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**New IPC recommendations from WHO -
the importance of IPC actions
in fighting the AMR burden**

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IPC Global Unit, SDS/HIS, WHO HQ

14 November 2016

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

World Antibiotic Awareness Week

11 November 2016 – This year World Antibiotic Awareness Week will be held from 14 to 20 November 2016. The campaign aims to increase awareness of global antibiotic resistance and to encourage best practices among the general public, health workers, policy-makers and the agriculture sector to avoid the further emergence and spread of antibiotic resistance.



WHO

World Antibiotic Awareness Week

2016 Campaign Toolkit

November 2016: You are invited to join the campaign, help raise awareness & understanding of this urgent problem & spark the changes needed to ensure antibiotics are used only when necessary & as prescribed by a health professional.

[Click here to view the 2016 campaign toolkit](#)



Campaign materials



2016 Campaign toolkit

About antibiotic resistance

- Fact sheet on antibiotic resistance
- Global action plan on antimicrobial resistance
- Worldwide country situation analysis: response to antimicrobial resistance
- How to stop antibiotic resistance? Here's a WHO prescription
- WHO's work on drug resistance
- Antibiotic resistance: Multi-country public awareness survey

Campaign updates

To receive regular information on the "Antibiotics: Handle with care" campaign, send an email to waaw@who.int with the subject line "SUBSCRIBE TO MAILING LIST".

Countdown to World Antibiotic Awareness Week, 14-20 November 2016

0	5	53	32
Days	Hours	Minutes	Seconds

<http://www.who.int/campaigns/world-antibiotic-awareness-week/en/>



WHAT'S THE PROBLEM?



1 IN 10 PATIENTS get an infection while receiving care



UP TO 32% OF SURGICAL PATIENTS get a post-op infection, up to 51% antibiotic resistant



UP TO 90% OF HEALTH CARE WORKERS do not clean their hands in some facilities



INFECTIONS CAUSE UP TO 56% OF DEATHS among hospital-born babies



UP TO 20% OF AFRICAN WOMEN get a wound infection after a caesarean section



50-70% OF INJECTIONS given in some developing countries are unsafe



INFECTIONS can lead to disability, **ANTIBIOTIC RESISTANCE**, increased hospital time and death

PREVENT INFECTIONS SAVE LIVES IN HEALTH CARE



HEALTH CARE WITHOUT AVOIDABLE INFECTIONS

INFECTION PREVENTION AND CONTROL CONTRIBUTES TO ACHIEVING SUSTAINABLE DEVELOPMENT GOALS and could save millions of lives



WHAT'S THE SOLUTION?



HAVE ACTIVE INFECTION PREVENTION AND CONTROL PROGRAMMES and target antibiotic resistance



USE CLEAN PRACTICES and asepsis for interventions



PRACTICE HAND HYGIENE to prevent infections and reduce the spread of antibiotic resistance



HAVE ENOUGH STAFF, a clean and hygienic environment and don't overcrowd health care facilities



MONITOR INFECTIONS and make action plans to reduce their frequency



NEVER RE-USE needles and syringes



Only dispense antibiotics when **TRULY NEEDED** to **REDUCE THE RISK OF RESISTANCE**

Youtube video promoting the new WHO IPC guidelines in the context of the fight against AMR



Dame Sally Davies,
Chief Medical Officer for England

WHO IPC team

*In the context of SDS focus: **safe, high quality integrated health services delivered through knowledge, innovation, collaborations and people-centeredness***

Functions

1. Leadership, connecting and coordinating
2. Campaigns and advocacy
3. Technical guidance and implementation
4. Capacity building
5. Measuring and learning

Technical areas of work 2015-17

- IPC capacity building
- IPC to combat AMR
- Surveillance & burden of HAIs
- Hand hygiene in health care
- Injection safety
- Prevention of infections associated with invasive procedures (e.g. surgery and catheters) - sepsis

WHO IPC team

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Working across the 3 levels of WHO & with Member States and partners



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1. Country Capacity Building

2. Implementation Approaches



IPC capacity building

- To **support** countries in their effort to strengthen or build reliable, resilient, effective IPC programmes and AMR national action plans
- To **encourage** countries to integrate IPC within national quality efforts in the context of universal health coverage
- To **provide** evidence- and expert consensus-based recommendations and an adaptable implementation framework
- To **facilitate** inter-country sharing and cooperation

Example of country support: IPC at the core of National Recovery Plans in the 3 Ebola countries



Republic of Liberia

Investment Plan for Building a Resilient Health System in Liberia

2015 to 2021

in response to the Ebola virus disease outbreak of 2014 – 2015



MINISTRY OF HEALTH AND SANITATION

HEALTH SECTOR RECOVERY PLAN (2015 – 2020)



"Government of Sierra Leone
working together with partners to



REPUBLIQUE DE GUINEE

Travail – Justice – Solidarité



MINISTRE DE LA SANTE

PLAN DE RELANCE ET DE RESILIENCE DU SYSTEME DE SANTE 2015 -2017

Avril 2015

Support also provided to “preparedness” countries
(<http://www.who.int/csr/en/>) and countries developing AMR/NAPs



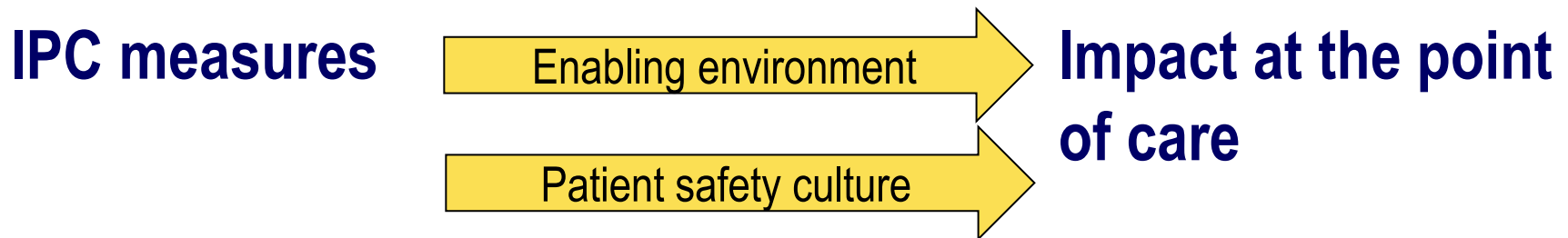
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Implementation of IPC best practices

