Patient empowerment in hand hygiene programs to combat epidemics and antimicrobial resistance crisis

Prof. Yee-Chun Chen, National Taiwan University Hospital

Content

- Background
- Why patient empowerment an important component in hand hygiene programs?
- What is patient empowerment?
- Where is the evidence?
- How to promote?
- Conclusion

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Patient empowerment

- A new concept in health care and has now been expanded to the domain of patient safety
- The process that allows an individual or a community to gain the knowledge, skills, and attitude needed to make choices about their care.

WHO guidelines on hand hygiene in health care, 2009

New relationship!

“You have to learn about thousands of diseases, but I only have to focus on fixing what’s wrong with ME! Now which one of us do you think is the expert?”


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Why patient empowerment an important component in hand hygiene programs?

Case study - SARS epidemic, 2003

SARS epidemic and public, patients, healthcare worker safety

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SARS Epidemic in 2003

- NTUH identified and treated the first cluster of SARS cases in Taiwan.¹
- NTUH reported 270 cases during Mar 10-Jul 23, many were severely ill, and treated 180 (27%) of 665 cases in Taiwan, even though it was staffed by 4,450 (2.5%) of the country’s 178,000 HCW.²
- An outbreak began on April 23 at a nearby hospital (hospital A) in Taipei and spread to others. Patients sought care at NTUH. Overcrowding in the ER during an epidemic augments opportunities for cross transmission and environmental contamination.³

¹Chen YC, et al. EID 2004;10:895
²Chen YC, et al. EID 2004;10:1886
³Chen YC, et al. EID 2004;10:782

SRAS in ER, 2003

- 31 cases occurred after exposure in NTUH ER. The index patient was linked to an large outbreak at a nearby municipal hospital.
- Six of 12 HCW cases (wearing N95 or P100 on duty at ER) with different working patterns, indicated that they did not have contact with a SARS patient.
- Patients and their care givers contaminated the environments.
- Overloaded medical staff took inadequate precautions, particularly hand hygiene.


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SARS and contaminated environment

<table>
<thead>
<tr>
<th>Source of samples</th>
<th>No. of samples collected</th>
<th>No. (%) of positive samples</th>
<th>Source of positive result (copies of viral RNA per sample)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface of environment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Triage</td>
<td>11</td>
<td>1 (9.1)</td>
<td>Bottom of drinking water fountains (2.570–2.570)</td>
</tr>
<tr>
<td>Examination area</td>
<td>10</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Observation unit</td>
<td>42</td>
<td>2 (4.8)</td>
<td>Bottom of drinking water fountains (2.570–2.570)  Bedside chair (2.570–2.570)</td>
</tr>
<tr>
<td>Critical care areas</td>
<td>3</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>SARS area</td>
<td>10</td>
<td>4 (40.0)</td>
<td>Outlet of central air supply (2.570–2.570)  Table top (2.570–2.570)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bedding (2.570–2.570)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bed edge (2.570–2.570)</td>
</tr>
<tr>
<td>Clean area</td>
<td>14</td>
<td>2 (14.3)</td>
<td>Book shelf (2.570–2.570)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bedding (2.570–2.570)</td>
</tr>
<tr>
<td>High-efficiency particulate air filter</td>
<td>10</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Air</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High-volume sampler</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Low-volume sampler</td>
<td>10</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>110</td>
<td>9 (7.0)</td>
<td></td>
</tr>
</tbody>
</table>

- SARS virus is stable in the environment at room temperature for 1–2 days. It can survive on plastic surfaces, stainless steel, glass slides and paper files. The virus can survive even longer (up to 4 days) in stool from patients with diarrhea.
- Diarrhea is a common presenting complaint in SARS. One of our patients (Case 2 in the first cluster) presented with intestinal bleeding, and 4 patients in the second cluster had diarrhea.

