



IMPROVING INFECTION PREVENTION AND CONTROL AT THE HEALTH FACILITY

Interim practical manual supporting implementation
of the WHO Guidelines on Core Components of Infection
Prevention and Control Programmes



World Health
Organization

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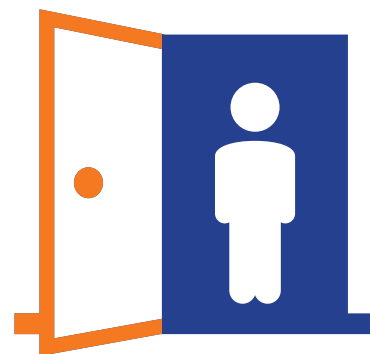
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ABBREVIATIONS AND ACRONYMS

AMR	antimicrobial resistance	PPE	personal protective equipment
APIC	Association for Professionals in Infection Control and Epidemiology	PPS	point prevalence survey
APSI	Asia Pacific Society of Infection Control	PSCH	Patient safety climate in healthcare organizations
BSI	bloodstream infection/s	RNAO	Registered Nurses' Association of Ontario
CDC	Centers for Disease Control and Prevention	SAQ	Safety attitudes questionnaire
CUSP	Comprehensive Unit-based Safety Program	SARA	service availability and readiness assessment
ECDC	European Centre for Disease Control and Prevention	SDG	Sustainable Development Goals
GLASS	Global Antimicrobial Resistance Surveillance System	SLMTA	Strengthening Laboratory Management Toward Accreditation
HAI	health care-associated infection	SMART	specific, measurable, attainable, realistic, timely
HSAF	Hand Hygiene Self-Assessment Framework	SUSP	Surgical Unit Safety Program
HIV	human immunodeficiency virus	TB	tuberculosis
HSC	Hospital safety climate scale	UHC	universal health coverage
HSOPSC	Hospital survey on patient survey culture	USA	United States of America
IHR	International Health Regulations	WASH FIT	water, sanitation and hygiene (WASH) facility improvement tool
ICAN	Infection Control Africa Network	WISN	Workload Indicators of Staffing Need
INICC	International Nosocomial Infection Control Consortium	WHO	World Health Organization
IPC	infection prevention and control		
IPCAF	Infection Prevention and Control Assessment Framework		
JEE	joint external evaluation		
MDRO	multidrug-resistant organism/s		
NGO	nongovernmental organization		
NHSN	National Healthcare Safety Network		
NNIS	National Nosocomial Infections Surveillance System		
PAHO	Pan American Health Organization		





PART I INTRODUCTION

PURPOSE OF THE MANUAL

This practical manual is designed to support health care facilities to achieve effective implementation of their infection prevention and control (IPC) programmes according to the World Health Organization (WHO) Guidelines on core components of IPC programmes¹ in the context of their efforts to improve the quality and safety of health service delivery and the health outcomes of the people who access those services. The principles and guidance provided in this manual are valid for any country, but with a special focus on settings with limited resources. The guidelines address eight areas of IPC (Box 1) and a summary of the recommendations can be found in Part II.

The guidelines describe what is necessary (that is, recommendations) to effectively improve IPC, according to the available evidence and wide-ranging expert consensus. This manual offers practical guidance, tips, resources and examples from around the world to support guideline implementation. It also focuses on the development of a sustainable action plan that should be informed by the local context to put into operation the guideline recommendations. Finally, the manual focuses on integrating and embedding IPC within the day-to-day structure and activities of a health care facility.

Although there is no single formula for guideline implementation, the manual draws on current evidence relating to the effectiveness of interventions to support the uptake of guidelines. Furthermore, input and external review of the content have been gathered from many IPC professionals in a wide range of countries across all regions.

The manual will provide you with:

- a step-wise approach for the implementation of the core components of IPC programmes in the perspective of improvement;
- a clear summary of the core component recommendations for a person tasked with leading IPC improvement in a health care facility;
- a summary of common barriers and practical solutions to support your implementation journey;
- implementation examples from around the world;
- tools to support each implementation step where available, including addressing action planning, advocacy (developing a convincing narrative to win hearts and minds²), assessment, guideline development, stakeholder engagement, training and education and many other aspects of IPC implementation.

¹ <http://www.who.int/infection-prevention/publications/core-components/en/>.

² The term "winning hearts and minds" is used in this context to refer to securing the emotional and intellectual support or commitment of key stakeholders as part of the overall process of motivating people and groups to change.

Box 1. The eight core components relevant to facility-level IPC programmes

1. IPC programmes
2. Evidence-based guidelines
3. Education and training
4. Health care-associated infection (HAI) surveillance
5. Multimodal strategies
6. Monitoring and audit of IPC practices and feedback
7. Workload, staffing and bed occupancy
8. Built environment, materials and equipment for IPC



Target audience

If you are responsible for or involved in implementing IPC in a health care facility, this manual provides practical guidance on how to make the necessary improvements to ensure health care is safer, more effective and of a higher quality by reducing the risk of microbial transmission and health care-associated infections, including the spread of antimicrobial resistance.

