- Associated with compliance improvement and reduction in cross-transmission and infection rates

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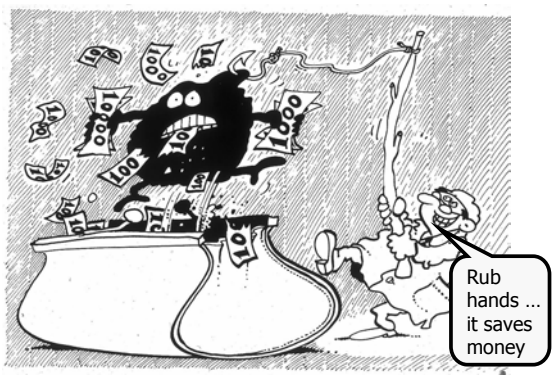

Pittet D et al, *Inf Control Hosp Epi* 2004; 25:264

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Infection control in developing countries

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Infection control in developing countries: main issues

- Unfavorable social background
- Facilities badly structured and equipped
- Technological gap

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Lack of adequate conditions in hospitals

- Inadequately/insufficiently equipped
- Inadequate hygiene conditions
- Lack of microbiological data
- Understaffing
  - Pessoa-Silva et al *J Pediatrics* 2002;141:381-7.
- Overcrowding
  - Merchant et al *J Hosp Infect* 1999;38:143-148.
    - Bed occupancy exceeding capacity: 140%!
- Low staff preparedness
  - Issack MI *J Hosp Infect* 1999;42:339-344.
    - Unecessary measures / lack of adequate measures

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Consequences

- Unsafe invasive procedures
  - Simonsen et al. *Bull WHO* 1999;77:789-800.
    - 50% injections = unsafe in 14 out of 19 countries
    - ↑ sepsis, hepatitis B and C, HIV, Ebola, Lassa and malaria
- Nosocomial outbreaks of introduced community pathogens
  - Paton et al. *Infect Control Hosp Epidemiol* 1991;12:710-7
    - *Shigella* spp. / *Salmonella* spp.
- Spread of multiresistant microorganisms
  - Hart & Kariuki *BMJ* 1998;317:647-50.
- Higher healthcare-associated infection rates

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Consequences

Higher device-associated nosocomial rates

Author, year, country	Setting	CR-BSI*	VAP*	CR-UTI*
Abramczyk, 2003, Brazil	PICU	10.2	18.7	1.8
NNIS, USA	PICU	5.9	2.2	4.3
Rosenthal, 2003, Argentina	Med/Surg ICU	44.6	51.0	22.6
Rosenthal, 2004, Argentina	Med/Surg ICU	30.3	46.3	18.5
NNIS, USA	Med/Surg ICU	4.9	4.9	4.9

* Device-related rate= Number of infections/1000 device-days

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Consequences

Inadequate use of technology

Review of cases of nosocomial Lassa fever in Nigeria: the high price of poor medical practice
Fisher-Hoch et al. *BMJ* 1995;311:857-859.

- 34 cases (9 HCWs)
- 55% attack rate
- **65% fatality rate**
- Outbreak linked to:
  - Hospitals inadequately equipped and staffed
  - Poor medical practice
  - Sharing of syringes
  - Staff contamination during emergency surgery

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Perspectives

- Improvement in hygiene conditions
- Staff training
  - Brazil: Calcante et al *Infect Control Hosp Epidemiol* 1991;12649-53.
    - ➢ ↓ HAI rates
    - ➢ Savings: ~ US$ 2 million
  - Thailand: Thamlikitkul et al. *J Clin Epidemiol* 1998;51:773-8.
    - ➢ ↓ 20% atb use
- Surveillance strategy
  - Selective surveillance
    - Brazil: Lima et al *Infect Control Hosp Epidemiol* 1993;14:197-202.
  - Feasible epidemiologic markers
    - Argentina: Kurlat et cols. *J Hosp Infect* 1998;40:149-154.

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Impact of hand hygiene education in the community in a developing country

Luby et al. *JAMA* 2004; 291: 2547-2554

- Cluster-randomized study (villages)
- Rural community in Pakistan
- Intervention: education with focus on hand hygiene and distribution of soap
- Results
  - ↓ diarrhoea
  - ↓ skin infections
  - ↓ respiratory infections
  - ↓ mortality among children

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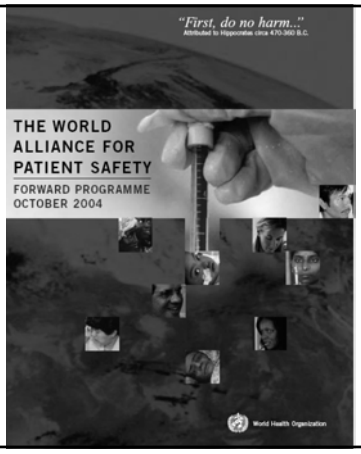

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World Alliance for Patient Safety
Global Patient Safety Challenge 2005 2006

- Healthcare-associated infections
  - affect millions of patients worldwide every year
  - more serious illness
  - prolong hospital stay
  - long-term disability
  - high costs on humans and their families
  - excess deaths
  - massive additional financial burden