- **Standards, innovation & adaptation**

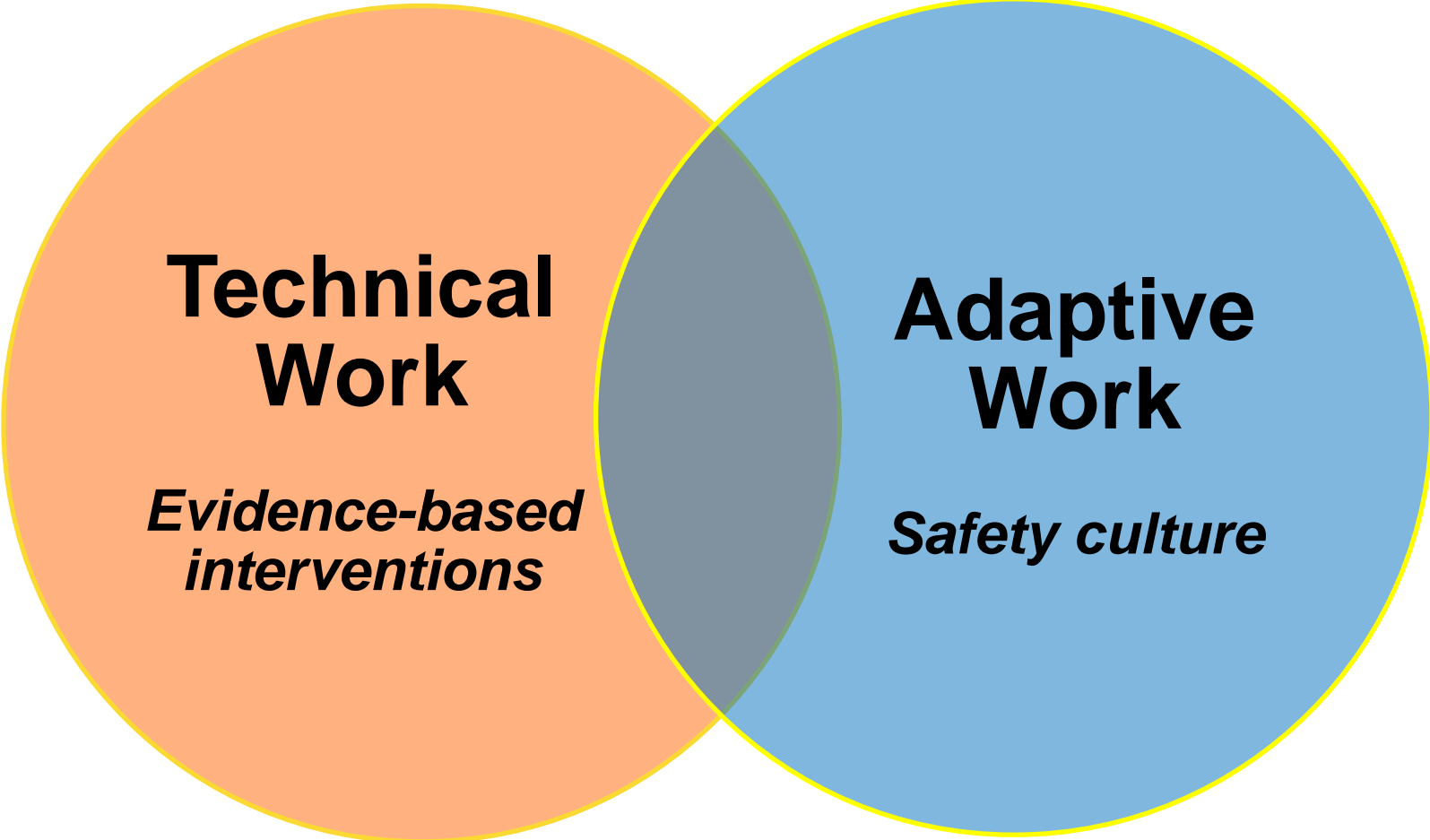


- **Enabling environment & patient safety culture**



- **Focus on LMICs**





The diagram consists of two overlapping circles. The left circle is orange and contains the text 'Technical Work' and 'Evidence-based interventions'. The right circle is blue and contains the text 'Adaptive Work' and 'Safety culture'. The overlapping area in the center is shaded grey.

Technical Work

*Evidence-based
interventions*

Adaptive Work

Safety culture



Why new guidelines on core components for effective IPC programmes

- No international evidence-based recommendations available
- Support to countries for the development of their national action plans to combat antimicrobial resistance
- Support for the recovery phase in countries affected by the Ebola virus disease outbreak
- Need for advancing the global IPC agenda on the basis of:
 - Field experiences
 - Recent research developments (i.e. implementation science, behavioural change approaches)

More specifically....

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!



Rationale for the Guidelines

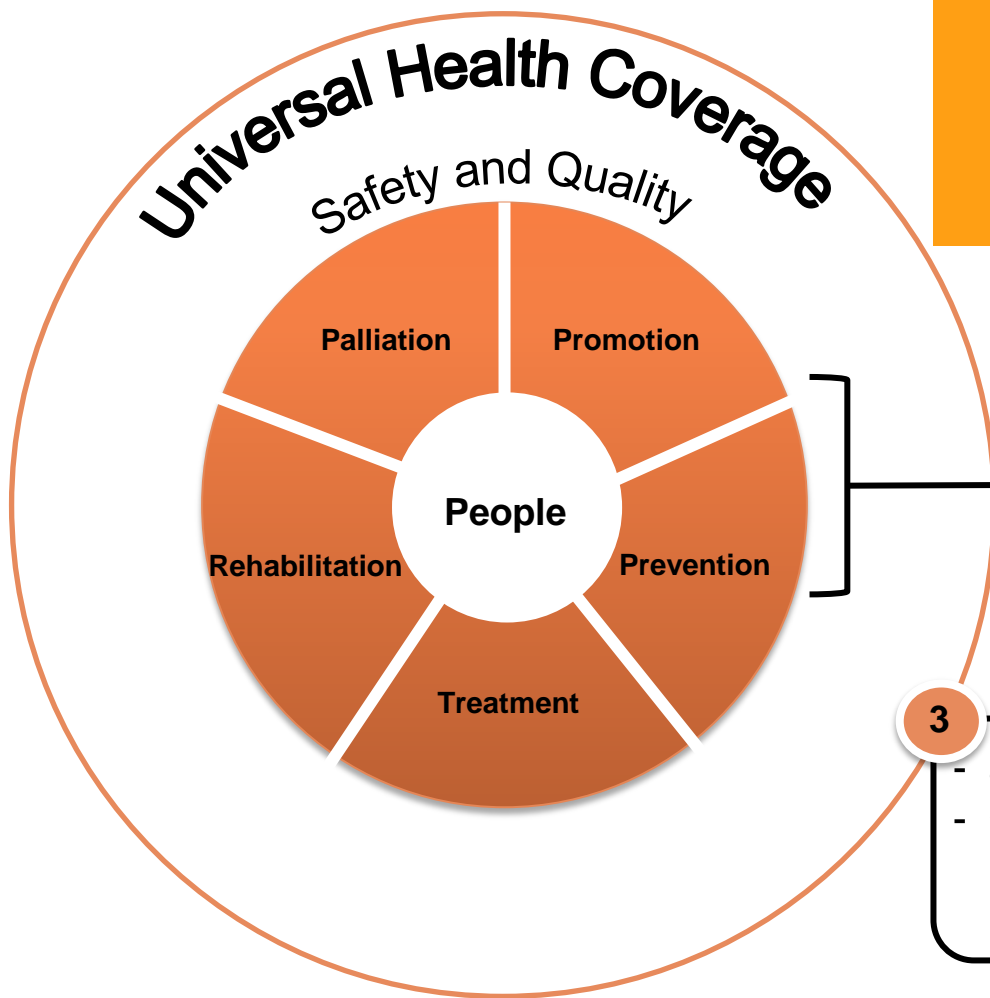
3. Sustainable Development Goals 3 and 6 and the requirement for effective, integrated IPC programmes to support **quality health service delivery in the context of universal health coverage and water, sanitation and health (WASH)** at national and facility levels.

