WHO core components for infection prevention and control

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29 March 2017
New WHO Infection Prevention and Control Global Unit

Protecting patient and health worker lives across the world through excellence in infection prevention and control
Health care without avoidable infections
The critical role of infection prevention and control

http://www.who.int/gpsc/en/
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:

1. Sustainable development goals (SDGs) 3.1-3, 3.8, 3.d and 6
   - *Good Health and Well-being*
   - *Clean Water and Sanitation*
2. AMR global and national action plans
3. Preparedness and response to outbreaks
4. International Health Regulations
5. Post-Ebola recovery plans
6. Quality universal health coverage
7. Patient and health worker safety
8. WHO Global Strategy on integrated people-centred health services
## Global Action Plans & National Action Plans

### Global strategic objectives

<table>
<thead>
<tr>
<th>Objective</th>
<th>Key Actions</th>
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<tbody>
<tr>
<td>1. Improve awareness and understanding of AMR</td>
<td>• Risk communication&lt;br&gt;• Education</td>
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<tr>
<td>2. Strengthen knowledge through surveillance and research</td>
<td>• National AMR surveillance system&lt;br&gt;• Laboratory capacities&lt;br&gt;• Research and development</td>
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<td>3. Reduce the incidence of infection through effective sanitation, hygiene and infection prevention measures</td>
<td>• IPC in health care (incl. liaison with WASH)&lt;br&gt;• Community level prevention (incl. liaison with WASH)&lt;br&gt;• Animal health</td>
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<td>4. Optimize the use of antimicrobial medicines</td>
<td>• Access to qualified antimicrobial medicines&lt;br&gt;• Animal health</td>
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<tr>
<td>5. Ensure sustainable investment in countering antimicrobial resistance</td>
<td>• Measuring the burden of AMR&lt;br&gt;• Assessing investment needs&lt;br&gt;• Establishing procedures for participation</td>
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![World Health Organization logo](logo.png)
Why IPC in health care to combat AMR?

- Transmission of resistant bacteria from patient to patient (and to others) within health-care facilities amplifies the problem of AMR

- IPC best practices are crucial to combat AMR for two main reasons:
  1. they reduce occurrence of infection (any type of infection, not only due to resistant germs) by preventing microbial transmission, and consequently reduce antibiotics use (pressure) and therefore AMR
  2. they limit or stop the spread of multi-drug resistant microorganisms

- Countless success stories from around the globe document that effective IPC programs can reduce the spread of infection and recurrence of resistant bacteria in health care
Exploring the evidence base for national and regional policy interventions to combat resistance

Lancet 2016; 387: 285-95


One Health

Surveillance and monitoring

Infection prevention

Need

Demand
Supply

Responsible use

Universal access

Innovation and R&D (knowledge base)

Human health

Animal health

World Health Organization
Why IPC is so important for patient outcomes

Effective IPC programmes lead to more than a 30% reduction in HAI rates

Surveillance contributes to a 25-57% reduction in HAIs

Improving hand hygiene practices may reduce pathogen transmission in healthcare by 50%

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%

MRSA declined by 56% over a four-year period in England in line with a national target

A safety culture and prevention programme reduced SSI risk in African hospitals by 44%

Between 2010 and 2015 Australia achieved and sustained 80% hand hygiene compliance in hospitals nationwide
Implementation of IPC best practices

- Standards, innovation & adaptation

Guidelines  Implementation strategies & tools  Behavioural change

- Enabling environment & patient safety culture

IPC measures  Enabling environment  Impact at the point of care

- Focus on LMICs

Operational research  Adapted interventions  Evidence for low-resource settings
Figure 1.9 – Percentages of Member States that had an infection prevention and control (IPC) programme and in which all tertiary hospitals had such a programme, all regions
(Note: numbers above the bars represent the numbers of Member States that answered “yes”)

AFR, WHO African Region; AMER, WHO Region for the Americas; EMR, WHO Eastern Mediterranean Region; EUR, WHO European Region; SEAR, WHO South-East Asia Region; WPR, WHO Western Pacific Region
Technical Work
Evidence-based interventions

Adaptive Work
Safety culture
1. IPC is one part of the solution to address the threats of **epidemics, pandemics and AMR** – IPC protects people from harm – what are the critical elements (core components) that every country should have in place to achieve effective IPC?
2. Renewed focus on the **International Health Regulations (IHR)** which position IPC as a key strategy for dealing with public health threats of international concern.

