Is Hand Hygiene More Effective than Vaccination?

Dr Celia Cooper
Director, Microbiology & Infectious Diseases, Children’s, Youth and Women’s Health Service
Definitions

• **Infection Control** – “the prevention of transmission of infectious diseases in the healthcare setting” (1)
  – Patient to patient, staff to patient, patient to staff, environment to staff & patients
  – Broad range of practices including – hand hygiene, equipment reprocessing, personal protective equipment, food safety, air conditioning, cleaning, needlesticks, vaccination

• **Vaccination** – “the introduction into humans or domestic animals of microorganisms that have previously been treated to make them harmless for the purpose of inducing the development of immunity” (2)

(1) Infection control guidelines for the prevention of transmission of diseases in the health care setting (CDNA 2004)
(2) Merriam-Websters Medical Dictionary (11th Edition)
Simplified topic

• Substitute “hand hygiene” for “infection control”
• Substitute “vaccination” for “vaccination & antivirals”
• Compare and Contrast
  – History
  – Efficacy
  – Guidelines
The “father” of hand hygiene
What happened next?
Efficacy (1)

- In the past decade, over 130 published clinical trials on the efficacy of hand hygiene
  - Compliance
  - New products
  - Outbreak control
Efficacy (2)

- 1960s - reduced transmission of healthcare associated pathogens to infants associated with use by nurses of antiseptic hand rub

- 1980s - Reduced healthcare associated infections in ICUs

  - Hand hygiene compliance increased from 48% - 66% (&lt;0.001)
  - Overall nosocomial infection rate decreased from 16.9% - 9.9% (p=0.04)
  - MRSA transmission decreased from 2.16 – 0.93 per 10,000 patient days (p&lt;0.001)
Efficacy (3)

  - Intervention with assessment 12 months post-intervention
  - Improvement in hand hygiene compliance from 21%-42% (p<0.001)
  - 36 months post intervention
    - 40% reduction in clinical MRSA isolates (p<0.001)
    - 57% reduction in MRSA bacteraemia (p=0.01)
    - 90% reduction in clinical ESBL isolates (p<0.001)
The modern-day “father” of hand hygiene?
Guidelines

  - Evidence-based
  - Revised advice published from 1960s that waterless antiseptics products (e.g. alcohol-based handrubs) were inferior to soap and water
  - Promoted the use of alcohol-based hand rubs in all clinical situations where hands are not visibly soiled

- WHO Guidelines for Hand Hygiene in Health Care 2005
  - Evidence-based
  - WHO Global Patient Safety Challenge –"Clean Hands are Safer Hands”
  - Increasing recommendations for soap and water to include organisms where alcohol proven to be less effective
  - WHO hand rub formulation
The National Hand Hygiene Initiative

• The Australian Commission on Safety and Quality in Health Care – Five Year Work program approved by Australian Health Ministers – 9 priority programs

• Program 3 – The Health Care Associated Infection (HCAI) Priority Program – a national and systematic approach to surveillance, hand hygiene, infection control guidelines and building clinician capacity

• 5 Key Initiatives
  – Initiative 3 – The National Hand Hygiene Initiative
  – Draws on the WHO Guidelines on Hand Hygiene
  – Modelled on the initiatives described in Austin Health published in MJA 2005
  – Includes education and audit (standardised)
  – A toolkit for implementation and education strategies is expected by mid 2008
Vaccination - history
Early opposition to vaccination
What happened next?

- Early smallpox vaccination techniques
- “Mass production”
- Preservatives
- Modern vaccine production
Efficacy (1)

- In 1958, the WHO passed a resolution calling for the global eradication of smallpox.
- In 1966, smallpox remained endemic in 33 countries and the WHO approved $2.4 million for a 10 year global eradication program.
- The last naturally occurring case of smallpox occurred in Somalia in 1977, and the WHO declared that smallpox had been eradicated from the earth in 1980.
Efficacy (2)

- Worldwide eradication of smallpox demonstrates the power of vaccination to eliminate all future cases of previously devastating infectious diseases resulting in an infinite cost benefit ratio.