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*

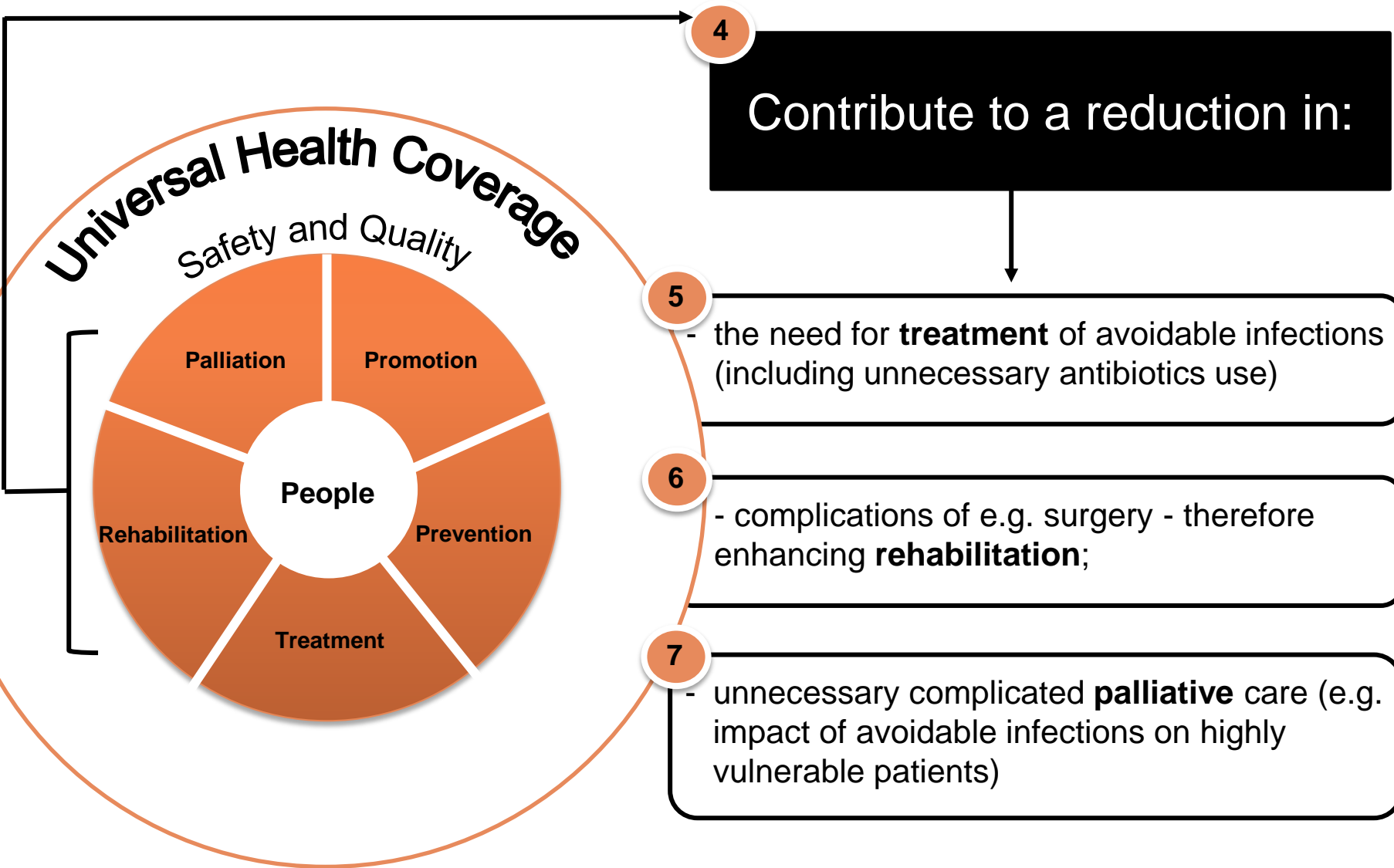
Infection Prevention & Control – the foundation of quality essential health services – critical to effective WASH



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



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

See next page for summary recommendations/good practice statements

IMPLEMENTATION FOCUS

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

Focus on multimodal behaviour change approaches and bundles

Focus on WASH-IPC integration, environment & human factors

Focus on AMR, IHR and IPC interface



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

To be launched during WAAW 2016




Background supporting the recommendations

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

Author: Shiga, A. et al. *Journal of Hospital Infection* 2016; 81: 1-10

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 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 patients' 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

Systematic reviews methods

● Inclusion

- Any **quantitative study** using recognised methodology
- Any **qualitative study** using a recognised methodology
- Studies using mixed-methods' approaches
- Acute care

- **Exclusion:** Retrospective and cross-sectional studies, reviews, letters, theses, conference proceedings and opinion articles; outbreak control

● Search strategy

- MEDLINE, the Cochrane Controlled Trials Register, EMBASE, the Outbreak database, PsychINFO, HMIC, World Health Organization Institutional Repository for Information Sharing (WHO IRIS), and Cumulative Index to Nursing and Allied Health Literature (CINAHL)
- 1 January 1996 to 31 December 2015
- In English, Spanish, French, Portuguese, German

● Outcomes

- *Healthcare-associated infections*
- *Infections due to multidrug-resistant organisms*
- *Hand hygiene (compliance and ABHR consumption)*

9 Dimensions

#	Thematic Area	Description
1	Organization & Structure	Organizational and structural arrangements Access to IPC professionals and role of mgmt
2	Surveillance	Targets and methods of HAI surveillance, outbreak management and role of feedback
3	Education and training	Methods and effectiveness of educating and training HCWs
4	Behaviour change strategies	Multimodal/bundle strategies
5	Standard and transmission based precautions	Effectiveness of local policies and resources for standard and transmission based isolation strategies
6	Auditing	Process of auditing
7	Patient participation	Patient empowerment and involvement
8	Target setting	Setting targets or goals
9	Knowledge management	Range of strategies to identify, create and distribute information and data within and out of an institution

Methods for quality assessment

- Integrated quality Criteria for Reviews Of Multiple Study designs” (ICROMS)