The manual is not intended to be a prescriptive list of 'must do's'. Instead, it provides a stepwise approach to implementation based on the evidence and experience of what has worked in a number of settings and introduces examples and ideas from health care facilities around the world which can be used by IPC leads/focal persons and teams within health care facilities.

This is an interim version of the manual. WHO will collect case study examples and lessons learned from health facilities implementing the core components that will feed into future versions of the manual and support the development of additional resources and implementation tools.

WHO SHOULD USE THE MANUAL?

The main target audience of the manual is IPC leads/focal persons and teams in acute health care facilities (either a tertiary or secondary care facility), that is, those responsible for implementing IPC, including health care facility managers. Where these roles do not yet exist, the manual will be of interest to nurses and others responsible for maintaining a clean, safe and high quality facility. It can also be useful with some adaptations for community, primary care and long-term care facilities as they develop and review their IPC programmes.

It is important to note that IPC implementation is not the sole responsibility of the IPC teams. The activities outlined in this manual require a broad range of skills that can only be met through the continuous development of competencies and collaboration, as well as cooperation and engagement with a range of stakeholders. Therefore, the manual is also relevant to colleagues at the health facility responsible for quality improvement, patient safety, health facility accreditation/regulation, and public health/disease control, including those involved in the implementation and associated assessments of the international health regulations (IHR), water, sanitation and hygiene (WASH), occupational health, antimicrobial stewardship programmes, clinical microbiology and environmental health. In addition, it may be of value to national and district level officers and development partners/non-governmental organizations (NGOs) working in health care facilities.



HOW TO USE THE MANUAL

Part I of the manual is a short introduction describing the purpose, target audience, how to use the manual, its relevance to teams in different settings, and an introduction to the WHO multimodal strategy.

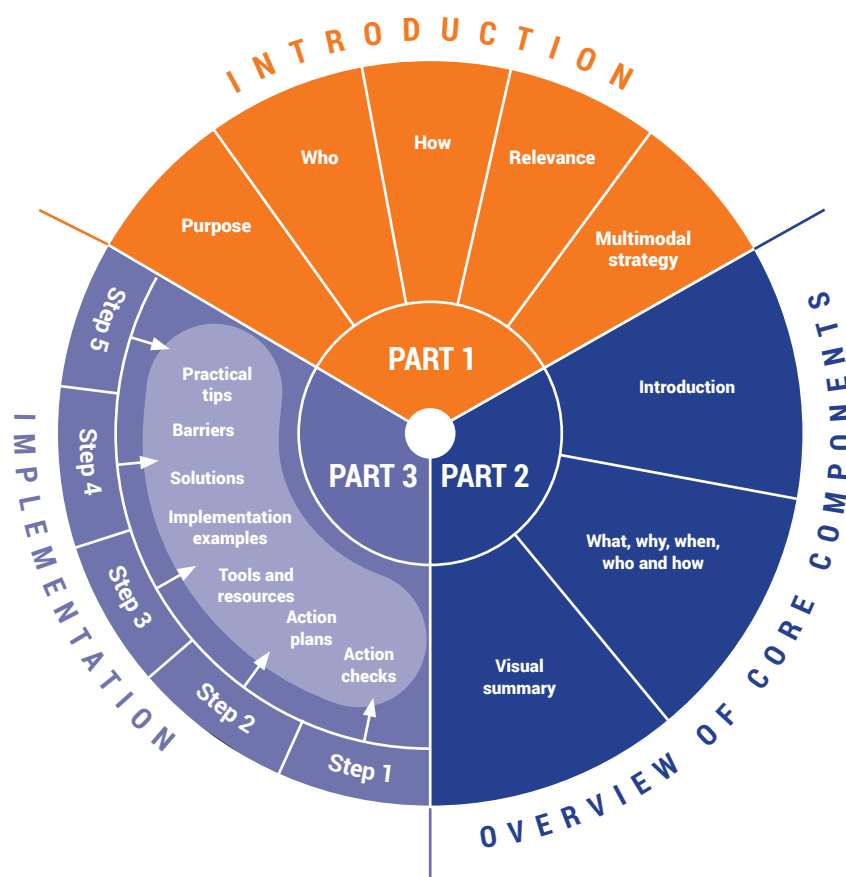
Part II reminds the reader of the eight core components focusing on the **what, why, when, who and how** and concluding with a visual representation of how the IPC core

components interconnect. A requirement for implementation success is to gain a solid understanding of each of the core components, that is, what the guideline recommendation means, why it is important, who should be involved, when action should take place and how the core components can be operationalized. It is important to familiarize yourself with Part II before moving on to Part III.

