
Prof. Benedetta Allegranzi, WHO Infection Prevention and Control Global Unit
Sponsored by the World Health Organization Infection Prevention and Control Global Unit

Hosted by Dr. Nizam Damani
Sponsored by the World Health Organization Infection Prevention and Control Global Unit
www.webbertraining.com

HAIs worldwide: 1 in 10 patients

Allegranzi B et al. Lancet 2011;377:228-41


Hosted by Dr. Nizam Damani, International Federation of Infection Control
A Webber Training Teleclass
www.webbertraining.com
HAIs worldwide: 1 in 10 patients

Allegrenzi B et al. Lancet 2011;377:228-41

Prevalence of health care-associated infection in low- and middle-income countries, 1995-2010

Studies of high quality: 56%

Range: 5.7-19.1%
Pooled prevalence: 10.1% (95% CI 8.4-12.2)
In high-quality papers: 15.5% (95% CI 12.6-18.9)

WHO Report on the Burden of Endemic Health Care-associated Infection Worldwide

Hosted by Dr. Nizam Damani, International Federation of Infection Control
A Webber Training Teleclass
www.webbertraining.com
Infection was the most common complication (1156 [10.2%] of 10970 patients), of whom 112 (9.7%) died.

Overall healthcare- and device-associated infection incidence in high risk patients, 1995-2010 – meta-analysis

<table>
<thead>
<tr>
<th>High-income countries</th>
<th>Low- and middle-income countries</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall HAI:</strong> 17.0/1000 pt-days</td>
<td><strong>Overall HAI:</strong> 47.9/1000 pt-days</td>
</tr>
<tr>
<td>CR-BSI: 3.5/1000 cath-days</td>
<td>CR-BSI: 12.2/1000 cath-days</td>
</tr>
<tr>
<td>CR-UTI: 4.1/1000 cath-days</td>
<td>CR-UTI: 8.8/1000 cath-days</td>
</tr>
<tr>
<td>VAP: 7.9/1000 vent-days</td>
<td>VAP: 23.9/1000 vent-days</td>
</tr>
<tr>
<td>• at least X 2-3</td>
<td>• at least X 2-3</td>
</tr>
<tr>
<td>• up to 13 times higher in some countries</td>
<td>• up to 13 times higher in some countries</td>
</tr>
</tbody>
</table>


Hosted by Dr. Nizam Damani, International Federation of Infection Control
A Webber Training Teleclass
www.webbertraining.com
Burden of HAIs in Europe – Second Global Ministerial Summit on Patient Safety
29-30 March 2017

Hosted by Dr. Nizam Damani, International Federation of Infection Control
A Webber Training Teleclass
www.webbertraining.com
Factors associated with sepsis mortality

- 31.5 million sepsis and 19.4 million severe sepsis cases, with potentially 5.3 million deaths annually
- Hospital mortality for sepsis: 17%
- Hospital mortality for severe sepsis: 26%

Toll of AMR in USA

The toll of AR in the US alone is staggering

Estimated minimum number of illnesses and deaths caused annually by antibiotic resistance*:

At least

2,049,442 illnesses
23,000 deaths

* bacteria and fungus included in this report

PLUS at least 500,000 illnesses and 15,000 deaths from C. difficile infections

Hosted by Dr. Nizam Damani, International Federation of Infection Control
A Webber Training Teleclass
www.webbertraining.com
Global Implications of AMR

Prevalence of multidrug resistance from inpatient clinical blood and urine specimens (2014)*

Significantly higher MRSA, ESBL-PE, CRE, and MRAB prevalence from blood cultures in LMICs

* 380 high-quality laboratories worldwide

Hosted by Dr. Nizam Damani, International Federation of Infection Control
A Webber Training Teleclass
www.webbertraining.com
Global AMR Surveillance System (GLASS)

- GLASS early implementation (2015-19):
  - Data on the status of national AMR surveillance
  - Aggregated national AMR data for priority pathogen-antibacterial combinations
    - Antibiotic susceptibility test (AST) data from blood and other priority specimens sent routinely to labs for clinical purposes
  - GLASS promotes a shift from surveillance based solely on lab data to a system to a system that includes epidemiological, clinical, and population-level data

First GLASS report
January 2018!