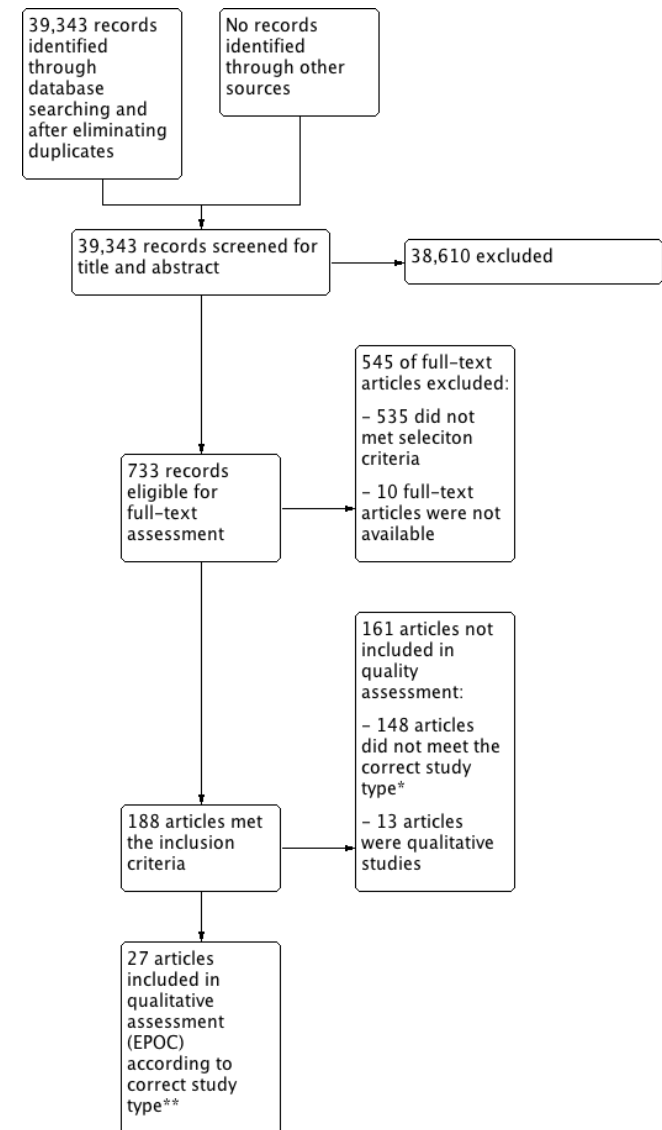
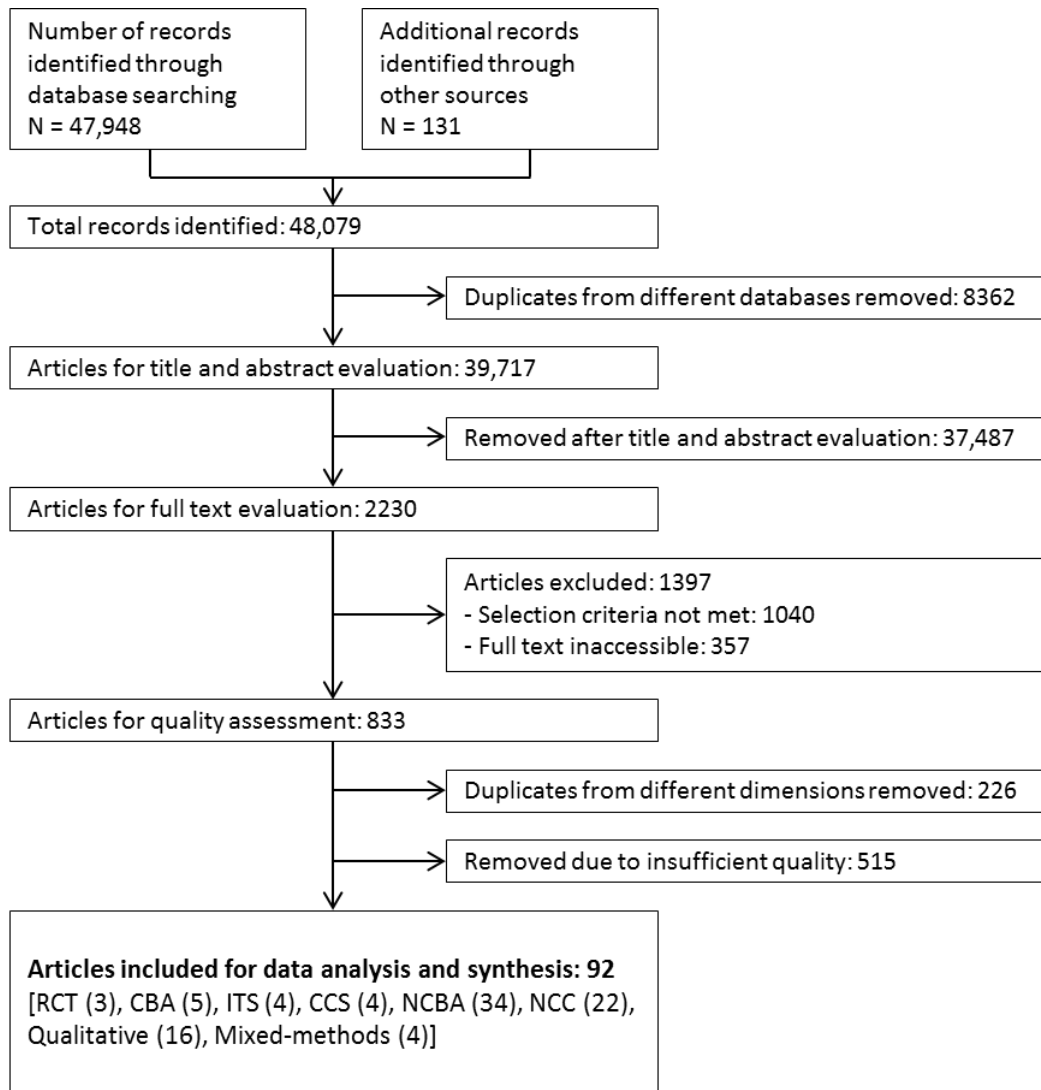
Quality criteria	Specific criteria*	Study				NCBA	CS	QUAL
		RCT	CBA	ITS	NC			
A. Clear statement of the aims of the research?						✓✓	✓✓	
B. Rationale for number of pre- and post-intervention points or adequate baseline measurement						✓✓	X	
C. Justification for sample choice						✓	X	
E. Comparability of groups						X	✓✓	
G. Comparability of outcomes						X	✓✓	
C. Incomplete outcome data addressed						✓	✓✓	
D. Attempts to mitigate effects of no control						✓✓	X	

SIGHT update & national review: studies meeting Cochrane’s Effective Practice and Organization of Care (EPOC) criteria:

- Full economic evaluations or partial economic evaluations
- Randomized controlled trials (RCT)
- Cluster randomized trials (CRT)
- Non-randomized trials (NRT)
- Controlled before and after studies (CBA)
- Interrupted time series (ITS) studies

Total: 87422 hits → 119 selected

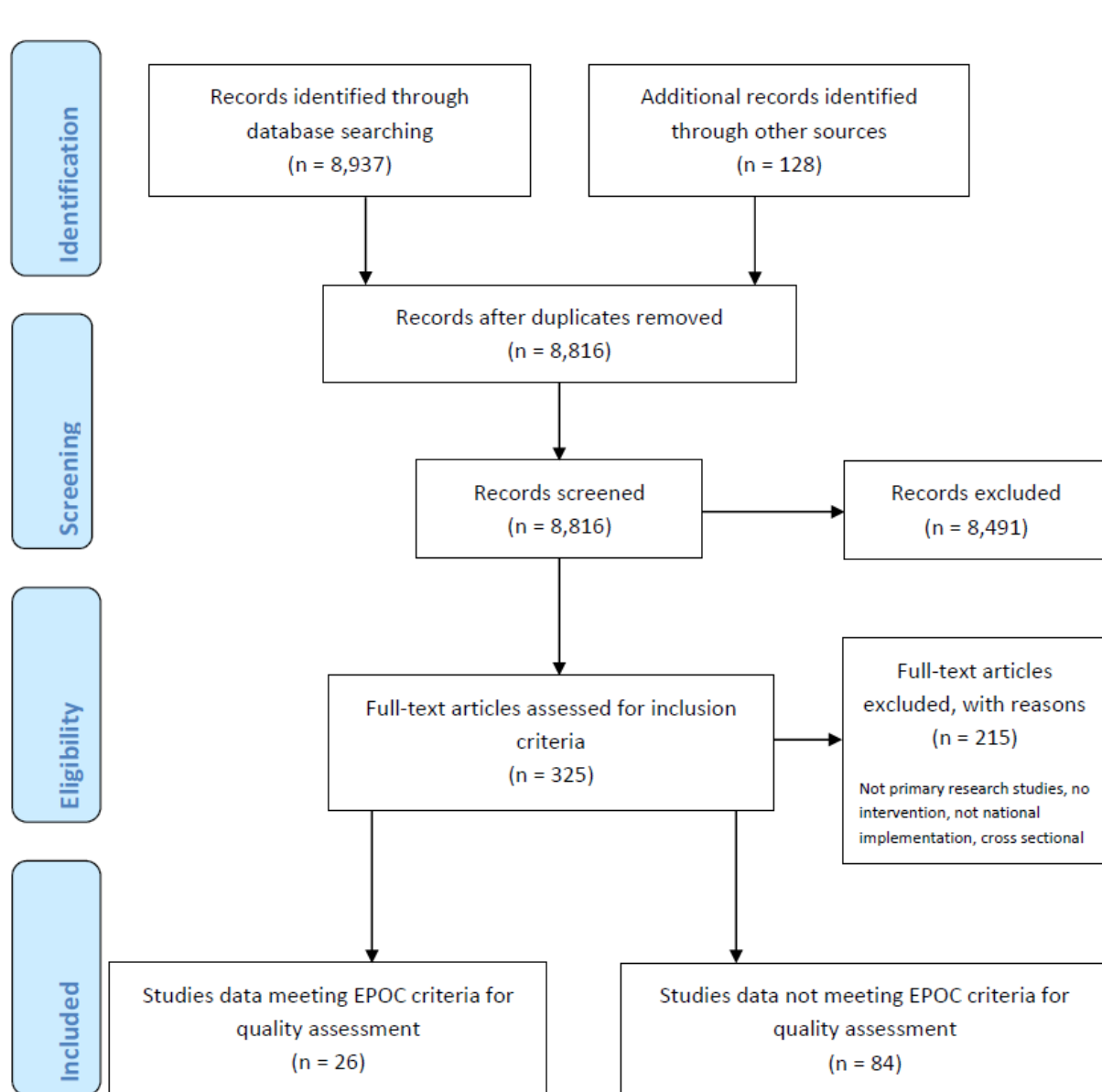
Facility level systematic reviews (1996-2015)



