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**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*



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Health care without avoidable infections

The critical role of
infection prevention
and control



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



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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) 3.1-3, 3.8, 3.d 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



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Global Action Plans & National Action Plans

Global strategic objectives

Examples of key actions for national action plans

1. Improve awareness and understanding of AMR

- Risk communication
- Education

2. Strengthen knowledge through surveillance and research

- National AMR surveillance system
- Laboratory capacities
- Research and development

3. Reduce the incidence of infection through effective sanitation, hygiene and infection prevention measures

- IPC in health care (incl. liaison with WASH)
- Community level prevention (incl. liaison with WASH)
- Animal health

4. Optimize the use of antimicrobial medicines

- Access to qualified antimicrobial medicines
- Animal health

5. Ensure sustainable investment in countering antimicrobial resistance

- Measuring the burden of AMR
- Assessing investment needs
- Establishing procedures for participation

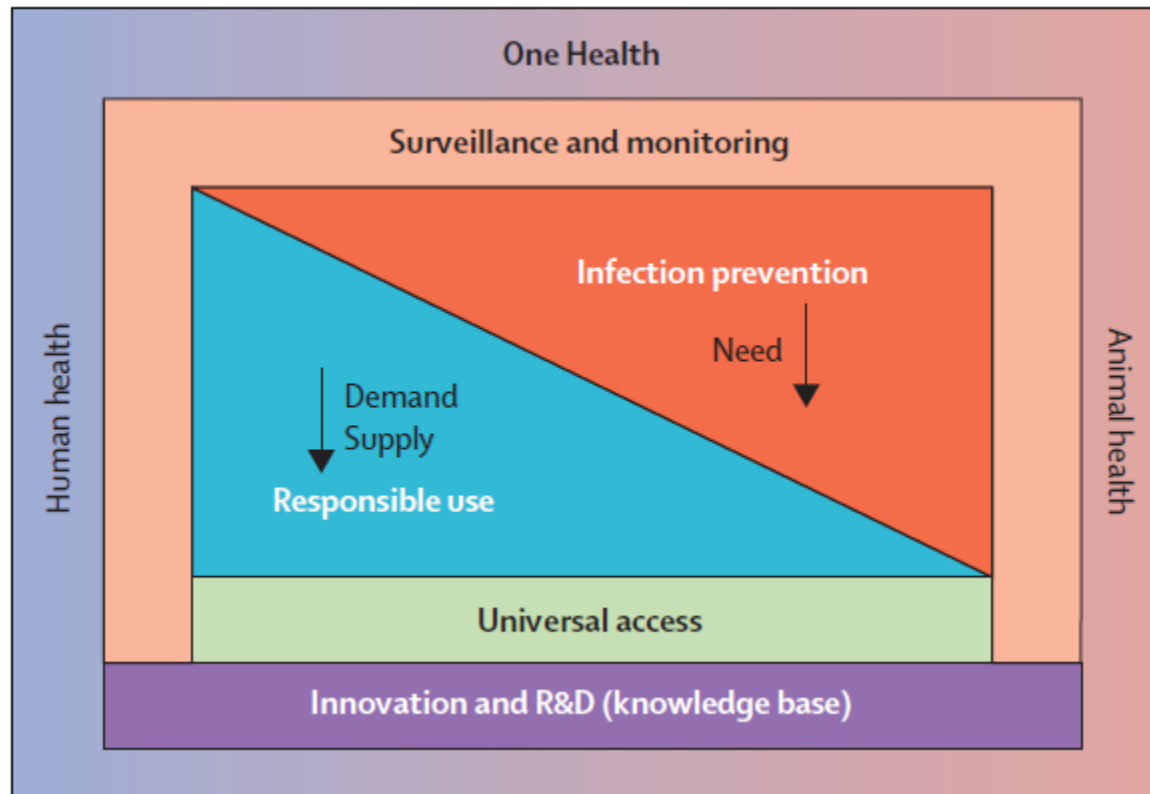
Why IPC in health care to combat AMR?