Carbapenem Resistance in 2015

- **K. pneumoniae**: 8.1% (top left)
- **P. aeruginosa**: 17.8% (top right)
- **Acinetobacter spp**: 12/27 countries had resistance ≥50% (bottom left)


Hosted by Dr. Nizam Damani, International Federation of Infection Control
A Webber Training Teleclass
www.webbertraining.com
**Higher mortality with CRE, CRAB and CRPsA**

**P. aeruginosa bacteremia:**
carbapenem resistant vs susceptible

OR = 3.07; 95% CI 1.60–5.89

**A. baumannii infection:**
carbapenem resistant vs susceptible

OR = 2.49; 95% CI 1.61–3.84

---

**Factors Contributing to AMR**

- Human antimicrobial misuse or overdose
- Animal antimicrobial misuse or overdose
- Environmental contamination
- Health-care transmission
- Suboptimal rapid diagnostics
- Suboptimal vaccination
- Suboptimal dosing, including from substandard and falsified drugs
- Travel
- Mass drug administration for human health

---

Hosted by Dr. Nizam Damani, International Federation of Infection Control
A Webber Training Teleclass
www.webbertraining.com
Prof. Benedetta Allegranzi, WHO Infection Prevention and Control Global Unit
Sponsored by the World Health Organization Infection Prevention and Control Global Unit

Factors Contributing to AMR
- Human antimicrobial misuse or overuse
- Animal antimicrobial misuse or overuse
- Environmental contamination
- Healthcare transmission
- Suboptimal rapid diagnostics
- Suboptimal vaccination

Suboptimal dosing, including from substandard and falsified drugs
- Travel
- Mass drug administration for human health

Evidence that factor is contributing to antimicrobial resistance

Why IPC in health care to combat AMR?
Exploring the evidence base for national and regional policy interventions to combat resistance
Lancet 2016; 387: 285–95

IPC interventions can:
- Minimise the spread of pathogens, including R ones
- Decrease the likelihood of infection in health-care settings
- Reduce the overall need for antimicrobials

Hosted by Dr. Nizam Damani, International Federation of Infection Control
A Webber Training Teleclass
www.webbertraining.com
Prof. Benedetta Allegranzi, WHO Infection Prevention and Control Global Unit
Sponsored by the World Health Organization Infection Prevention and Control Global Unit

**IPC further reduces resistance**

<table>
<thead>
<tr>
<th>Study setting</th>
<th>Incidence ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intensive care</td>
<td>0.77 (0.66-0.89)</td>
</tr>
<tr>
<td>Medical ward</td>
<td>0.78 (0.68-0.89)</td>
</tr>
<tr>
<td>Surgical ward</td>
<td>0.74 (0.65-0.85)</td>
</tr>
<tr>
<td>Neonatology-acuity room</td>
<td>0.41 (0.30-0.55)</td>
</tr>
</tbody>
</table>

- **Larger impact on incidence of infections /colonizations with resistant bacteria when IPC (esp. HH) and antibiotic stewardship are combined**
- **Incidence reduced by 1/3 and 2/3 when IPC and HH implemented with AMS, respectively**

**Why IPC is so important for patient outcomes**

- **>30% Reduction**
  Effective IPC programmes lead to more than a 30% reduction in HAI rates
- **25-57% Reduction**
  Surveillance contributes to a 25-57% reduction in HAI's
- **50% Reduction**
  Improving hand hygiene practices may reduce pathogen transmission in healthcare by 50%
- **13-50% Reduction**
  Strong IPC plans, implemented across the USA between 2008 and 2014, reduced central line-associated bloodstream infections by 50%, surgical site infections (SSIs) by 17% and MRSA bacteremia by 13%
- **56% Reduction**
  MRSA declined by 56% over a four-year period in England in line with a national target
- **44% Reduction**
  A safety culture and prevention programme reduced SSI risk in African hospitals by 44%
- **80% Compliance**
  Between 2010 and 2015 Australia achieved and sustained 80% hand hygiene compliance in hospitals nationwide

http://www.who.int/infection-prevention/en/

Hosted by Dr. Nizam Damani, International Federation of Infection Control
A Webber Training Teleclass
www.webbertraining.com
Why IPC is so important for global health

- IPC occupies a unique position in the field of patient safety and quality of care, as it is universally relevant to every health worker and patient, at every health care interaction
- Without effective IPC it is impossible to achieve quality health care delivery and strong health systems

IPC contributes to achieving the following global health priorities:

I. Sustainable development goals (SDGs) 3.3–3.8, 3.9, 3.10 and 6
II. AMR global and national action plans
III. Preparedness and response to outbreaks
IV. International Health Regulations
V. Post-Ebola recovery plans
VI. Quality universal health coverage
VII. Patient and health worker safety
VIII. WHO Global Strategy on integrated people-centred health services

Leadership, connecting, coordinating

Guidelines & implementation

Campaigns & advocacy

Capacity building

Measuring & learning

WHO IPC Global Unit Functions

http://www.who.int/infection-prevention/en/
Prof. Benedetta Allegranzi, WHO Infection Prevention and Control Global Unit
Sponsored by the World Health Organization Infection Prevention and Control Global Unit

**CDC’s International Infection Control Program (IICP): Activities**

**Respond Rapidly to Outbreaks**
- Provide technical assistance in outbreak investigations in healthcare settings
- Collaborate with domestic and international partners on response efforts to ensure rapid and effective response

**Improve Infection Prevention and Control Capacity**
- Work with ministries of health to adapt and promote policies, guidelines and training materials for use at the national and local level
- Provide technical assistance for the implementation of infection prevention programs
- Identify and refine best practices for preventing healthcare-associated infections
- Promote innovative solutions through domestic and international partnerships

**Reduce the Global Burden of Drug Resistance**
- Assist in the development of national policies and plans to combat antimicrobial resistance in healthcare settings
- Provide tools and technical assistance for countries to detect, track and respond to antimicrobial resistance in healthcare settings
- Promote appropriate use of antibiotics

*Global IPC Network*

- Supported collaboratively by WHO and CDC and coordinated by WHO
  - to enhance local, national (Member States) and international coordination and collaboration in the field of IPC and
  - to support WHO’s and Member States’ efforts on IPC, from preparedness to IPC systems and programmes’ strengthening, outbreak prevention and control, as well as capacity building for surveillance.

**Ultimate goal:** reduction of HAI (including in the context of outbreaks) and addressing the global burden of AMR in support of all Member States and WHO priorities


Hosted by Dr. Nizam Damani, International Federation of Infection Control
A Webber Training Teleclass
www.webbertraining.com
2017 - IPC PRIORITIES AND CHALLENGES OVER THE NEXT 5 YEARS

- At national level:
  - for settings where IPC has just started
  - for settings with advanced IPC programmes

- At global level

http://www.who.int/infection-prevention/about/GIPC_Network/en/
Global infection prevention and control priorities 2018–22: a call for action

Priorities for IPC at country level
Countries where IPC has just started

- Decisive and visible political commitment, including IPC policy development and enforcement
- Availability of resources (both human and infrastructure)
- Establishment and execution of IPC programmes at the national and acute health facility levels to ensure advocacy, training and data for future improvement and sustainability
- Action to increase availability of in-country IPC knowledge and expertise

Global infection prevention and control priorities 2018–22: a call for action

Priorities for IPC at country level
Countries where IPC has just started

- Decisive and visible political commitment, including IPC policy development and enforcement
- Availability of resources (both human and infrastructure)

- Establishment and execution of IPC programmes at the national and acute health facility levels to ensure advocacy, training and data for future improvement and sustainability
- Action to increase availability of in-country IPC knowledge and expertise

Hosted by Dr. Nizam Damani, International Federation of Infection Control
A Webber Training Teleclass
www.webbertraining.com
Prof. Benedetta Allegranzi, WHO Infection Prevention and Control Global Unit
Sponsored by the World Health Organization Infection Prevention and Control Global Unit

WHO Guidelines on Core Components of IPC Programmes at the National and Acute Health Care Facility Level

Focus on preventing HAIs and combating AMR

- Storr J et al. ARIC 2017

What's new in these Guidelines?