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

Total: 87422 hits → 119 selected

National level systematic review (2000-2015)



Methods for recommendations development

- **Development of recommendations:**
 - According to the standard GRADE decision making process, based on
 - scientific evidence
 - expert consensus & country experience
- **Strength of recommendations:**
 - **“Strong”** – the expert panel was confident that benefits outweighed risks / considered to be adaptable for implementation in most (if not all) situations and patients should receive the intervention as the course of action.
 - **“Conditional”** – the panel considered that benefits of the intervention probably outweighed the risks / a more structured decision-making process should be undertaken, based on stakeholder consultation and the involvement of patients and health care professionals.
- **Good practice statements:**
 - developed instead of recommendations based on expert opinion about the utmost importance of the subject, in the absence of methodologically sound, direct evidence on the effectiveness of interventions.

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.

Core Component 1:

Facility level - Key remarks

The IPC programme should have:

- clearly defined **objectives** based on local epidemiology and priorities according to risk assessment and functions to contribute towards the prevention of HAI and the spread of AMR in health care
- **dedicated, trained professionals** in every acute health care facility (minimum ratio one full-time or equivalent infection preventionist [nurse or physician] per 250 beds
- **support from the facility leadership** by providing materials as well as organizational and administrative support through the allocation of a protected and dedicated budget
- **good quality microbiological laboratory** support to be effective



Core Component 1:

National level - Key remarks

- The organization of national IPC programmes must be established with clear objectives, functions, appointed IPs and a defined scope of responsibilities.
Minimum objectives include:
 - Goals to be achieved for endemic and epidemic infections
 - Development of recommendations for IPC processes and practices that are known to be effective in preventing HAI and the spread of AMR
- The organization of the programme should include:
 - Appointed **technical team** of trained IPs, including medical and nursing professionals
 - The technical teams should have:
 - formal IPC training and allocated time according to tasks
 - the authority to make decisions and to influence field implementation
 - a protected and dedicated budget according to IPC activity and support national authorities and leaders
- There should be an established and maintained **linkage** between national IPC programmes and other related programmes
- An **official multidisciplinary group, committee** or an equivalent structure should be established to interact with the IPC technical team
- Good quality **microbiological support** provided by at least one national reference laboratory is a critical factor for an effective national IPC programme.



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.



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Core Component 2: IPC Guidelines

Key remarks (national and HCF level)

- **Appropriate IPC expertise** is necessary to write or adapt and adopt a guideline both at the national and health care facility level. Guidelines should be evidence-based and reference international or national standards. Adaptation to local conditions should be considered for the most effective uptake and implementation.
- **Monitoring adherence** to guideline implementation is essential.
- Guidelines should be **prioritized locally** based on the most frequent and/or risky practices and adapted to local circumstances.

Core Component 2: IPC Guidelines

Key remarks (national and HCF level)

- **Appropriate IPC expertise** is necessary to write or adapt and adopt a guideline both at the national and health care facility level. Guidelines should be evidence-based and reference international or national standards. Adaptation to local conditions should be considered for the most effective uptake and implementation.
- **Monitoring adherence** to guideline implementation is essential.
- Guidelines should be **prioritized locally** based on the most frequent and/or risky practices and adapted to local circumstances.

Core Component 2: IPC Guidelines

Key remarks (national level)

- Developing relevant evidence-based national IPC guidelines and related implementation strategies is one of the **key functions of the national IPC programme**.
- The national IPC programme should also ensure that the **necessary infrastructures and supplies** to enable guideline implementation are in place.
- The national IPC programme should support and mandate health care workers' **education and training** focused on the guideline recommendations.

Core Component 2: IPC Guidelines

Key remarks

- The basic set of IPC guidelines should include the following:
 - Standard precautions (see core component 1)
 - Transmission-based precautions, including patient identification, placement and the use of personal protective equipment.
 - Aseptic technique for invasive procedures (including surgery) and device management for clinical procedures, according to the scope and type of care delivered at the facility level.
 - Specific guidelines to prevent the most prevalent HAIs (for example, catheter-associated urinary tract infection, SSI, central line-associated bloodstream infection, ventilator-associated pneumonia) depending on the context and complexity of care.

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.



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Core Component 3: Facility level - Key remarks

- IPC education and training should be a part of an **overall health facility education strategy**, including new employee orientation and the provision of continuous educational opportunities for existing staff, regardless of level and position
- Educational approaches should be **informed by behavioural change theories and methods**. Teaching the basic concepts and theories of microbiology, infectious diseases and IPC, using a range of educational modalities to maximize the impact of practical and in-service training. Such training should be complementary to WASH training.
- Three categories of human resources were identified as **targets for IPC training**:
 - IPC specialists
 - all health care workers involved in service delivery and patient care, and
 - other personnel that support health service delivery (administrative and managerial staff, auxiliary service staff, cleaners)
- **Periodic evaluations** of both the effectiveness of training programmes and assessments of staff knowledge should be undertaken on a routine basis.

Core Component 3:

National level - Key remarks

- The **IPC national team** plays a key role to support and make IPC training happen at the facility level.
- To support the development and maintenance of a skilled, knowledgeable health workforce, national pre-graduate and postgraduate IPC curricula should be developed in **collaboration with local academic institutions**.
- In the curricula development process, it is advisable to refer to international curricula and networks for specialized IPC programmes and to adapt these documents and approaches to national needs and local available resources.
- The national IPC programme should provide guidance and recommendations for **in-service training** to be rolled out at the facility level according to detailed IPC core competencies for health care workers and covering all professional categories listed in Core Component 3a.

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.



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Core Component 4:

Facility level - Key remarks (1)

- The responsibility for planning and conducting surveillance and analysing, interpreting and disseminating the collected data remains usually with the **IPC committee and the IPC team.**
- Surveillance of HAI is **critical to inform and guide IPC strategies**
- Health care facility surveillance should be **based on national recommendations and standard definitions and customized to the facility** according to available resources with clear objectives and strategies.
- Surveillance should be conducted by staff trained in a **national training program for performing surveillance**
- Surveillance **should provide information for:**
 - Describing the status of infections associated with health care (incidence and/or prevalence, type, aetiology and, ideally, data on severity and the attributable burden of disease).
 - Identification of high-risk populations, procedures and exposures.
 - Identification of the most relevant AMR patterns.
 - Early detection of clusters and outbreaks (early warning system).
 - Evaluation of the impact of interventions.