Chen YC, et al. EID 2004;10:782

THE 5 STEPS OF HAND TRANSMISSION

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Prevention and control of emerging infectious diseases

1. Early detection

Implicit case

- Atypical
- Early stage
- Co-morbidity
- Extreme age
- Co-infection
- Route of transmission
- Strain variation
- Mild infection
- Asymptomatic carrier

2. Source and contact tracing

3. Infection Control

Index case

Why patient empowerment an important component in hand hygiene programs?

Case study – Pandrug-resistant *Acinetobacter* outbreak, 2004

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Investigation and control of an outbreak of pandrug-resistant *Acinetobacter baumannii* colonization/infection

- PDRAB was first isolated from clinical specimens at NTUH in 1998. Only 2 strains were isolated from patients in the NICU before October 2004.
- On October 4, 2004, a 7-day-old neonate who had undergone abdominal surgery developed PDRAB bacteremia. This was considered to be an unusual event because of the patient’s brief hospital stay and was presumed to be the iceberg of a potential outbreak.
- A thorough outbreak investigation was performed, leading to the detection of PDRAB isolates from 8 additional premature neonates in the NICU during the next 2 months; 7 of the isolates shared the same electrokaryotype.

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Reported clusters of *Acinetobacter baumannii* Infection or Colonization in NICUs

<table>
<thead>
<tr>
<th>Country</th>
<th>Year of outbreak</th>
<th>No. of patients</th>
<th>Clinical presentation</th>
<th>Mortality, %</th>
<th>Suspected source of infection</th>
<th>Acinetobacter strain isolated</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Kingdom</td>
<td>1981</td>
<td>0</td>
<td>Meningitis</td>
<td>0</td>
<td>None identified</td>
<td>A. calcoaceticus var. anitratus</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>1983</td>
<td>1</td>
<td>Pneumonia infection</td>
<td>22</td>
<td>Ambu bag</td>
<td>A. baumannii</td>
</tr>
<tr>
<td>Germany</td>
<td>1988</td>
<td>41</td>
<td>Sepsis</td>
<td>0</td>
<td>Humidifier</td>
<td>A. baumannii</td>
</tr>
<tr>
<td>South Africa</td>
<td>1997</td>
<td>NA</td>
<td>Sepsis</td>
<td>22</td>
<td>Suction catheters</td>
<td>NA</td>
</tr>
<tr>
<td>Bahrain</td>
<td>1996</td>
<td>7</td>
<td>Sepsis</td>
<td>37</td>
<td>Air conditioner</td>
<td>NA</td>
</tr>
<tr>
<td>Taiwan</td>
<td>2000</td>
<td>NA</td>
<td>Sepsis</td>
<td>33.3, 0%</td>
<td>Hands of healthcare workers and environment</td>
<td>MDR A. baumannii</td>
</tr>
<tr>
<td>Brazil</td>
<td>2001</td>
<td>11</td>
<td>Sepsis</td>
<td>27</td>
<td>None identified</td>
<td>MDR A. baumannii</td>
</tr>
<tr>
<td>India</td>
<td>2003</td>
<td>NA</td>
<td>Bacteremia, meningitis</td>
<td>27.7</td>
<td>Intravenous catheter and washbasin</td>
<td>NA</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>2003</td>
<td>NA</td>
<td>None</td>
<td>42.8, 0%</td>
<td>None identified</td>
<td>NA</td>
</tr>
<tr>
<td>Taiwan (PR)</td>
<td>2004</td>
<td>7</td>
<td>Sepsis, pneumonia</td>
<td>11, 0%</td>
<td>None identified</td>
<td>PDR A. baumannii</td>
</tr>
</tbody>
</table>

- In the absence of environmental contamination, transient hand carriage by personnel (HCWs, family) who cared for neonates colonized or infected with PDR *A. baumannii* was suspected to be the mode of transmission.
- Vigilance, prompt intervention and strict adherence to hand hygiene protocol were the key factors that led to the successful control of this outbreak.

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A hospital-wide hand hygiene program
NTUH, 2004–

Compliance improved from 43.3% in April 2004 to 95.6% in 2007. There was a close correlation with increased consumption of the alcohol-based handrub ($r=0.9399$).