Part III of the manual is based on a five-step cycle of improvement to support guideline implementation^{3,4} and is grounded in the principles of successful change and improvement in health care^{5,6}. The structure of the manual is presented in Figure 1. The five steps are summarized in Box 2.

- 3 An introductory guide to implementation. Dublin: Centre for Effective Services; 2012 (http://www.effectiveservices.org/downloads/Guide_to_implementation_concepts_and_frameworks_Final.pdf accessed 20 April 2017).
- 4 Based on the Guide to the implementation of the WHO multimodal hand hygiene strategy. Geneva: WHO; 2009 (http://www.who.int/gpsc/5may/tools/WHO_IER_PSP_2009.02_eng.pdf?ua=1 accessed 19 December 2017).
- 5 Kotter JP. Leading change: why transformation efforts fail. Harvard Business Review. 2007; January 1. 2-9.
- 6 Dixon-Woods M, McNicol S, Martin G. Overcoming challenges to improvement. London (UK): Health Foundation; 2011

Figure 1. Outline summary of the manual



Box 2. The five-step approach to IPC improvement

Step 1. Preparing for action: This step ensures that all of the prerequisites that need to be in place for success are addressed, including the necessary resources (human and financial), infrastructures, planning and coordination of activities and the identification of roles and responsibilities (including key opinion leaders and champions). The facility senior managers/leaders play a critical role in this step.

Step 2. Baseline assessment: Conducting an exploratory baseline assessment of the current situation, including the identification of existing strengths and weaknesses, is critical for developing a tailor-made action plan that addresses the reality of a health care facility. A ready-to-use assessment tool based on the WHO IPC core components is available for step 2 (WHO IPC Assessment Framework [IPCAF]). Ideally, additional IPC assessment tools (for example, the Hand Hygiene Self-assessment Framework [HHSAF] and/or observation-based tools to evaluate IPC practices) could be used.

Step 3. Developing and executing an action plan: The results of the baseline assessment support the development and execution of an action plan based around a multimodal improvement strategy.

Step 4. Assessing impact: Conducting a follow-up assessment using the same tools as in step 2 is crucial to determine the effectiveness of the plan. The focus is on impact, acceptability and cost-effectiveness.

Step 5. Sustaining the programme over the long term: An important step in the cycle of improvement is to develop an ongoing action plan and review schedule to support the long-term impact and benefits of the IPC programme, thus contributing to its overall impact and sustainability.

Your local context will determine how best to use the manual. Some IPC teams may decide to start at step 1 and work through each step sequentially. In some health facilities where an IPC programme is already established, a decision may be taken to consult step 3 of the manual and review sample action plans for each core component.

Each step outlines practical tips, key considerations and actions and then where appropriate, describes common barriers and solutions associated with implementation based on lessons learned from colleagues working in health care facilities. Where available, implementation examples are included together with tools and resources to support implementation. Each step concludes with a “checklist”, which can be completed before moving on to the next step.

The emphasis within each step is on local context and adaptation.



RELEVANCE OF THE MANUAL TO IPC LEADS/FOCAL PERSONS AND TEAMS IN DIFFERENT SETTINGS

Each step is relevant to the process of improvement. However, depending on your local situation, some steps may already have been achieved, while others may need gradual development or to be revisited because you may have not previously used the WHO IPC core components recommendations. New challenges or changes within your health care facility may also have arisen. Four examples are described in box 3 to illustrate how the manual can support IPC activity in a range of health care facilities.



Box 3. Examples of how the manual can be used

Example 1. A health facility with no formally established IPC programme. Consult the manual from beginning to end. Pay attention to step 1 (Part III) in order to build a strong foundation for implementation of the IPC programme. The IPCAF in step 2 will help identify gaps and areas to target through action plans to be developed in step 3.

Example 2. A health facility with an IPC programme, but limited implementation and support across the facility. The facility may benefit from focusing initially on steps 1 and 2. Step 1 presents a number of suggestions to strengthen support for IPC from senior managers and leaders and contains a number of useful implementation examples. Step 3 provides examples of action plans to strengthen implementation and make real progress.

Example 3. A health facility with a mature IPC programme experiencing sustainability challenges. The facility may decide to bypass step 1 and proceed to step 2. Even in a health care facility with a mature IPC programme, spending time to undertake the WHO IPCAF (step 2) has the potential to provide data that may drive action and reignite the interest of senior managers and leaders. The facility should then consult the template action plans presented in step 3 and focus on examples and solutions that have not been put in place. This can help overcome the challenges and consolidate the function of the existing IPC programme.

Example 4. A health facility with a mature and well-functioning IPC programme. Even facilities with successful and well-established IPC programmes should regularly perform local assessment using the IPCAF to ensure sustained excellence in IPC. It is always of value to revisit the practical tips, key considerations and actions described in Part III steps 1, 3 and 5 to ensure that IPC is always recognized as a priority.