- 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

Osman A Dar, Rumina Hasan, Jørgen Schlundt, Stephan Harbarth, Grazia Caleo, Fazal K Dar, Jasper Littmann, Mark Rweyemamu, Emmeline J Buckley, Mohammed Shahid, Richard Kock, Henry Lishi Li, Haydar Giha, Mishal Khan, Anthony D So, Khalid M Bindayna, Anthony Kessel, Hanne Bak Pedersen, Govin Permanand, Alimuddin Zumla, John-Arne Røttingen, David L Heymann



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 HAIs

50%
Reduction

Improving hand hygiene practices may reduce pathogen transmission in health care 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 bacteraemia 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

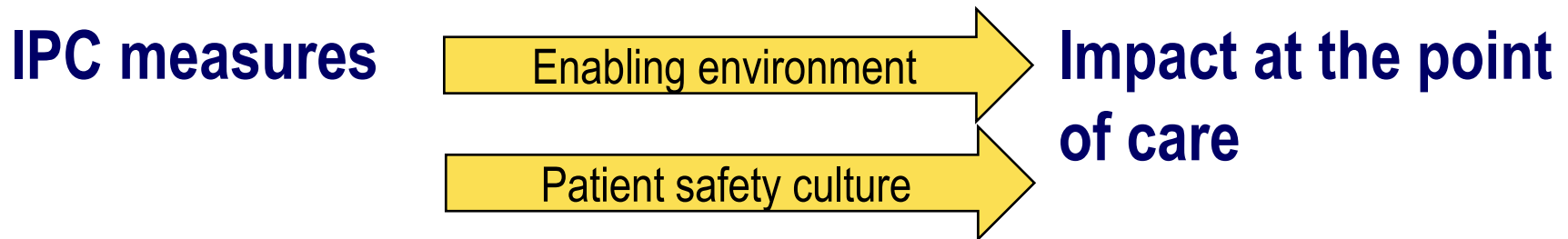
Between 2010 and 2015 Australia achieved and sustained 80% hand hygiene compliance in hospitals nationwide