Core Component 4:

Facility level - Key remarks (2)

- **Quality microbiology and laboratory capacity** is essential to enable reliable HAI surveillance.
- A system for surveillance **data quality assessment** is of the utmost importance.
- Methods for detecting infections should be **active and prospective** (prevalence or incidence studies).
- Hospital-based infection surveillance systems should be **linked to integrated public health infection surveillance systems**.
- Surveillance reports should be **disseminated in a timely manner** to those at the managerial or administration level (decision-makers) and the unit/ward level (frontline health care workers).
- The responsibility for planning and conducting surveillance and analysing, interpreting and disseminating the collected data remains usually with the IPC committee and the IPC team.



Core Component 4:

National level - Key remarks (1)

- National HAI surveillance systems feed into **general public health capacity building and the strengthening of essential public health functions**
- Establishing a national HAI surveillance programme **requires full support and engagement by governments and other respective authorities, allocation of human and financial resources**
- **National surveillance should have:** clear objectives, a standard set of case definitions, methods for detecting infections and the exposed population, a process for the analysis of data and reports and a method for evaluating the quality of the data
- **Clear regular reporting lines** of HAI surveillance data from the local facility to the national level should be established
- It is important to **triangulate IPC data with WASH monitoring and services** in an effort to help identify the source of the problem

Core Component 4:

National level - Key remarks (2)

- **International guidelines on HAI definitions** are important, but it is the **adaptation at country level** that is critical for implementation
- **Good quality microbiological support** provided by at least one national reference laboratory is a critical factor for an effective national IPC surveillance programme
- A **national training program for performing surveillance** should be established to ensure the appropriate and consistent application of national surveillance guidelines and corresponding implementation toolkits



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.

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.



World Health
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Core Component 5: Facility level - Key remarks

- Successful multimodal interventions:
 - should be associated with an **overall organizational culture change** as effective IPC can be a reflector of quality care, a positive organizational culture and an enhanced patient safety climate.
 - require **coordination and teamwork** across the organization or health facility
 - include the **involvement of champions or role models** in several cases
- Implementation of multimodal strategies within health care institutions needs to be **linked with national quality aims and initiatives** including health care quality improvement initiatives or health facility accreditation bodies.

Core Component 5:

National level - Key remarks

- The national approach to coordinating and supporting local (health facility level) multimodal interventions should be within the **mandate of the national IPC programme** and be considered within the context of other quality improvement programmes or health facility accreditation bodies.
- **Ministry of health support and the necessary resources**, including policies, regulations and tools, are essential for effective central coordination.
- Successful multimodal interventions should be **associated with overall cross-organizational culture change** as effective IPC can be a reflector of quality care, a positive organizational culture and an enhanced patient safety climate.
- Strong consideration should be given to **country adaptation of implementation strategies reported in the literature**, as well as to **feedback of results to key stakeholders** and education and training of all relevant persons involved in the implementation of the multimodal approach.



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

6

Monitoring, Audit & Feedback

NEW

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.



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Core Component 6: facility level – key remarks

- The **main purpose** of auditing/monitoring practices is to **achieve behaviour change or other process modification** to improve the quality of care and practice, with the result being the reduction in the risk of HAI and AMR spread.
- Monitoring and feedback are also aimed at **engaging stakeholders**, creating partnerships and developing working groups and networks.
- **Sharing the audit results and providing feedback** not only with those being audited (**individual change**), but also with hospital management and senior administration (**organizational change**) are critical steps.
- **IPC programmes should be periodically evaluated** to assess the extent to which the objectives are met, the goals accomplished, whether the activities are being performed according to requirements and to identify aspects that may need improvement identified via standardized audits.

Core Component 6:

National level – key remarks

- Regular monitoring and evaluation provides a **systematic method to document the progress and impact of national programmes** in terms of defined indicators, e.g. tracking hand hygiene improvement as a key indicator, including hand hygiene compliance monitoring.
- National level monitoring and evaluation should have in place mechanisms that:
 - Provide **regular reports** on the state of the national goals (outcomes and processes) and strategies.
 - Regularly monitor and evaluate the **WASH services, IPC activities and structure** of the health care facilities through audits or other officially recognized means.
 - Promote the evaluation of the performance of local IPC programmes in a non- punitive institutional culture.

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.



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Core Component 7: Facility level – key remarks

- Standard for bed occupancy should be **one patient per bed with adequate spacing** (1 metre) **between patient beds**
- Intended capacity could vary from original designs and across facilities and countries.
- In exceptional circumstances where bed capacity is exceeded, hospital management should act to ensure **appropriate staffing levels** that could meet patient demand, and the adequate distance between beds.
- These principles apply to all units and departments with inpatient beds, including emergency departments.
- The **WHO Workload Indicators of Staffing Need (WISN) method** provides health managers with a systematic way to determine how many health workers of a particular type are required to cope with the workload of a given health facility and decision making (http://www.who.int/hrh/resources/wisn_user_manual/en/).
- Overcrowding was recognized as being a public health issue that can lead to disease transmission

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.



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

8a. Key Remarks (1)

- An **appropriate environment, WASH services and materials and equipment for IPC** are a core component of effective IPC programmes at health care facilities.
- Ensuring an **adequate hygienic environment** is the responsibility of senior facility managers and local authorities.
- The **central government and national IPC and WASH programmes** also play an important role in developing standards and recommending their implementation regarding adequate WASH services in health care facilities, the hygienic environment, and the availability of IPC materials and equipment at the point of care.
- **WHO standards for drinking water quality, sanitation and environmental health** in health care facilities should be implemented.

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

8b. Key Remarks

- WHO standards* for the adequate number and appropriate position of hand hygiene facilities should be implemented in all health care facilities.

* This requires that a hand hygiene product (for example, alcohol-based hand rub, if available) be easily accessible and as close as possible – within arm’s reach of where patient care or treatment is taking place. Point-of-care products should be accessible without having to leave the patient zone. The *WHO Guidelines on hand hygiene in health care* state: “minimum sink-to-bed ratio 1:10 and 1:1 in isolation rooms”

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 and
- 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

IPC Core Components dissemination & implementation



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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

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



World Health
Organization

Awareness raising on HAI endemic burden

Allegranzi B et al.

Lancet 2011;377:228-41

Burden of endemic health-care-associated infection in developing countries: systematic review and meta-analysis

Benedetta Allegranzi, Sepideh Bagheri Nejad, Christophe Combescure, Wilco Graafmans, Homa Alilar, Liam Donaldson, Didi Pittet

Summary

Background Health-care-associated infection is the most frequent result of unsafe patient care & data are available from the developing world. We aimed to assess the epidemiology of endemic health-care-associated infection in developing countries.

Methods We searched electronic databases and reference lists of relevant papers for articles published between 1995 and 2009 on health-care-associated infection in developing countries. We classified studies as low-quality or high-quality according to predefined criteria. We pooled data for analysis.

Findings Of 271 selected articles, 220 were included in the final analysis. Limited data were reported in high-quality studies were greater than those from low-quality studies. Prevalence of health-care-associated infection in high-quality studies, 15.5 per 100 patients [95% CI 12.6–18.9] was significantly higher than proportions reported from Europe and the USA. Pooled overall health-care-associated infection in intensive-care units was 47.9 per 1000 patient-days [95% CI 36.7–59.1], at least three times as reported from the USA. Surgical-site infection was the leading infection in hospitals (pooled current prevalence in high-quality studies, 15.5 per 100 surgical procedures), with significantly higher than proportions recorded in developed countries. Apart from methicillin resistance, none of the *Staphylococcus aureus* isolates (in eight studies), very few articles reported antimicrobial resistance.

Interpretation The burden of health-care-associated infection in developing countries is high. Our findings support the need to improve surveillance and infection-control practices.

Funding World Health Organization.