- Remember – IHR is the only international “law” that addresses IPC.
- IPC is an IHR Core Capacity!
The #SDGs & IPC

3.8. Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all

Infection Prevention & Control – the foundation of quality essential health services – critical to effective WASH
Universal Health Coverage

Promote & prevent

- avoidable harm (patients and health workers);
- Contributes to a reduction in health care costs (health facilities & nations, & out of pocket patient expenditure)

IPC programmes based on evidence-based norms & standards, embedded at the national & local level as a key part of people centered & integrated health services

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

To be launched during WAAW, on 15 November 2016
Background supporting the recommendations

Country experiences and lessons learned
Facility level systematic reviews (1996-2015)

Total records identified: 48,079

- Duplicates from different databases removed: 8362
  - Articles for title and abstract evaluation: 39,717
    - Removed after title and abstract evaluation: 37,487
      - Articles excluded: 1397
        - Selection criteria not met: 1040
        - Full text inaccessible: 357

- Articles for full text evaluation: 2230
  - Articles excluded: 1397
    - Selection criteria not met: 1040
    - Full text inaccessible: 357

- Articles for quality assessment: 833
  - Duplicates from different dimensions removed: 226
    - Removed due to insufficient quality: 515

Articles included for data analysis and synthesis: 92
[RCT (3), CBA (5), ITS (4), CCS (4), NCBA (34), NCC (22), Qualitative (16), Mixed-methods (4)]

733 records eligible for full-text assessment

- 545 of full-text articles excluded:
  - 535 did not meet selection criteria
  - 10 full-text articles were not available

- 161 articles not included in quality assessment:
  - 148 articles did not meet the correct study type

- 188 articles met the inclusion criteria

- 27 articles included in qualitative assessment (EPOC) according to correct study type

Total: 87422 hits → 119 selected

National level systematic review (2000-2015)

Identification

Records identified through database searching (n = 8,937)

Additional records identified through other sources (n = 128)

Records after duplicates removed (n = 8,816)

Records screened (n = 8,816)

Records excluded (n = 8,491)

Full-text articles assessed for inclusion criteria (n = 325)

Full-text articles excluded, with reasons (n = 215)
- Not primary research studies, no intervention, not national implementation, cross sectional

Eligibility

Included

Studies data meeting EPOC criteria for quality assessment (n = 26)

Studies data not meeting EPOC criteria for quality assessment (n = 84)
New WHO core components for IPC programmes

<table>
<thead>
<tr>
<th>1</th>
<th>IPC programmes</th>
<th>R1a</th>
<th>Strong</th>
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<tbody>
<tr>
<td>2</td>
<td>Evidence-based guidelines</td>
<td>R2</td>
<td>Strong</td>
</tr>
<tr>
<td>3</td>
<td>Education &amp; training</td>
<td>R3a</td>
<td>Strong</td>
</tr>
<tr>
<td>4</td>
<td>Surveillance</td>
<td>R4a</td>
<td>Strong</td>
</tr>
<tr>
<td>5</td>
<td>Multimodal Strategies</td>
<td>R5a</td>
<td>Strong</td>
</tr>
<tr>
<td>6</td>
<td>Monitoring, audit &amp; feedback</td>
<td>R6a</td>
<td>Strong</td>
</tr>
<tr>
<td>7</td>
<td>Workload, staffing &amp; bed occupancy</td>
<td>R7</td>
<td>Strong</td>
</tr>
<tr>
<td>8</td>
<td>Built environment, materials &amp; equipment</td>
<td>8a</td>
<td>GPS</td>
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- **8 Core components**
- **11 evidence based recommendations**
- **3 good practice statements**

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R = recommendation; GPS: good practice statement
Core component 1: IPC programmes

An IPC programme with a dedicated, trained team should be in place in each acute health care facility for the purpose of preventing HAI and combating AMR through IPC good practices.

Stand-alone, active national IPC programmes with clearly defined objectives, functions and activities for the purpose of preventing HAI and combating AMR through IPC good practices should be established. National IPC programmes should be linked to other relevant national programmes and professional organizations.

Evaluation of the evidence from 2 studies shows that IPC programmes including dedicated, trained professionals are effective in reducing HAI in acute care facilities.
Core Component 2: IPC Guidelines

Evidence-based guidelines should be developed and implemented for the purpose of reducing HAI and AMR. Education and training of relevant health care workers on guideline recommendations and monitoring of adherence with guideline recommendations should be undertaken to achieve successful implementation.

Evaluation of the evidence from 6 studies shows that guidelines on the most important IPC good practices and procedures are effective to reduce HAI when implemented in combination with health care workers’ education and training.
Core Component 3: IPC Education & Training

At the facility level, IPC education should be in place for all health care workers by utilizing team- and task-based strategies that are participatory and include bedside and simulation training to reduce the risk of HAI and AMR.

The national IPC programme should support education and training of the health workforce as one of its core functions.

Evaluation of the evidence from 15 studies shows that IPC education that involves frontline health care workers in a practical, hands-on approach and incorporates individual experiences is associated with decreased HAI and increased hand hygiene compliance.
Core Component 4: HAI surveillance

Facility-based HAI surveillance should be performed to guide IPC interventions and detect outbreaks, including AMR surveillance with timely feedback of results to health care workers and stakeholders and through national networks.

National HAI surveillance programmes and networks that include mechanisms for timely data feedback and with the potential to be used for benchmarking purposes should be established to reduce HAI and AMR.