Implementation of IPC best practices

- **Standards, innovation & adaptation**



- **Enabling environment & patient safety culture**



- **Focus on LMICs**



WHO Global Survey - 2015

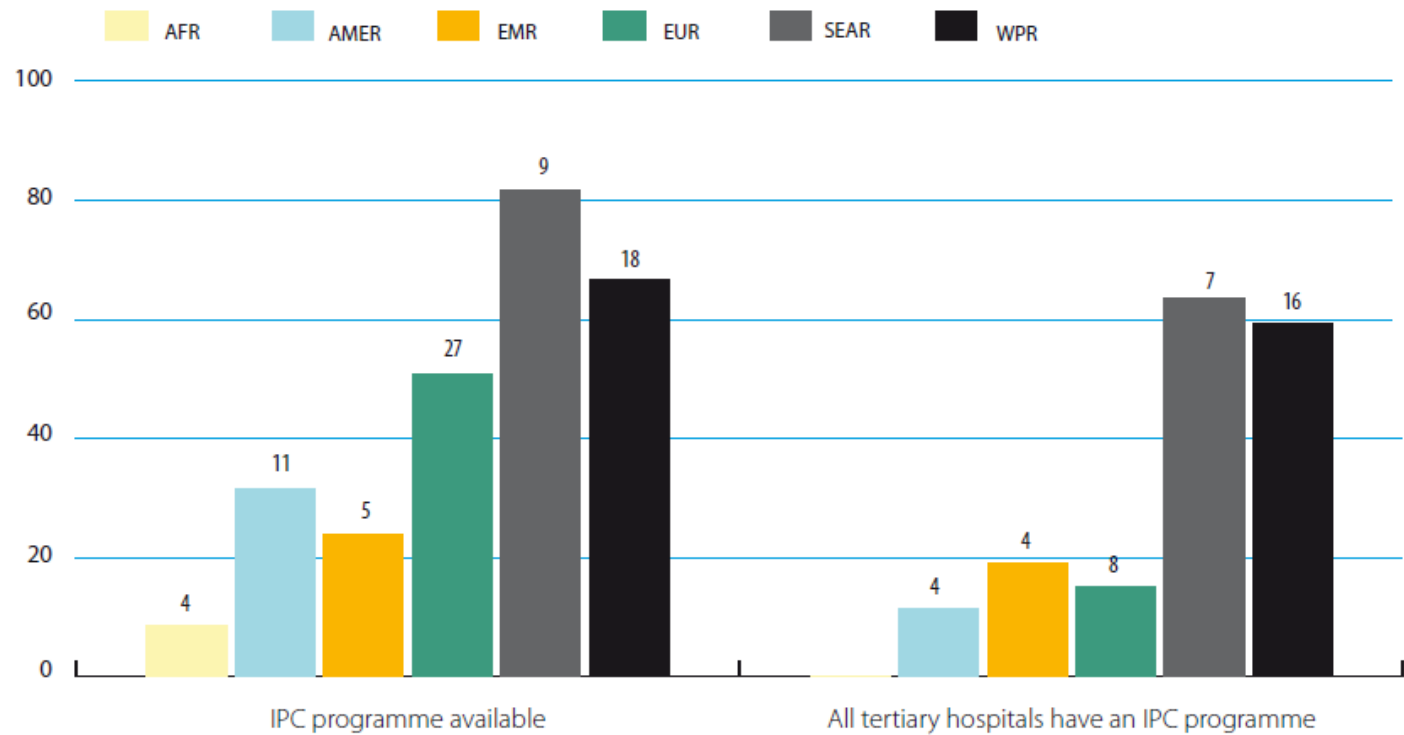
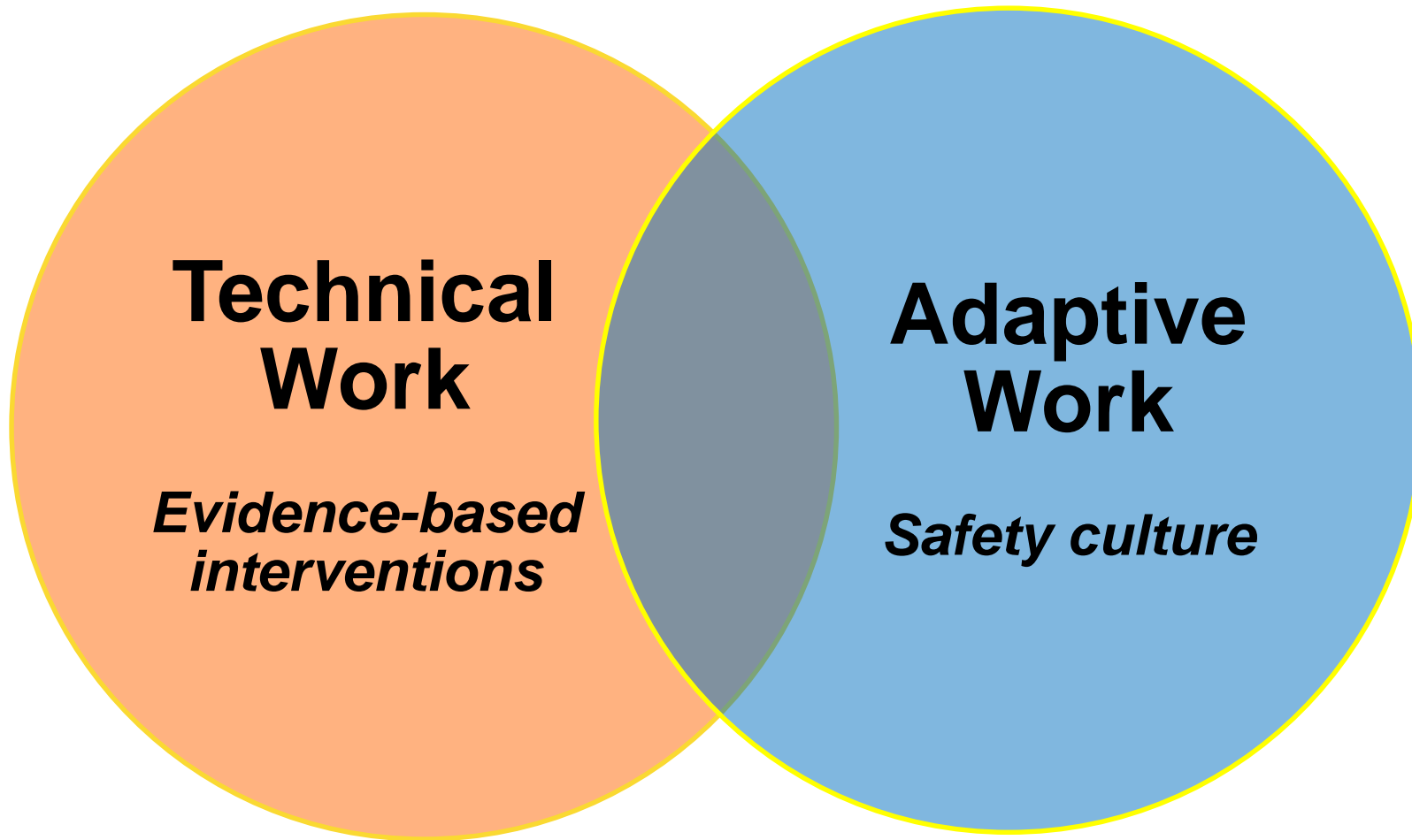