It is important to review the entire practical manual before deciding how best to use it according to your situation.

WHO MULTIMODAL STRATEGY

Introduction to the multimodal strategy

Core component five addresses multimodal strategies and their role in supporting IPC implementation in health care facilities (a strong guideline recommendation). This core component is critical for the

implementation of IPC programmes and practices. It is “the” way to achieve the system change, climate and behaviour that supports IPC progress and, ultimately, the measurable impact that benefits patients and health care workers. It is based on evidence about best approaches for IPC implementation (figure 2, part II). The WHO multimodal strategy comprises five elements commonly referred to as: 1) system change; 2) training and education; 3) monitoring and feedback; 4) reminders and communications; and 5) a culture of safety. In other words, the strategy involves “building” the right system, “teaching” the right things, “checking” the right things, “selling” the right messages, and ultimately “living” IPC throughout the entire health system (Annex 1). Lessons from the field of implementation science suggest that targeting only one of these five elements (that is, using a “unimodal” strategy) is more likely to result in improvements that are short-lived and not sustainable.

All five areas should be considered and necessary action taken, based on the local context and situation informed by periodic assessments. A multimodal approach to improve IPC practices and reduce HAIs and antimicrobial resistance (AMR) is constantly reinforced throughout the entire manual. Many readers will be familiar with application of a multimodal strategy in relation to hand hygiene improvement. However, evidence of its success relating to a range of IPC-related implementation challenges is also available (see example in Box 4), including the prevention of surgical site infections, central line-associated bloodstream infections, ventilator-associated pneumonia and infections caused by methicillin-resistant *Staphylococcus aureus* (MRSA) and *Clostridium difficile*.

How the multimodal strategy supports implementation of the core components

The basis for the multimodal strategy is that any IPC-related improvement activity should address each of the five elements with the aim of improving IPC outcomes and changing behaviour. The visual representation of the core components (see Figure 2, Part II) illustrates how multimodal strategies are relevant to all other components and represents the dynamic element, the “motion” for IPC action. IPC leads/focal persons and teams should therefore aim to become “multimodal thinkers” and consider the implementation of each core component (including the potential challenges and opportunities) through a multimodal lens.

Multimodal thinking

When considering any aspect of IPC, for example, developing an action plan to improve IPC or address an identified gap, multimodal thinking means systematically asking the following questions (box 4):



Annex 2 contains a template and list of multimodal guiding questions that you can print and use in your local context when developing a multimodal strategy for your IPC interventions.

Box 4. Multimodal thinking

1. What resources, infrastructures or supplies are required to facilitate practices?

This includes consideration of procurement and accessibility of supplies, water availability and quality and ergonomic factors including workflow. For example, the placement of a central venous catheter set and tray (**system change/“build it”**).

2. Who needs to be trained and/or educated to address the identified gap – how will this happen and who will undertake the training/education?

This involves written information and/or oral instruction and/or e-learning and practical and interactive training sessions, including simulation and/or bedside training. For example, the training of doctors and nurses in charge of the placement and maintenance of central venous catheters on the prevention of bloodstream infection (BSI), including summarizing critical best practices in bundles (**education and training/“teach it”**).

3. How have you become aware that practices need to be improved – how will you know that an improvement has taken place?

This usually involves monitoring compliance with process and practice indicators, as well as monitoring outcome indicators. For example, audits of catheter insertion and maintenance and the provision of timely and direct feedback of