- All infectious diseases where humans are the only reservoir and an effective vaccine is available can potentially be targeted for elimination
  - Polio – WHO eradication program commenced 1988
  - Measles – 2015?
  - Mumps, hepatitis B, rubella, Hib, (varicella?)

- “The ultimate in sustainability and social justice”
Efficacy (3)

- Gardasil – approaching 100% efficacy against 4 HPV types causing approx 70% of cases of cervical cancer – if not already infected

- Acellular pertussis vaccine – 92% efficacy in preventing symptomatic disease in adults but does not prevent infection

- No vaccine currently available
  - HIV
  - Malaria
  - HCV, Staphylococcus aureus, RSV
Guidelines

Is Hand Hygiene more effective than Vaccination?

Between the idea
And the reality
Between the motion
And the act
Falls the Shadow
Health Care Worker Reasons for poor compliance with Hand Hygiene

- Hand washing agents cause irritation and dryness
- Sinks are inconveniently located or shortage of sinks
- Lack of soap, paper towel
- Often too busy or insufficient time
- Patient needs take priority
- Hand hygiene interferes with healthcare worker – patient relationship
- Low risk of acquiring infection from patients
- Wear of gloves or belief that glove use obviates the need for hand hygiene
- Lack of knowledge of guidelines and protocols
- Not thinking about it, forgetfulness
- No role model from colleagues, superiors
- Scepticism about the value of hand hygiene
- Disagreement with the recommendations
- Lack of information of definitive impact of improved hand hygiene on healthcare associated infection rates

Source: WHO Guidelines on Hand Hygiene in Healthcare (Advanced Draft)
Improving Hand Hygiene Compliance in Health Care Workers

- Education
- Monitoring compliance and providing performance feedback
- Placing reminders in the workplace
- Convenience - engineering controls and alternative products
- Promoting skin care
- Avoiding overcrowding, understaffing and excessive workloads
- Rewarding compliance
- Support and commitment from opinion leaders
- Successful programs combine several strategies (multi-modal)
Sustaining Hand Hygiene Compliance in Health Care Workers

- Routine observation of compliance and performance feedback (Hawthorne Effect)
- Provision of alternate hand hygiene products
- Communication and Education Tools
- Constant reminders in the work environment
- Involvement of institutional leaders
“A sustained and never-ending Hawthorne effect associated with improved compliance with hand hygiene and decreased infection and cross-transmission rates should be the dream of every hospital epidemiologist”

Didier Pittet
Efficacy?
Health Care Worker Reasons for poor compliance with Staff Immunisation

• Influenza

– I never get the flu and I don’t feel I need the vaccine
– I am worried about having an adverse reaction to the vaccine as I am healthy and never get the flu, only colds
– When the vaccine is needle-free, I will consider having it
– I am a healthy person and would prefer my immune system to protect me against the flu
– The vaccine doesn’t work on me. I got the flu anyway
– I don’t believe in it
– My boss doesn’t get vaccinated so why should I?
– I’m worried about developing Guillian-Barre Syndrome
Improving Health Care Worker Compliance with Staff Immunisation

- Duty of care
- Education
- Dispelling myths
- Fresh relevant messages each year
- Free, mobile vaccination services with after hours delivery and delivery over a period of time
- Unified program supported by all senior staff
- Make vaccination a requirement of working in patient contact areas
- Supporting Immunisation providers
Efficacy?

- CYWHS – Staff Influenza Immunisation Program
- Immunisation rates
  - 2004 – 15%???
  - 2005 – 49.5%
  - 2006 – 54%
  - 2007 – 55.9%
  - 2008 - ???
Is Hand Hygiene more effective than Vaccination?

• Both have proven efficacy when applied
• Neither are applied consistently or well
• Hand hygiene
  – Impact on transmission of most infectious agents
  – Compliance needs to be sustained on multiple occasions over the course of a single shift
• Vaccination
  – Not available for all infections
  – Less requirement for sustained, repeated compliance
What do you think?