Figure 1.9 – Percentages of Member States that had an infection prevention and control (IPC) programme and in which all tertiary hospitals had such a programme, all regions

(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





Rationale for the Guidelines

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?

2017

- Deadline for all countries to have in place **a national action plan** to tackle AMR
- IPC one of the **five action areas** to be addressed



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Rationale for the Guidelines

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!

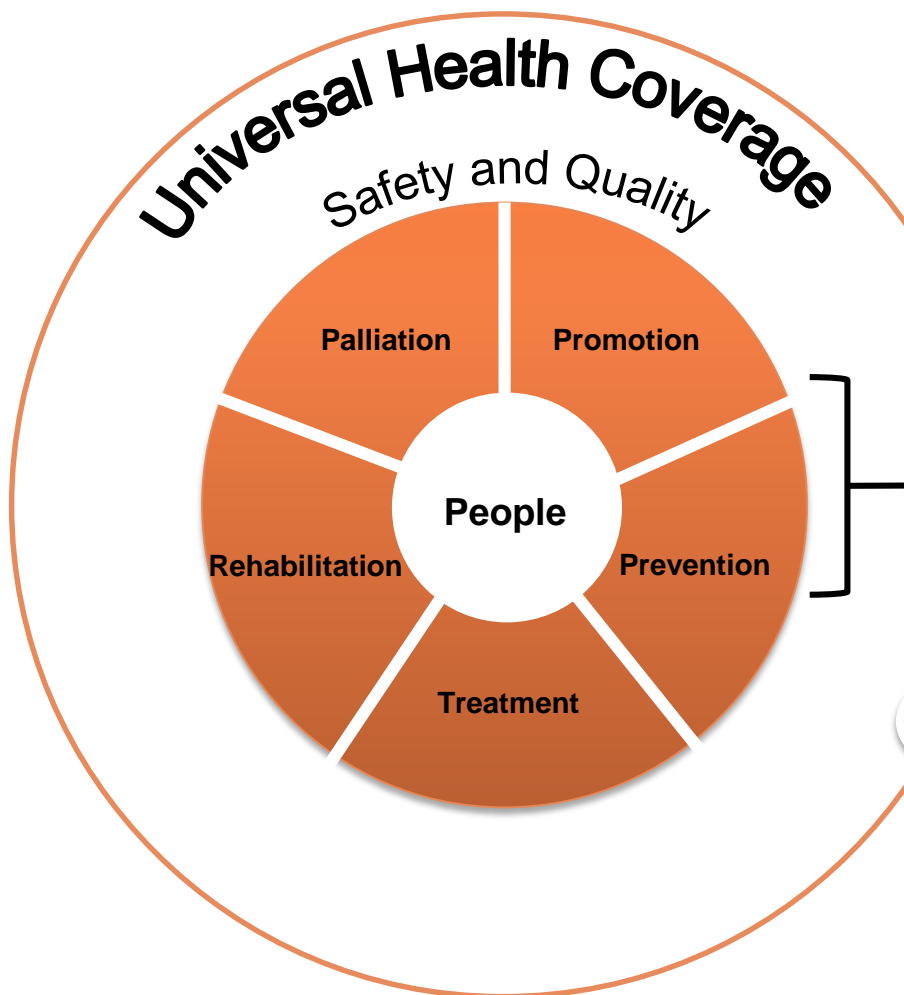


The #SDGs & IPC



*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



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

2 Promote & prevent

- 3
- avoidable harm (patients and health workers);
 - Contributes to a reduction in health care costs (health facilities & nations, & out of pocket patient expenditure)