Many of the principles of what constitute the central elements of IPC programmes remain the same as those presented in 2009. However, the following aspects are highlighted as new:

THE APPROACH
- Evidence-based, 3 systematic reviews
- Evidence selection based on quality
- Based on country experience and expert consensus

NEW RECOMMENDATIONS
- Focus on multimodal behaviour change approaches and bundles
- Focus on WASH-IPC integration, environment & human factors
- Focus on AMR, IHR and IPC interface

IMPLEMENTATION FOCUS
- Commitment to supporting implementation in low- and middle-income countries

Hosted by Dr. Nizam Damani, International Federation of Infection Control
A Webber Training Teleclass
www.webbertraining.com
Systematic reviews

UPDATE OF

Hospital organisation, management, and structure for prevention of healthcare-associated infection: a systematic review and expert consensus

Price L et al. Lancet Infect Dis; October 31, 2017

Effectiveness of national and subnational infection prevention and control interventions in high-income and upper-middle-income countries: a systematic review

New WHO core components for IPC programmes

- 8 Core components
  - 8 Facility level
  - 6 National level
- 11 evidence-based recommendations
- 3 good practice statements

Hosted by Dr. Nizam Damani, International Federation of Infection Control
A Webber Training Teleclass
www.webbertraining.com
Global infection prevention and control priorities 2018–22: a call for action

Countries with advanced IPC programmes
- Increased accountability with IPC as a quality indicator
- Development of advanced information technology tools to support IPC monitoring and implementation
- Translation of information through enhanced communications to sustain awareness and engagement
- Credible incentives considering the local context to increase compliance rates
- Enhanced education and training to embed IPC knowledge across all disciplines

Hosted by Dr. Nizam Damani, International Federation of Infection Control
A Webber Training Teleclass
www.webbertraining.com
Hand Hygiene Australia

- Central HH database
- New direct-entry HH compliance App
  - i-Phones, other Smart-devices
  - Benefits:
    - Reduces data management time by 50%
    - No duplicate data entry and errors
    - Mobile devices common and cheap
    - Flexible reporting options

Hosted by Dr. Nizam Damani, International Federation of Infection Control
A Webber Training Teleclass
www.webbertraining.com
Prof. Benedetta Allegranzi, WHO Infection Prevention and Control Global Unit
Sponsored by the World Health Organization Infection Prevention and Control Global Unit

Global infection prevention and control priorities 2018–22: a call for action

Priorities for IPC at the global level

**Strengthen IPC in the health system perspective**

- Strengthen IPC visibility and advocacy: convince decision-makers and stakeholders
- Lead on IPC knowledge development: create standardised curricula templates that can be adapted locally (“adapt to adopt”) and stimulate further research on priority areas
- Foster and promote IPC as a marker of quality: establish international IPC minimum standards
- Build active networks and stronger communications: ensure that patient safety and quality improvement leaders, as well as other health workers across all disciplines, are engaged to advocate for IPC

Hosted by Dr. Nizam Damani, International Federation of Infection Control
A Webber Training Teleclass
www.webbertraining.com
Prof. Benedetta Allegranzi, WHO Infection Prevention and Control Global Unit
Sponsored by the World Health Organization Infection Prevention and Control Global Unit

Global infection prevention and control priorities 2018–22: a call for action

Priorities for IPC at the global level
Strengthen IPC in the health system perspective
- Strengthen IPC visibility and advocacy; convince decision-makers and stakeholders
- Lead on IPC knowledge development: create standardised curricula templates that can be adapted locally (“adapt to adopt”) and stimulate further research on priority areas
- Foster and promote IPC as a marker of quality: establish international IPC minimum standards
- Build active networks and stronger communications: ensure that patient safety and quality improvement leaders, as well as other health workers across all disciplines, are engaged to advocate for IPC

www.thelancet.com/lancetgh Vol 5 December 2017

Hosted by Dr. Nizam Damani, International Federation of Infection Control
A Webber Training Teleclass
www.webbertraining.com
WHO IPC Advanced Training Modules

- Leadership and IPC program management
- Prevention of urinary tract infections
- Prevention of catheter-associated bloodstream infections
- Prevention of respiratory tract infections
- Prevention of infections in surgery
- Reprocessing of medical devices
- Outbreak management in healthcare settings
- IPC to control antibiotic resistance
- HAI surveillance
- Injection safety

Global infection prevention and control priorities 2018–22: a call for action

Elevate the role of IPC specifically to better combat AMR
- Strengthen the power to act: secure support for a “top-down” chief executive approach, empower IPC leads
- Improve evidence presentation to leaders: effectively outline available data and other information on the impact of IPC solutions on AMR
- Expand the narrative: help people visualise how IPC programmes can lead to AMR risk reduction

Hosted by Dr. Nizam Damani, International Federation of Infection Control
A Webber Training Teleclass
www.webbertraining.com
Global infection prevention and control priorities 2018–22: a call for action