Introduction

Health-care-associated infections are deemed the most frequent adverse events threatening patients' safety worldwide.^{1,2} However, reliable estimates of the global burden are hampered by a paucity of data adequately describing endemic infections at national and regional levels, particularly in resource-limited settings.³ In countries where less than 5% of the gross national product is spent on health care, and workforce density is less than five per 1000 population,⁴ other emerging health problems and diseases take priority.⁵ The epidemiological gap leading to the absence of reliable estimates of the global burden is mainly because surveillance of health-care-associated infection depends on time and resources and needs expertise in study design, data collection, analysis, and interpretation. Very few countries of low and middle income have national surveillance systems for health-care-associated infections. Data from the International Nosocomial Infection Control Consortium⁶ and findings of two systematic reviews on hospital-acquired neonatal infections⁷ and ventilator-associated pneumonia,⁸ suggested not only that risks of health-care-associated infection are significantly higher in developing countries

but also that the effect on patient systems is severe and greatly underestimates the burden of endemic health-care-associated infection in developing countries available data from published studies. We also aim to investigate causes of health-care-associated infections in resource-limited settings and identify ways for improvement.

Methods

Search strategy and selection criteria We undertook a literature search according to a protocol designed before. We aimed to identify studies on the health-care-associated infection in developing countries with a particular focus on the most common infections—urinary-tract infection, skin and bloodstream infection, hospital-acquired pneumonia, ventilator-associated pneumonia. We searched for reports published between January 1995 and December 2009, with no language restriction. We included studies of terms (panel 1)

Articles



World Health Organization

Patient Safety
A World Alliance for Safer Health Care

Published on 5 May 2011

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

Report on the Burden of Endemic Health Care-Associated Infection Worldwide

Clean Care is Safer Care



Systematic reviews

Health-care-associated infection in Africa: a systematic review

Sepideh Bagheri Nejad,¹ Benedetta Allegranzi,² Shamsuzzoha B Syed,³ Benjamin Ellis,⁴ & Didier Pittet^{1*}

Objective To assess the epidemiology of endemic health-care-associated infection (HAI) in Africa.

Methods Three databases (PubMed, the Cochrane Library, and the WHO regional medical database for Africa) were searched to identify studies published from 1995 to 2009 on the epidemiology of HAI in African countries. No language restriction was applied. Available abstracts of leading international infection control conferences were also searched from 2004 to 2009.

Findings The eligibility criteria for inclusion in the review were met by 19 articles, only 2 of which met the criterion of high quality. Four relevant abstracts were retrieved from the international conference literature. The hospital-wide prevalence of HAI varied between 2.5% and 14.8%; in surgical wards, the cumulative incidence ranged from 5.7% to 45.8%. The largest number of studies focused on surgical site infection, whose cumulative incidence ranged from 2.5% to 30.9%. Data on causative pathogens were available from a few studies only and highlighted the importance of Gram-negative rods, particularly in surgical site infection and ventilator-associated pneumonia.

Conclusion Limited information is available on the endemic burden of HAI in Africa, but our review reveals that its frequency is much higher than in developed countries. There is an urgent need to identify and implement feasible and sustainable approaches to strengthen HAI prevention, surveillance and control in Africa.

Abstracts in Arabic, Chinese, French, Russian and Spanish at the end of each article.

Introduction

Health-care-associated infection (HAI) is a major global safety concern for both patients and health-care professionals.^{1–3} HAI is defined as an infection occurring in a patient during the process of care in a hospital or other health-care facility that was not manifest or incubating at the time of admission. This includes infections acquired in the hospital and any other setting where patients receive health care and may appear even after discharge. HAI also includes occupational infections among facility staff.⁴ These infections, often caused by multiresistant pathogens, take a heavy toll on patients and their families by causing illness, prolonged hospital stay, potential disability, excess costs and sometimes death.^{5–8}

The burden of HAI is already substantial in developed countries, where it affects from 5% to 15% of hospitalized patients in regular wards and as many as 50% or more of patients in intensive care units (ICUs).⁹ In developing countries, the magnitude of the problem remains underestimated or even unknown largely because HAI diagnosis is complex and surveillance activities to guide interventions require expertise and resources.⁶ Surveillance systems exist in some developed countries and provide regular reports on national trends of endemic HAI,¹⁰ such as the National Healthcare Safety Network of the United States of America or the German hospital infection surveillance system. This is not the case in most developing countries¹¹ because of social and health-care system deficiencies that are aggravated by economic problems. Additionally, overcrowding and understaffing in hospitals result in inadequate infection control practices, and a lack of infection control policies, guidelines and trained professionals also adds to the extent of the problem.

This review provides a general overview of the endemic burden of HAI in Africa based on the information available in the scientific literature. It also identifies information gaps, examines differences in HAI epidemiology between developed and developing countries and highlights the possible role of the World Health Organization (WHO) in preventing HAI.

Methods

Search strategy and selection criteria

A literature search was performed from January 1995 to December 2009 with no language restriction to retrieve publications on the epidemiology of the most common HAIs in African countries: health-care-associated urinary tract infection (HA-UTI), surgical site infection (SSI), hospital-acquired pneumonia/ventilator-associated pneumonia and health-care-associated bloodstream infection. PubMed was searched using a combination of the following keywords, including "cross-infection" as the MeSH term: "nosocomial infection", "hospital-acquired", "infection", "prevalence" and "rate" together with the individual country names. The Cochrane Library was searched for any relevant review papers. Reference lists of retrieved articles were hand searched for additional studies.

A separate search was run in the WHO regional medical database for Africa, African Index Medicus, using a shorter list of essential keywords and with no time restriction. The abstract books of the following international conferences were also searched from 2004 to 2009: Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAAC), Annual Congress of the Society for Healthcare Epidemiology of America (SHEA), European Congress of Clinical Microbiology and Infectious Diseases (ECCMID), International Federation of Infection Control

www.thelancet.com Published online December 10, 2010 DOI:10.1016/S0140-6736(10)64458-4

Bagheri Nejad S, et al. Bull OMS 2011;89:757-765

Surgical Site Infection (SSI)

- **Second most frequent type of HAI in Europe & USA**
 - Most frequent type of HAI on admission (67% in US, 33% in Europe)
- **SSI incidence = 0.9% (USA 2014)**
- **AMR: 39-51% SSI pathogens are resistant to standard prophylactic antibiotics in the USA**

- **Most frequent type of HAIs in LMICs**
- **SSI incidence in LMICs:**
 - 7.1 per 100 procedures
 - 11 per 100 operated patients
- **In Africa, up to 20% of C sections lead to a wound infection**
- **Surgical sepsis = 30% of all septic patients**

Main reasons for developing global guidelines for SSI prevention

- High global epidemiological burden
- Highly preventable infection
- No recent evidence-based guidelines
- Need for a global perspective
- Need for taking into account balance between benefits and harms, evidence quality level, cost and resource use implications, and patient values and preferences



**WHO
GLOBAL
SSI
PREVENTION
GUIDELINES**

WHO SSI Prevention Guidelines

- **27** systematic reviews & meta-analysis
- **29** recommendations
- **30** core chapters

Key updates on:

- Timing & duration of surgical ATB prophylaxis
- ATB use with drains
- *S. aureus* carriers' decolonization
- Glucose control
- Normovolemia
- Oxygenation
- Wound irrigation
- Antimicrobial sutures

& A LOT MORE....

*Abstracts presented at 26th ECCMID, Amsterdam 2016
The Lancet Infectious Diseases & official launch, 3 November 2016*

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

New infographic

STOP INFECTIONS AFTER SURGERY

WHAT'S THE PROBLEM?