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



<http://www.who.int/gpsc/ipc-components/en/index.html>

To be launched during WAAW, on 15 November 2016




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Background supporting the recommendations

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

Weller, D., et al. *Journal of Hospital Infection* 2016; 81: 1-10. doi:10.1016/j.jhin.2015.11.017

Despite control efforts, the burden of health-care-associated infections in Europe is high and leads to around 37 000 deaths each year. We did a systematic review to identify crucial elements for the organisation of effective infection prevention programmes in hospitals and key components for implementation of monitoring. 32 studies published from 1996 to 2012 were assessed and ten key components identified: organisation of infection control at the hospital level; bed occupancy, staffing, workload, and employment of pool or agency nurses; availability of and ease of access to materials and equipment and optimum ergonomics; appropriate use of guidelines; education and training; auditing, surveillance and feedback; multidisciplinary and multidisciplinary prevention programmes that include behavioural change, engagement of champions; and positive organisational culture. These components comprise manageable and widely applicable ways to reduce health-care-associated infections and improve patient safety.


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Core elements of effective infection prevention and control programmes in acute health care facilities: a systematic review (update of the SIGHT review)

Version 4
29 March 2016


A Systematic Literature Review on Core Components for Infection Prevention and Control (IPC) Programmes at the National Level

March 2016
Draft version 0.1
Glasgow Caledonian University (GCU)
Safeguarding Health through Infection Prevention (SHIP) Research Group