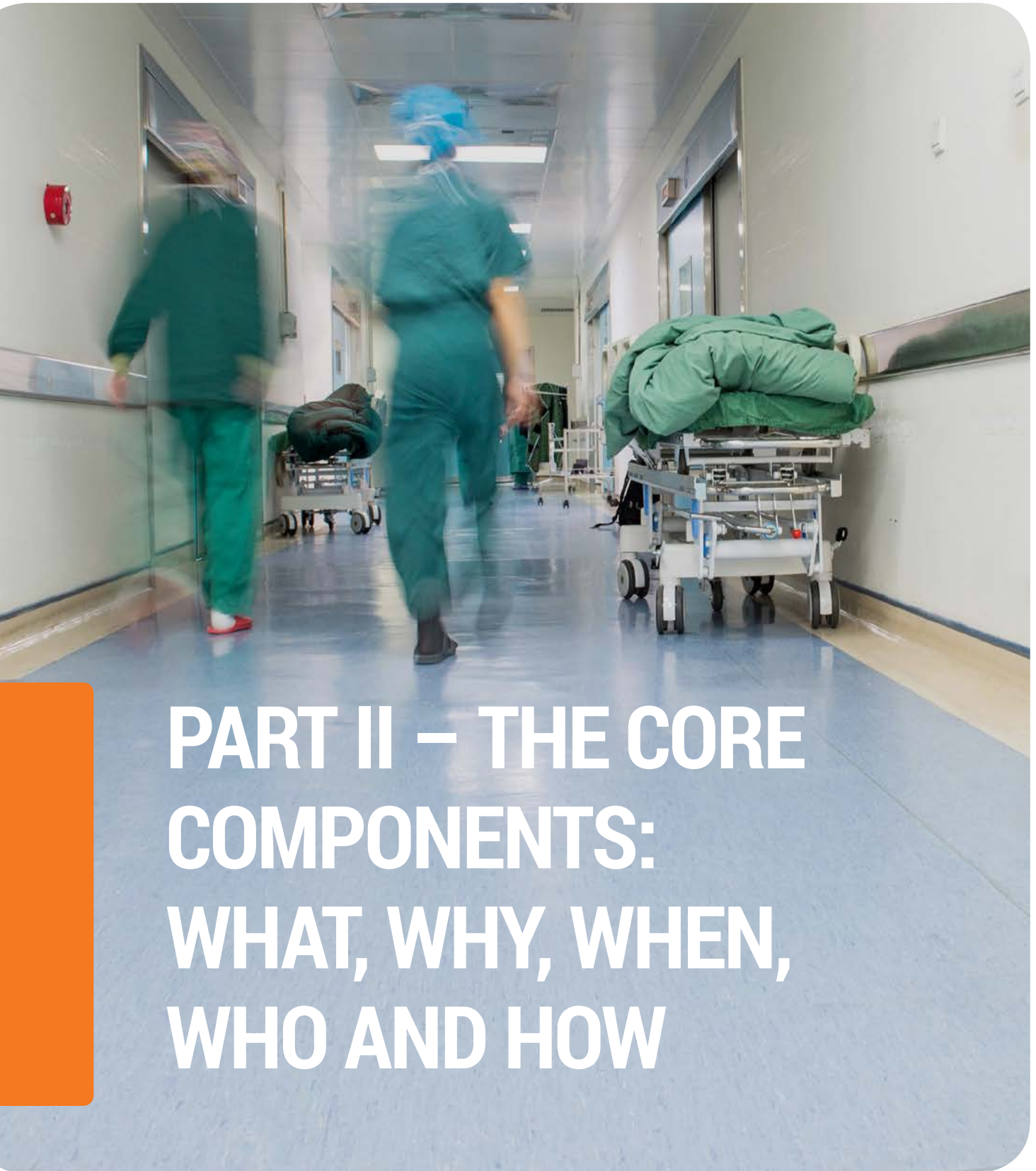
results to doctors and nurses (monitoring and feedback/“check it”).

4. How will you publicize action on specific measures and promote improvement and best practice in this area?

This may involve the use of reminders, posters or other advocacy/awareness-raising tools and cues-to-action to promote an intervention and methods/initiatives to improve team communication across units and disciplines. For example, discussion of the strategy for the prevention of BSI during clinical meetings and the use of promotional leaflets and posters to reinforce bundles of best practices (**communications and reminders/“sell it”**).

5. How will you make and maintain this as a health care facility priority and engage senior leaders/managers/champions and opinion leaders over time?

This is concerned with ensuring that senior managers/leaders show tangible support and act as champions and role models, including making relevant decisions and promoting an adaptive approach and strengthening a culture that supports IPC, patient safety and quality. In addition, teams and individuals are empowered so that they perceive ownership of the intervention. For example, discussion of BSI rates at the executive level facility meetings (**safety climate and culture of safety/“live it”**).



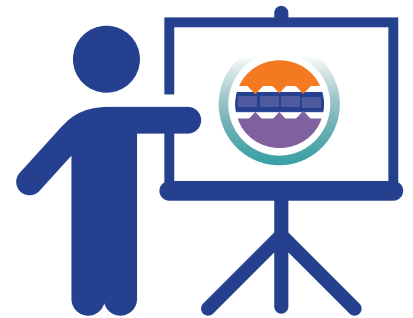
**PART II – THE CORE
COMPONENTS:
WHAT, WHY, WHEN,
WHO AND HOW**

INTRODUCTION TO THE CORE COMPONENTS

In this section you will find a summary of the what, why, when, who and how of each core component. It is important to note that comprehensive details on each core component can be found in the main guidelines.

If you and your team are familiar with the guidelines you may decide to bypass this step and move directly to Part III.

Suggested action As the lead person for this work, sit down with your IPC team and/or the IPC committee and look at the what, why, when, who and how of each core component. Here you can see at-a-glance what a health care facility needs to have in place to meet the core component guideline recommendations, why this is important, who should be involved and when action should occur. The ultimate long-term goal of your IPC improvement journey is to fully implement and sustain the core components and it is important to always be aware of your destination. However, it is likely you will not have in place some or even most of the things listed. The aim here is to become familiar with the core components and the requirements for success to help you build and sustain your narrative for IPC improvement.