World Alliance for Patient Safety
Global Patient Safety Challenge 2005 2006

Healthcare associated infection is a major patient safety problem

- Affects a large number of individuals worldwide
- Multifaceted causation related to
  - systems and processes of care provision
  - human behavior
  - political and economical constraints on systems/countries
- Patient safety gap
  (some healthcare institutions/systems control the risk to patients much better than others)
- Data to assess the size and nature of the problem and to create the basis for monitoring the effectiveness of actions

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World Alliance for Patient Safety
Global Patient Safety Challenge 2005 2006

Clean Care is Safer Care

Major action areas
- Improve hand hygiene
- Injection safety
- Blood safety
- Safety associated with healthcare-related procedures
- Environment-related issues

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World Alliance for Patient Safety
Global Patient Safety Challenge 2005 2006

Clean Care is Safer Care

- Driven by WHO
- Association with key partners
- Countries invited to adopt the challenge for their own healthcare system
- Work closely with one healthcare area in each of the 6 WHO regions

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World Alliance for Patient Safety
Global Patient Safety Challenge 2005 2006

Clean Care is Safer Care

Countries (almost 200 members) will be invited to adopt the challenge for their own healthcare systems with the following principles:

- Assess the scale and nature of HAI
- Adopt an internationally recognized approach to surveillance so that a baseline can be established and changes monitored
- Conduct root causes analyses with particular emphasis on «system thinking»
- Develop solutions to improve safety and reduce risk

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World Alliance for Patient Safety
Global Patient Safety Challenge 2005 2006

Clean Care is Safer Care

Countries (almost 200 members) will be invited to adopt the challenge for their own healthcare systems with the following principles (continued):

- Rely on evidence-based best practice
- Fully engage patients and service users as well as healthcare professionnals in improvement and action plans
- Ensure the sustainability of all actions beyond the initial 2-year period of the *Challenge*

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World Alliance for Patient Safety
Global Patient Safety Challenge 2005 2006

Clean Care is Safer Care

To develop solutions to improve safety and reduce risk by focusing on 5 action areas:

- Clean hands
- Clean practices
- Clean products
- Clean environment
- Clean equipment

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World Alliance for Patient Safety
Global Patient Safety Challenge 2005-2006

Clean Care is Safer Care

WHO guidelines for hand hygiene

Gather together WHO material for infection prevention
–injection safety
–blood safety
–procedure safety
–environment

time

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World Alliance for Patient Safety
Global Patient Safety Challenge 2005-2006

Clean Care is Safer Care

WHO guidelines for hand hygiene

WHO strategy for hand hygiene promotion

Gather together WHO material for infection prevention
–injection safety
–blood safety
–procedure safety
–environment

WHO strategy for promotion of clean practices clean products clean environment clean equipment

time

65

World Alliance for Patient Safety
Global Patient Safety Challenge 2005-2006

Clean Care is Safer Care

WHO guidelines for hand hygiene

WHO strategy for hand hygiene promotion

Implementation of whole / part of WHO strategies for prevention of healthcare associated infections by members

From second part of 2005

Gather together WHO material for infection prevention
–injection safety
–blood safety
–procedure safety
–environment

WHO strategy for promotion of clean practices clean products clean environment clean equipment

Before / After evaluation in 6 WHO districts

time

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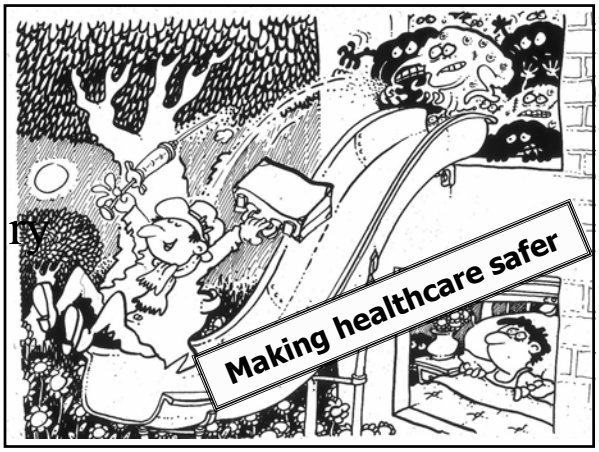

Other 2005 Teleclasses

For more information, refer to www.webbertraining.com/schedule.cfm

- *March 24* – **Infection Control and Pre-Hospital Care** with Margaret McKenzie
- *March 31* – **Voices of CHICA** (a free teleclass)
- *April 7* – **Root Cause Analysis for the Infection Control Professional** with Dr. Denise Murphy
- *April 14* – **Disinfectants and Environmental Impact** with Dr. Franz Daschner
- *April 19* – **Methods for Testing Hand Disinfectants** with Dr. Manfred Rotter
- *April 21* – **Creutzfeldt-Jakob Disease: Recommendations for Disinfection and Sterilization** with Dr. William Rutala

Questions? Contact Paul Webber paul@webbertraining.com