Evaluation of the evidence from 13 studies shows that a hospital-based surveillance system is associated with a decrease in HAI, including central line-associated bloodstream infections, ventilator-associated pneumonia, SSI, catheter-related urinary tract infections and catheter-related bloodstream infections, and that timely feedback of results are influential in the implementation of effective IPC actions.
Core Component 5: Multimodal Strategies

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.

Evaluation of the evidence from 44 studies 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 and infections caused by MRSA and *C. difficile*.

At the facility level IPC activities should be implemented using multimodal strategies to improve practices and reduce HAI and AMR.

National IPC programmes should coordinate and facilitate the implementation of IPC activities through multimodal strategies on a nationwide or sub-national level.
Core Component 6: Monitoring/audit of IPC practices & feedback

Regular monitoring/audit and timely feedback of health care practices should be undertaken according to IPC standards to prevent and control HAIs and AMR at the health care facility level. Feedback should be provided to all audited persons and relevant staff.

A national IPC monitoring and evaluation programme should be established to assess the extent to which standards are being met and activities are being performed according to the programme’s goals and objectives. Hand hygiene monitoring with feedback should be considered as a key performance indicator at the national level.

Evaluation of the evidence from 6 studies showed that the regular monitoring/auditing of IPC practices paired with regular feedback (individually and/or team/unit) is effective to increase adherence to care practices and to decrease overall HAI.
Evaluation of the evidence from 19 studies showed that bed occupancy exceeding the standard capacity of the facility is associated with the increased risk of HAI in acute care facilities, in addition to inadequate health care worker staffing levels.
Core Component 8: Built environment, materials & equipment for IPC

The GDG deemed it essential to describe the appropriate water and sanitation services, environment, and materials and equipment for IPC as a core component of effective IPC programmes at health care facilities.

Evaluation of the evidence from 11 studies showed that the ready availability of equipment and products at the point of care leads to an increase of compliance with good practices and the reduction of HAI. In 6 of the 11 studies, the intervention consisted of the ready availability and optimal placement of hand hygiene materials and equipment in areas designated for patient care or where other health care procedures are performed and led to a significant increase of hand hygiene compliance.
Limited access to qualified and trained IPC professionals
Limited human resources
Inadequate budgets
Implementation challenges
Need for adaptation or tailoring to the cultural setting and local context, and according to available resources
Availability of human resources and training, quality microbiological/laboratory support, information technology, and data management systems are requirements for surveillance and auditing; in their absence, surveillance based on clinical data could be considered.
New IPC core components: implications for low and middle income countries (2)

**However:**

- Resources invested are worth the net gain, irrespective of the context and despite the costs incurred.
- Not all solutions require additional resources.
- Some solutions can likely be low cost and local production (e.g. alcohol-based hand rubs) should be encouraged.
- Partnerships or partners’ collaborations could assist in the achievement of the core components delivery and funding.
Articles from LMICs

Total number of papers retrieved according to EPOC/ICROMS
- HCF: 119
- National: 29

From LMICs:
- Identified through ICROMS: 7 studies
  - 3 from Argentina supporting GUIDELINES implementation (on CLABS, CAUTI, HAI prevention)
  - 2 on EDUCATION & MULTIMODAL STRATEGIES from Brazil and India (hand hygiene interventions)
  - 1 on hand hygiene audits from Thailand
  - 1 on CLABS surveillance and feedback from Argentina

- EPOC/HCF: 0 EPOC/18 non-EPOC
- EPOC/National: 0 EPOC/4 non-EPOC

Type of study designs:
- HCF: 17 non-controlled before/after + 1 cohort
- National: 4 non-controlled before/after
IPC Core Components dissemination & implementation

- National Level systematic review paper submitted
  - IPC Core Components Scientific Paper *Antimicrobial Resistance & Infection Control, in press*
- Practical Guide
  - IPC Core Components field implementation in low-resource settings
    - National Level
- Practical Guide
  - IPC Core Components field implementation in low-resource settings
    - Facility Level
- Assessment Framework & tools
- Advanced IPC training packages
Directions and priorities for IPC (1)

- Use innovative and locally adapted implementation strategies and locally produced practical tools to catalyze behavioural change
- Use new approaches with implementation science and behavioural change theories underpinning IPC implementation strategies, also for LMICs
- Support IPC with patient safety culture and integrate it within clinical procedures (interventions led by clinical staff) and people-centred service delivery
- Undertake research and strategic thinking on approaches tailored to specific cultures and resource level
Directions and priorities for IPC (2)

- Report more details on interventions (how you do it) and conduct qualitative studies to understand the way and why interventions work or not.
- Seek political engagement, including in co-financing interventions (new business models).
- Support peer learning communities and platforms for sharing experiences, including failures.
- Encourage and support multi-country approaches, especially in the developing world.
THANK YOU!!!
WHO Infection Prevention and Control
Global Unit

Learn more at: http://www.who.int/gpsc/en/