 Glasgow Caledonian University



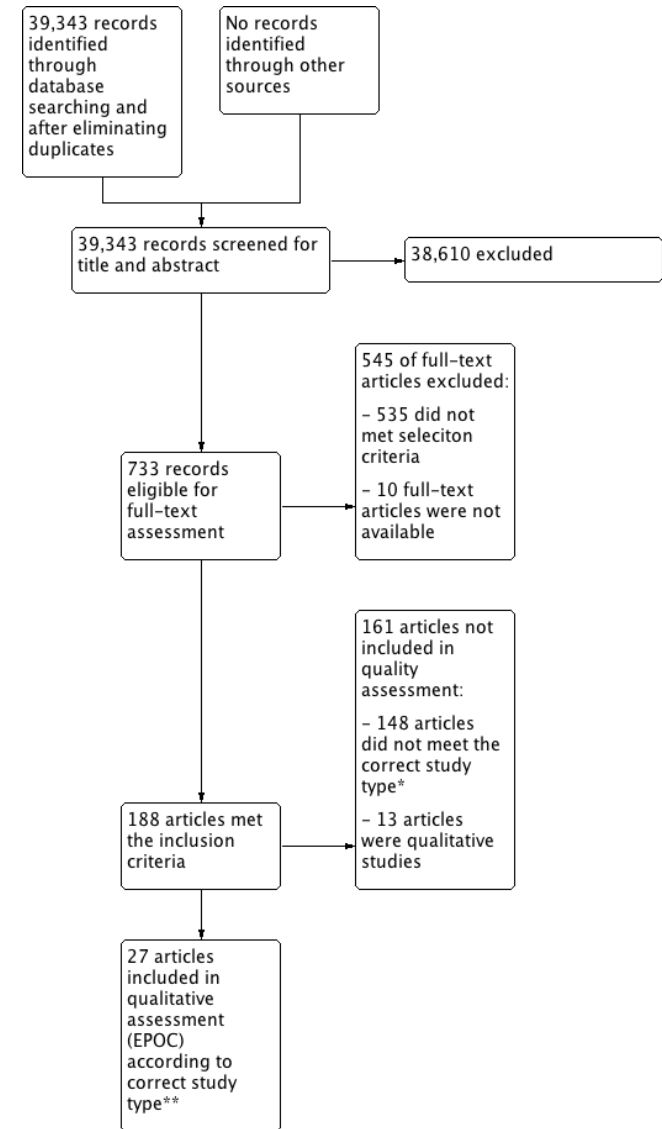
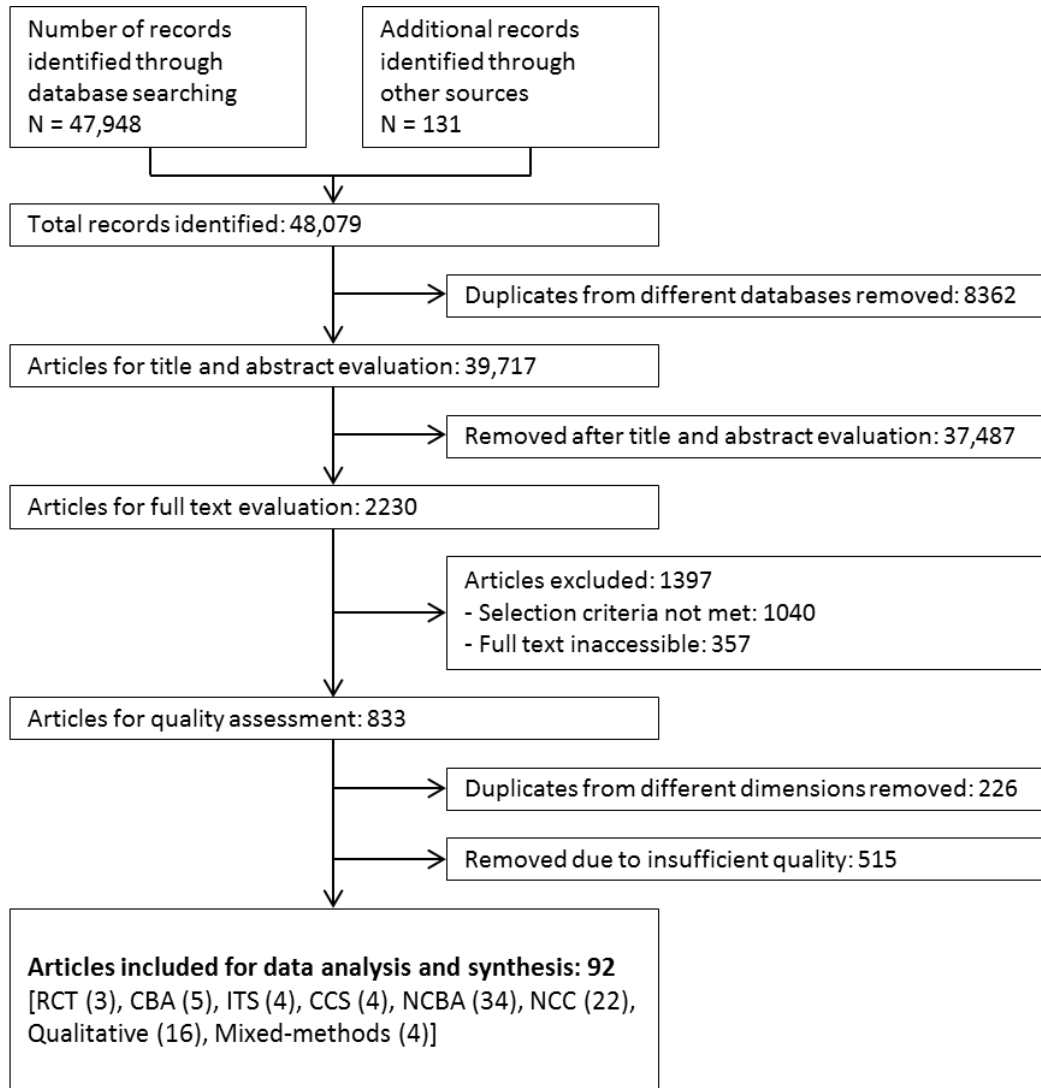
Country experiences and lessons learned

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Core Components for Infection Prevention and Control Programmes at the National and Facility Level

A Draft Inventory of Available Guidance from Member States and WHO Regional Offices