Core Component 1. IPC programmes



WHAT

- An IPC programme with a dedicated, trained IPC team (see “who”) should be in place in each acute health care facility for the purpose of preventing HAI and combating AMR through implementing IPC recommendations.
- The programme should include clearly defined objectives and an annual work plan based on local epidemiology and priorities according to risk assessments. The IPC programme needs to have a dedicated budget and resources.
- IPC objectives, measurable outcome indicators and targets should be set for critical health care facility areas.

WHY

- The development and maintenance of an IPC programme is the foundation for the implementation of all other core components.
- Establishing an IPC programme ensures that facility leadership and the right technical expertise is in place to support all IPC activities.
- IPC programmes support the prevention of avoidable infections and saves lives. Effective IPC programmes lead to more than a 30% reduction in HAI rates and prevent morbidity and mortality, the development and transmission of AMR and also reduce health care costs.
- A strong, effective and sustained IPC programme ultimately strengthens health systems and supports the delivery of high quality, people-centred and integrated health services that are a necessary prerequisite to protect the vulnerable and achieve quality universal health coverage and the Sustainable Development Goals (SDGs).

WHEN

- Establishment of an IPC programme should be a high priority. However, it is still possible to make progress on IPC improvement even in the absence of a formal IPC programme.
- If a formal IPC programme is not yet in place, some of its functions may be fulfilled or integrated within other established programmes (for example, tuberculosis [TB], human immunodeficiency virus [HIV]) and some core components could already be in place (for example, some form of HAI surveillance).

WHO

- An IPC focal person and team (medical and nursing staff trained at a certified IPC course or equivalent; at least one professional per 250 beds) should be established to lead the IPC work (HAI surveillance and prevention) and should be supported by a multidisciplinary IPC committee with interested stakeholders across the facility.
- The person identified to direct the IPC programme can be a doctor (with a speciality in microbiology or infectious diseases or epidemiology or public health) or a nurse, both with proven expertise and experience in IPC.
- An IPC committee should include: senior facility leadership; senior clinical staff; leads of other relevant complementary areas such as biosafety, pharmacy, microbiology or clinical laboratory, waste management, WASH services and quality and safety, where in place.

HOW

- Develop defined functions and activities of the IPC programme according to local risk assessment and needs.
- Secure the necessary leadership support for the IPC programme and indicators (for example, at executive level meetings, executive rounds, participation in morbidity and mortality meetings). Leadership support should be demonstrated through budget allocation for IPC.
- Develop a narrative on how IPC strengthens quality improvement efforts and can be used as a vehicle for improving overall structures and processes, including health care worker competencies.
- Remember - use multimodal thinking and consult the multimodal strategy guiding questions (Box 4 and Annex 2) and refer to Part III for more practical information on the “how” of implementation.

Core component 2. IPC guidelines

WHAT

- Evidence-based guidelines should be developed and implemented for the purpose of reducing HAI and AMR. The education and training of relevant health care workers on the guideline recommendations and the monitoring of adherence with guideline recommendations should be undertaken to achieve successful implementation. Guidelines should address a number of key topics¹.
- Where national IPC guidelines exist, facilities may choose to use these national guidelines adapted to local conditions.
- It is important to note that the term ‘guidelines’ is a general term used here to imply policies and/or standards in the context of facility level IPC implementation.

WHY

- The development and/or adaptation of IPC guidelines, policies, protocols and standard operating procedures² and related implementation strategies is a key function of an IPC programme.
- Technical guidelines should provide clear directions on IPC priorities and clear evidence-based standards, which should be adapted to the local context. If effectively linked to education and training when implemented and monitored, guidelines can lead to desired IPC outcomes and quality improvement. IPC guidelines provide a means by which health care facilities/workers can be held accountable.
- It is important to be aware that the availability of technical guidelines on IPC programme organization and key practices is usually a prerequisite for rolling out IPC education and training, as well as monitoring and evaluation.

WHEN

- The development and/or adaptation of guidelines covering the key topics should be considered a priority.
- Where established national guidelines and standard operating procedures already exist, these can be used in your health facility.
- The implementation sequence of the core component recommendations for evidence-based guidelines, education and training, monitoring, audit, feedback and surveillance should be determined according to the specific local context.

WHO

- The IPC team is responsible for writing, adapting, promoting the adoption and monitoring adherence to guidelines. If the expertise of the IPC team is limited, external support should be sought.

HOW

- The development and implementation of guidelines requires a functioning IPC programme and associated expertise to ensure that local guidelines refer to national or international evidence-based guidelines and standards. Adaptation to local conditions should be considered for the most effective uptake and implementation.
- Relevant stakeholders (for example, leading doctors, nurses, health care facility managers, quality managers) should be involved in the development and adaptation of guidelines.
- Involvement of frontline health care workers, in addition to IPC teams, should be considered in guideline implementation (planning and execution).
- Specific training should be put in place for health care workers when new guidelines are issued.
- Regular monitoring should be established relating to the implementation of some IPC guidelines.
- Remember - use multimodal thinking and consult the multimodal strategy guiding questions (Box 4 and Annex 2) and refer to Part III for more practical information on the “how” of implementation.