Patients develop infections when **bacteria get into incisions made during surgery**. These affect patients in both...

LOW- AND MIDDLE-INCOME COUNTRIES



More than 1 in 10 people who have surgery in low- and middle-income countries (LMICs) get surgical site infections (SSIs)

People's risk of SSI in LMICs is **3 TO 5 TIMES HIGHER** than in high-income countries



Up to 1 in 5 women in Africa who deliver their baby by caesarean section get a wound infection



SSIs can be caused by bacteria that are **resistant to commonly-used antibiotics**



SSIs threaten the lives of **millions** of surgical patients **each year** and contribute to the spread of **antibiotic resistance**

HIGH-INCOME COUNTRIES



In Europe, SSIs affect more than **500 000 PEOPLE** per year costing up to **€ 19 BILLION**

Around 1% of people who have surgery in the USA get an SSI



In the USA, SSIs contribute to patients spending more than **400 000 extra days** in hospital, costing **US\$ 10 BILLION** per year



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Organization

New infographic

WHAT'S THE SOLUTION?

A range of precautions - **before, during and after surgery** - reduces the risk of infection



BEFORE SURGERY



Ensure patients bathe or shower



Do not shave patients



Only use antibiotics when recommended



Use chlorhexidine alcohol-based antiseptic solutions to prepare skin



Surgical scrub technique: hand wash or alcohol-based handrub

DURING SURGERY



Limit the number of people and doors being opened



Ensure all surgical equipment is sterile and maintain asepsis throughout surgery



AFTER SURGERY



Do not continue antibiotics to prevent infection - **this is unnecessary and contributes to the spread of antibiotic resistance**



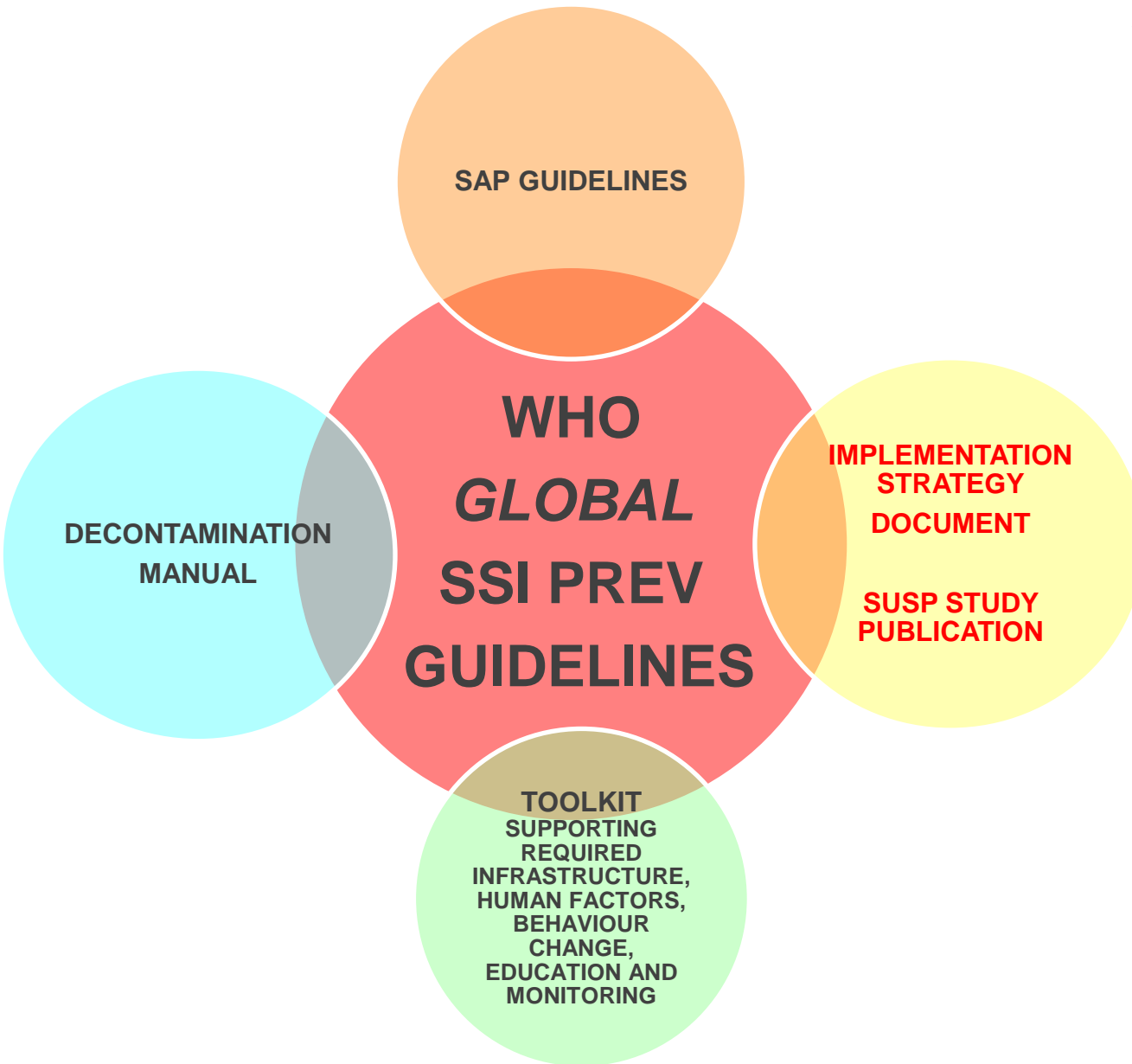
Check wounds for infection and use standard dressings on primary wounds



World Health Organization

Important considerations for implementation in low-resource settings

- Some recommendations will NOT be resource demanding or they will even allow avoidance of unnecessary costs (e.g. no antibiotic prophylaxis prolongation; no laminar flow)
- Some recommendations will contribute to reducing AMR
- For others, careful evaluation should be made about:
 - Additional costs involved and/or limited product availability (e.g. alcohol-based hand rubs, chlorhexidine gluconate alcohol-based antiseptic solutions, antimicrobial sutures)
 - Need for staff training (e.g. increased oxygenation)
 - Need for specific expertise (e.g. glucose control; normovolemia)
 - Need for technical laboratory capacity (e.g. *S. aureus* carrier identification)
 - Involving organisational resources for appropriate administration (e.g. antibiotic timing)
 - Reuse and contamination risks (e.g. clippers)
 - Infrastructure constraints (e.g. limited access to clean water)
- Local production and solutions should be encouraged



WHO SSI Prevention Guidelines

- 27 systematic reviews & meta-analysis
- 29 recommendations
- 30 core chapters

Key updates on:

- Timing & duration of surgical ATB prophylaxis
- ATB use with drains
- *S. aureus* carriers' decolonization
- Glucose control
- Normovolemia
- Oxygenation
- Wound irrigation
- Antimicrobial sutures

& A LOT MORE....

*Abstracts presented at 26th ECCMID, Amsterdam 2016
The Lancet Infectious Diseases & official launch, 3 November 2016*

THANK YOU!!!

WHO Infection Prevention and Control Global Unit



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



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Join UN, WHO and partners in the **WAAW!**

World Antibiotic Awareness Week

11 November 2016 – This year World Antibiotic Awareness Week will be held from 14 to 20 November 2016. The campaign aims to increase awareness of global antibiotic resistance and to encourage best practices among the general public, health workers, policy-makers and the agriculture sector to avoid the further emergence and spread of antibiotic resistance.

- [Read real life stories](#)
- [Download the posters](#)
- [More about the campaign](#)



WHO

<http://www.who.int/campaigns/world-antibiotic-awareness-week/en/>



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