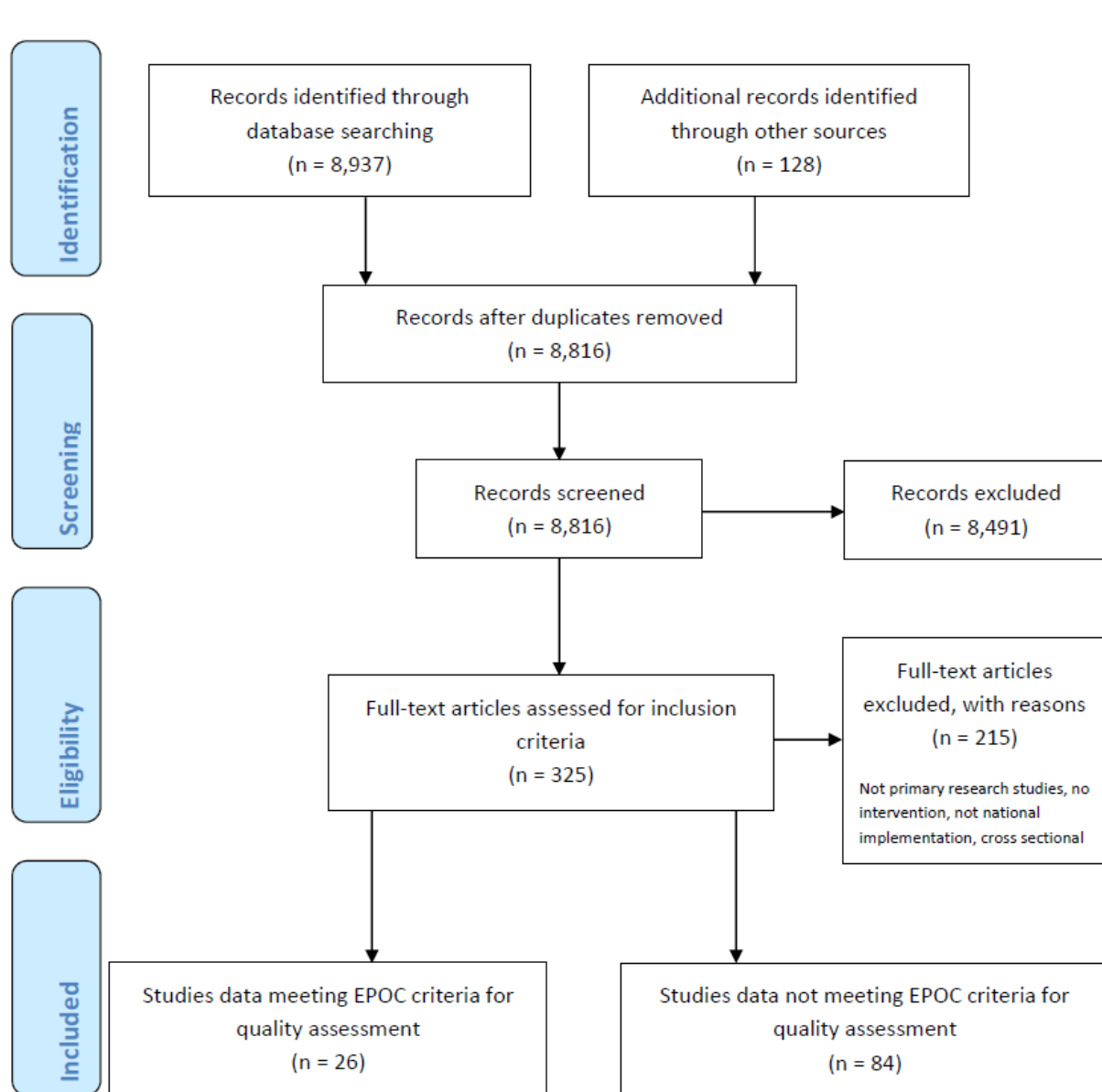
Facility level systematic reviews (1996-2015)



Zingg W. *Lancet Infect Dis* 2015; 15: 212-224

Total: 87422 hits → 119 selected

National level systematic review (2000-2015)