¹ Standard precautions; hand hygiene; transmission-based precautions; prevention of surgical site infection; prevention of vascular catheter-associated BSI; prevention of hospital-acquired pneumonia; prevention of catheter-associated urinary tract infections; prevention of transmission of multidrug-resistant organisms (MDRO); disinfection and sterilization; health care worker protection and safety; injection safety; waste management; antibiotic stewardship; outbreak preparedness and management.

² Guidelines are developed to improve decision-making by providing guidance and recommendations according to the best available evidence. A standard operating procedure is a set of step-by-step instructions compiled by an organization to help workers carry out routine operations in the most effective manner. A protocol is a detailed plan of a scientific or medical experiment, treatment or procedure.

Core component 3. IPC education and training

WHAT

- 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.

WHY

- Support of IPC education and training is a key function of IPC programmes with the ultimate aim of developing a skilled and knowledgeable health workforce, including a frontline workforce with IPC basic competencies, as well as providing continuous education for IPC specialists with advanced knowledge and mentorship and implementation skills.
- Health worker training has been found to be an essential component for effective IPC guideline implementation, contributing to the ultimate prevention of HAIs and AMR and the provision of high quality health service delivery.

WHEN

- Development of IPC education and training packages should be considered during the establishment of a facility IPC programme.
- The implementation sequence of the core component recommendations for evidence-based guidelines, education and training, monitoring, audit, feedback and surveillance should be determined according to the specific local context.

WHO

- IPC expertise is required to lead IPC training. In addition, include non-IPC personnel with adequate skills to serve as trainers and mentors (for example, link nurses/practitioners or champions and opinion leaders).
- If IPC expertise is not yet available to lead and undertake IPC training, consider support from outside the health facility, for example, at the regional or national level.
- Three categories of human resources are identified by WHO as targets for IPC training, with each requiring different strategies and training content or updates at the facility level: 1) updates for IPC specialists (doctors, nurses and other professionals who are members of the technical teams responsible for the IPC programme); 2) basic IPC for all health care workers involved in service delivery and patient care; and 3) other personnel that support health service delivery (administrative and managerial staff, auxiliary service staff, cleaners, etc.).

HOW

- IPC education and training should be part of an overall health facility education strategy, including new employee orientation and the provision of continuous education opportunities (at least annually) for existing staff regardless of level and position (for example, including also senior administrative and housekeeping staff).
- Use a blended approach to training including written information and/or oral instructions and/or e-learning and interactive and practical sessions (including simulation and/or bedside training).
- Individual, team and peer supportive supervision mechanisms are effective in helping staff to improve performance. This must be instituted and monitored in the health facility.
- Establish regular, at least annual, evaluation of the effectiveness of training (for example, hand hygiene audits and other checks on knowledge).
- Integrate IPC training into clinical practice and the training of other specialties (for example, training of surgeons involves aspects of IPC).
- In-service mentorship should be considered - one example could be the use of IPC link nurses/practitioners as unit-based resources or champions.
- Tailored IPC education for patients or family members should be considered to minimize the potential for HAI (for example, patients who are immunosuppressed or with invasive devices or with multidrug resistant infections).
- IPC specialists require development and training, usually at the national or international level.
- Remember - use multimodal thinking and consult the multimodal strategy guiding questions (Box 4 and Annex 2) and refer to Part III for more practical information on the "how" of implementation.



Core component 4. HAI surveillance

WHAT

- Facility-based HAI surveillance should be performed to identify the most frequent HAIs and detect HAI outbreaks, including AMR surveillance. Timely feedback of results should be provided to health care workers and managers, as well as through national networks, and should guide IPC interventions.
- Surveillance should be an essential and well-defined component of the IPC programme.
- Adequate microbiology laboratory capacity is needed to support surveillance.

WHY

- Surveillance of HAI and AMR can provide critical information on the incidence and prevalence of HAIs and AMR in health care facilities (that is, identify “the problem”) to:
 - ▶ guide IPC strategies and priorities and assess the effectiveness and impact of interventions;
 - ▶ develop benchmarking and assess trends over time;
 - ▶ detect clusters or outbreaks of importance and inform wider public health decision-making and actions;
 - ▶ assist national decision-makers and the IPC national team to identify priorities for IPC; and
 - ▶ develop targeted evidence-based standards and policies.
- Evidence has shown significant reductions in HAI rates after the implementation of HAI surveillance programmes, including mechanisms for timely feedback.