Effectiveness of Hand Hygiene Promotion on Decreasing Healthcare–associated Infections
The disease severity score (Charlson comorbidity index) increased ($p=0.002$) in the intervention period. Nevertheless there was an 8.9% decrease in HAIs.

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Importance of patient empowerment in hand hygiene


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Importance of patient empowerment in hand hygiene

- Education of medical students may damper by hierarchy in hospitals. (Am J Infect Control. 2014;42:231)

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What is “patient empowerment”?

Patient Empowerment

- Involvement
- Engagement
- Participation

In very simplified terms, empowerment is an intangible process, which often manifests itself in concrete action. The term participation may also be preferable because it is always an active word (in English).

For example, when a patient gains all the knowledge s/he needs to understand her/his condition, her/his life goals and the benefits and risks of different therapeutic options, s/he can reflect what therapeutic choice will be most suitable in her personal situation (empowerment), and participate actively in the therapeutic decision-making process with her/his doctor (involvement).

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http://www.eu-patient.eu/campaign/PatientsprescribE/

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Patient empowerment or ??

- The term can have different meanings and interpretations
- The term chosen to engage and involve patients will depend on what is appropriate for the specific culture of a region or community.
- Patient empowerment might be the preferred term from a patient advocacy point of view.
- However, the less emotionally charged and challenging term patient participation might be a term more acceptable to many HCWs, patients, and cultures.

WHO guidelines on hand hygiene in health care, 2009

Partnership

- Shared decision making
- Shared responsibility
- Shared accountability

Poor hand hygiene by college students linked to more occurrences of infectious diseases, medical visits, and absence from classes.
Patient empowerment

- WHO: a process through which people gain greater control over decisions and actions affecting their health (an individual and a community)
- Components fundamental to the process of patient empowerment:
  - understanding by the patient of his/her role;
  - acquisition by patients of sufficient knowledge to be able to engage with their healthcare provider;
  - patient skills;
  - the presence of a facilitating environment.

WHO guidelines on hand hygiene in health care, 2009

Patient Empowerment in Hand Hygiene

- WHO standard methodology for multi-modal hand hygiene strategy
- UK National Patient Safety Agency’s “clean your hands” campaign

Evidence of patient empowerment in hand hygiene

- **Evidence**: Patient could help to improve the hand hygiene compliance of healthcare professionals by reminding them to sanitize their hands.\(^1^\text{-}^4\)

- **Quality of evidence**: weakness of studies involving infection control.\(^5\)
  - Quadri-experimental design
  - Confounded by other infection control interventions at the same time

- Intention versus action
- Strategy

1. Parkin V, Jeanes A. Nurs Times 2003;99:19
2. Duncanson V. Br J Infect Control 2005;6:26
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Intention versus Action – Cross Atlantic

USA 1000 consumers
• 69% believed HH is above 50%
• 17% asked HCWs to perform HH

UK 3 years after introducing ‘cleanyourhands’ campaign
• 49% willing to ask nurses
• 43% willing to ask doctors
• 6% asked HCWs to perform HH

Intention versus Action – Asia Pacific

South Korea (intention)
• Patients: 75%
• HCWs: 26%

Australia
Patients: 49% willing to ask
HCWs’ concerns:
• lack of support
• busy workload, negative attitude

South Korea (intention)
• Patients: 67%
• HCWs: 63%

Taiwan (intention)
• Patients: 67%
• HCWs: 63%

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Attitude and intention toward patient empowerment, Taiwan