Elevate the role of IPC specifically to better combat AMR
- Strengthen the power to act: secure support for a “top-down” chief executive approach, empower IPC leads
- Improve evidence presentation to leaders: effectively outline available data and other information on the impact of IPC solutions on AMR
- Expand the narrative: help people visualise how IPC programmes can lead to AMR risk reduction

Hosted by Dr. Nizam Damani, International Federation of Infection Control
A Webber Training Teleclass
www.webbertraining.com
Prof. Benedetta Allegranzi, WHO Infection Prevention and Control Global Unit
Sponsored by the World Health Organization Infection Prevention and Control Global Unit

- 8 evidence-based recommendations
- Key areas:
  - Multimodal strategy
  - Hand hygiene
  - Surveillance
  - Contact precautions
  - Patient isolation
  - Environmental cleaning
  - CRE-CRAB-CRPsA surveillance
cultures of the environment
  - Monitoring, Audit and Feedback

http://www.who.int/infection-prevention/publications/focus-amr/en/

WHO SSI prevention guidelines -
4 recommendations specifically focus on
improving antibiotic use in surgery

1. Optimal timing EV surgical antibiotic prophylaxis (SAP)
   - SAP should be administered prior to the surgical incision when indicated (depending on the type of operation)
   - The administration of SAP within 120 minutes before incision, while considering the half-life of the antibiotic

2. Recommendations against:
   1. antibiotic wound irrigation
   2. antibiotic prophylaxis in presence of a drain
   3. SAP prolongation in the post-operative period

Translating guidelines to action

Effective IPC strengthens health services & health systems

Hosted by Dr. Nizam Damani, International Federation of Infection Control
A Webber Training Teleclass
www.webbertraining.com
Core component 5: Multimodal strategies

Evidence (44 studies at national, 14 at facility level) shows that implementing IPC activities at facility level using multimodal strategies is effective to improve IPC practices and reduce HAI (particularly hand hygiene compliance, central line-associated bloodstream infections, ventilator-associated pneumonia, infections caused by MRSA and C. difficile).

A multimodal strategy comprises several elements or components (3 or more; usually 5) implemented in an integrated way with the aim of improving an outcome and changing behaviour. It includes tools, such as bundles and checklists, developed by multidisciplinary teams that take into account local conditions.

The key approach for IPC implementation

The Five Components of the WHO multimodal hand hygiene improvement strategy

1a. System change - alcohol-based handrub at point of care
1b. System change - access to safe, continuous water supply, soap and towels
2. Training and education
3. Evaluation and feedback
4. Reminders in the workplace
5. Institutional safety climate
Stepwise approach

Step 1
Preparing for action

Step 2
Baseline assessment

Step 3
Developing and executing the plan

Step 4
Evaluating impact

Step 5
Sustaining the programme over the long-term

Multimodal improvement strategy embedded within each step in the cycle of continuous improvement

Implementation resources for the WHO IPC Core Components Guidelines

Hosted by Dr. Nizam Damani, International Federation of Infection Control
A Webber Training Teleclass
www.webbertraining.com
National & facility-level assessment tools

1. DRAFT - WHO IPC Self-Assessment Framework 2017 - Health care facility level

2. Other WHO IPC Guidelines & Implementation Support

Hosted by Dr. Nizam Damani, International Federation of Infection Control
A Webber Training Teleclass
www.webbertraining.com
The importance of leadership in IPC

We need to influence doctors, nurses, managers and all disciplines in health care!


Learn more at: http://www.who.int/infection-prevention/en/

Hosted by Dr. Nizam Damani, International Federation of Infection Control
A Webber Training Teleclass
www.webbertraining.com
Prof. Benedetta Allegranzi, WHO Infection Prevention and Control Global Unit
Sponsored by the World Health Organization Infection Prevention and Control Global Unit

SAVE LIVES: Clean Your Hands
WHO Hand Hygiene Campaign

Join us on 5 May 2018!

“It's in your hands – prevent sepsis in health care”


Hosted by Dr. Nizam Damani, International Federation of Infection Control
A Webber Training Teleclass
www.webbertraining.com
Thanks to Teleclass Education

**PATRON SPONSORS**

- Diversey: www.diversey.com
- Virox: www.virox.com
- Gojo: www.gojo.com
- World Health Organization: www.who.int/gpsc/en

Hosted by Dr. Nizam Damani, International Federation of Infection Control
A Webber Training Teleclass
www.webbertraining.com