New WHO core components for IPC programmes

1	IPC programmes	R1a Strong	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.
		1b GPS	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.
2	Evidence-based guidelines	R2 Strong	Evidence-based guidelines should be developed and implemented for the purpose of reducing HAI and AMR. Education and training of the relevant health care workers on guideline recommendations and monitoring of adherence with guideline recommendations should be undertaken to achieve successful implementation.
3	Education & training	R3a Strong	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.
		3b GPS	The national IPC programme should support education and training of the health workforce as one of its core functions.
4	Surveillance	R4a Strong	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.
		R4b Strong	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.
5	Multimodal Strategies	R5a Strong	At the facility level, IPC activities should be implemented using multimodal strategies to improve practices and reduce HAI and AMR.
		R5b Strong	National IPC programmes should coordinate and facilitate the implementation of IPC activities through multimodal strategies at the national or sub-national level.
6	Monitoring, audit & feedback	R6a Strong	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.
		R6b Strong	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.
7	Workload, staffing & bed occupancy	R7 Strong	In order to reduce the risk of HAI and the spread of AMR, the following should be addressed: (1) bed occupancy should not exceed the standard capacity of the facility; (2) health care worker staffing levels should be adequately assigned according to patient workload.
8	Built environment, materials & equipment	8a GPS	At the facility level, patient care activities should be undertaken in a clean and/or hygienic environment that facilitates practices related to the prevention and control of HAI, as well as AMR, including all elements around the WASH infrastructure and services and the availability of appropriate IPC materials and equipment.
		R8b Strong	At the facility level, materials and equipment to perform appropriate hand hygiene should be readily available at the point of care.

- 8 Core components
- 11 evidence based recommendations
- 3 good practice statements

R= recommendation; GPS: good practice statement

Core component 1: IPC programmes

1

IPC Programmes

R1a
Strong

R1b
GPS

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

2

Evidence Based Guidelines

R2
Strong

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

3

Education & Training

R3a
Strong

3b
GPS

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.



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Core Component 4: HAI surveillance

4

Surveillance

R4a
Strong

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.

R4b
Strong

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.



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Core Component 5: Multimodal Strategies

5

Multimodal Strategies

NEW

R5a
Strong

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

R5b
Strong

National IPC programmes should coordinate and facilitate the implementation of IPC activities through multimodal strategies on a nationwide or sub-national level.

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*.

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.



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Core Component 6: Monitoring/audit of IPC practices & feedback

6

Monitoring,
Audit &
Feedback

R6a
Strong

R6b
Strong

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.



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Core Component 7: Workload, staffing & bed occupancy

7

**Workload,
Staffing &
Bed
Occupancy**

R7
Strong

In order to reduce the risk of HAI and the spread of AMR the following should be addressed: (1) bed occupancy should not exceed the standard capacity of the facility; (2) health care worker staffing levels should be adequately assigned according to patient workload.

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.



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Core Component 8: Built environment, materials & equipment for IPC

8

Built Environment, materials & Equipment

8a
GPS

R8b
Strong

At the **facility** level patient care activities should be undertaken in a clean and/or hygienic environment that facilitates practices related to the prevention and control of HAI, as well as AMR, including all elements around the WASH infrastructure and services and the availability of appropriate IPC materials and equipment.

At the **facility** level materials and equipment to perform appropriate hand hygiene should be readily available at the point of care.

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.

New IPC core components: implications for low and middle income countries (1)

- 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)

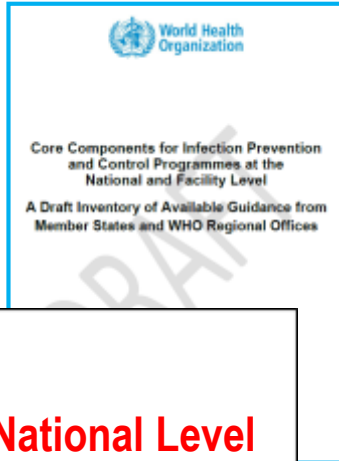
However:

- 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 CLABSI, CAUTI, HAI prevention)
 - 2 on EDUCATION & MULTIMODAL STRATEGIES from Brazil and India (hand hygiene interventions)
 - 1 on hand hygiene audits from Thailand
 - 1 on CLABSI 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!!!!

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



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