Factors for negative intention multivariate analysis

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Odds ratio (95% confidence interval)</th>
<th>Patients/families</th>
<th>HCWs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age &gt; 25 years</td>
<td>3.20 (1.55-6.61)</td>
<td>1.42 (1.06-2.89)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1.82 (1.08-3.03)</td>
<td>1.39 (0.88-2.13)</td>
<td></td>
</tr>
<tr>
<td>Medical specialties</td>
<td>1.00 (0.54-1.86)</td>
<td>1.00 (0.54-1.86)</td>
<td></td>
</tr>
<tr>
<td>Medical/nursing students</td>
<td>0.75 (0.42-1.39)</td>
<td>1.00 (0.58-1.67)</td>
<td></td>
</tr>
<tr>
<td>Negative attitude toward patient</td>
<td>10.00 (5.88-16.67)</td>
<td>10.00 (5.88-16.67)</td>
<td></td>
</tr>
<tr>
<td>empowerment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Department</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pediatrics</td>
<td>1.86 (0.93-3.64)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residence</td>
<td>3.18 (0.86-11.7)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Why healthcare workers not support patient participation, Korea

How to promote patient empowerment in Hand Hygiene

Strategies to involve patients

- **Background**
  - Patient could help to improve the hand hygiene compliance of healthcare professionals by reminding them to sanitize their hands
  - Actual proportions who remind staff varies from 5-80% \(^1\)

- **Systemic review** \(^2\)
  - 1980-2013, 28 articles
  - Single-component strategies (e.g., video), \(n=16\)
  - Multi-modal approaches (e.g., video and leaflet), \(n=12\)

- **Patient-focused strategies** (\(n=23\))
  - showed promise in helping to increase patients’ intentions and/or involvement
  - HCWs encouragement appeared to be the most effective strategy \(^1,2\)

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Methods of patient participation in hand hygiene preferred by patients and healthcare workers, Korea


How useful do you think the following interventions would be in encouraging hand hygiene? UK

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How to promote

- Written documents
- HCWs encouragement
- Video
- Social network!

Hand hygiene included in
- Admission orientation note
- Leaflet to patient or care givers

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Hand hygiene campaign at unit level and patient participation

Creativity

Role model nearby
Clean hands, save lives!

Patient participation
Education the future

Customized “My Five Moments”

For healthcare workers
For the public
For children

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Reminder at the public area!

5 May 2010 World Hand Hygiene Day activities

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5 May 2011 World Hand Hygiene Day activities

“Seeing is believing”

Medical Students as Ambassadors of Hand Hygiene Promotion at the First Girl High School, Taipei

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Medical Students as Ambassadors of Hand Hygiene Promotion at the First Girl High School, Taipei

NTUH Hand Hygiene web
http://www.ntuh.gov.tw/ifc/hhc

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NTUH Hand Hygiene web
http://www.ntuh.gov.tw/ifc/hhc

NTUH Hand Hygiene Promotion on YouTube, 2014
English version

https://youtu.be/uKwiTNW7kvM

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Promoting HH via social media

Pan SC, et al. JMIIR
Public Health Survell

Social networks

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Facebook utility in Asia

Population No. 1: India

Highest ratio: Taiwan


Using every methods to connect our patients/communities

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An internet-delivered handwashing intervention to modify influenza-like illness and respiratory infection transmission (PRIMIT): a primary care randomised trial

Paul Little, Beth Stuart, F D H Hobbs, Mike Moore, Jane Barnett, Deborah Pippin, Karen Meddleton, Joanne Kelly, Mark Muller, James Reffary, Guiqing Yao, William Carman, Douglas Fleming, Helen Stokes-Lampard, Ian Williamson, Judith Joseph, Srashe Miller, Lucy Yardley

Summary
Background Handwashing to prevent transmission of respiratory tract infections (RTIs) has been widely advocated, especially during the H1N1 pandemic. However, the role of handwashing is debated, and no good randomised evidence exists among adults in non-deprived settings. We aimed to assess whether an internet-delivered intervention to modify handwashing would reduce the number of RTIs among adults and their household members.

After 16 weeks, 4242 individuals (51%) in the intervention group reported one or more episodes of RTI compared with 5135 (59%) in the control group (multivariate risk ratio 0.86, 95% CI 0.83–0.89; \(p<0.0001\)).

The intervention reduced transmission of RTIs (reported within 1 week of another household member) both to and from the index person.


Safety of healthcare workers, patients and the public

Love is patient, love is kind.
Corinthians 13:4–7
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