WHEN

- An approach to the surveillance of HAIs should be considered during the establishment of your IPC programme. However, the implementation sequence of the core component recommendations for evidence-based guidelines, education and training, monitoring, audit, feedback and surveillance should be determined according to the specific local context.
- While it is recognized that HAI surveillance can provide critical information on the magnitude of the problem for awareness-raising and could be useful from the start of the implementation sequence, it is important to recognize that surveillance requires expertise, laboratory capacity and an established IPC programme and thus, may require time to set up.

WHO

- The responsibility for planning and conducting surveillance and analyzing, interpreting and disseminating the collected data rests usually with the IPC committee and the IPC team.
- The named person responsible for surveillance (usually the IPC focal person/lead) should be trained in basic epidemiology, surveillance and IPC.
- Epidemiologists, statisticians, data managers and information technology experts with the appropriate capacity to accurately and efficiently collect, analyze and interpret data at the facility (or if unavailable at the district level) also play a critical role. At least some of this expertise should be available.
- In the absence of an IPC team, data collection can still be undertaken by dedicated staff with access to medical documentation, patient charts, laboratory findings, microbiology and virology results and other relevant registries. However, this staff should receive specific training.



Core component 4. HAI surveillance, continued

HOW

- Health care facility surveillance should be based on national recommendations and standard definitions and customized to the facility needs and priorities according to available resources with clear objectives and methods. If national recommendations and standard definitions are unavailable, international recommendations/definitions should be referred to.
- A prioritization exercise should be undertaken to determine which HAI(s) to target for surveillance according to the local context. Possible recommended infections for surveillance in healthcare include:
 - ▶ surgical site infections;
 - ▶ device-associated infection (for example, catheter-associated urinary tract infections, central line-associated BSI, peripheral line-associated BSI, ventilator-associated pneumonia);
 - ▶ clinically defined infections (for example, in the absence of microbiological testing);
 - ▶ colonization or infections caused by multidrug-resistant organisms (MDROs) according to local epidemiology;
 - ▶ local priority epidemic-prone infections (for example, norovirus, influenza, TB, severe acute respiratory syndrome, Ebola, Lassa fever);
 - ▶ infections in vulnerable populations (for example, neonates, those housed in the intensive care unit, immunocompromised individuals, burn patients);
 - ▶ infections that may affect health care workers in clinical, laboratory or other settings (for example, hepatitis B or C, HIV, influenza).
- Reliable surveillance case definitions should be used (that is, defined numerator and denominator according to international definitions [United States Centers for Disease Control and Prevention National Healthcare Safety Network [CDC/NHSN]/European Centre for Disease Prevention and Control [ECDC]] or locally adapted definitions through an evidence-based adaptation process and expert consultation).
- Active surveillance should be used to detect infections. Different surveillance strategies could include the use of prevalence or incidence studies with clear and focused data collection forms.
- 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).
- Informatics support to conduct surveillance should be in place (for example, equipment, mobile technologies, electronic health records).
- A system for surveillance data quality assessment is of the utmost importance (for example, assessment of case reports, review of microbiology results, denominator determination, etc.). Additionally, regular evaluation of surveillance should be undertaken in line with current needs and priorities.
- Remember - use multimodal thinking and consult the multimodal strategy guiding questions (Box 4 and Annex 2) and refer to Part III for more practical information on the "how" of implementation.

Core component 5. Multimodal strategies

WHAT

- IPC activities using multimodal strategies and a multidisciplinary team approach (see Part I and Annex 2) should be implemented to improve practices and reduce HAI and AMR.

WHY

- The use of multimodal strategies in IPC has been shown to be the best evidence-based approach to achieve sustained behavioural change for the implementation of IPC interventions, with a large body of evidence related to hand hygiene improvement.
- The use of multimodal strategies supports all aspects of IPC implementation and underpins all of the core component guideline recommendations.
- Multimodal thinking means that IPC practitioners do not focus only on single strategies to change practices (for example, training and education), but consider a range of strategies that target different influencers of human behaviour, for example, monitoring and feedback, infrastructures or organizational culture.

WHEN

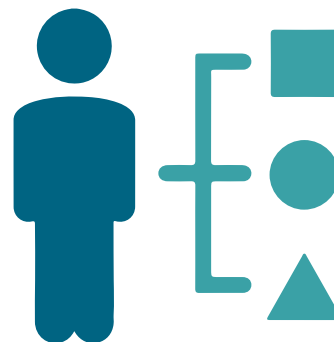
- The use of multimodal strategies should be considered right from the start to support implementation when establishing your IPC programme.
- Where an established IPC programme already exists, consider the extent to which multimodal strategies are already embedded.

WHO

- The team (lead and members) with support from the IPC committee are responsible for using a multimodal approach for implementation.
- Successful multimodal strategies include the involvement of champions or role models.
- Collaboration with colleagues in quality improvement and patient safety to develop and promote multimodal strategies should be addressed.

HOW

- Refer to the guiding questions listed in Box 4 and Annex 2.
- The use of bundles or checklists should be incorporated into multimodal strategies.
- Remember - use multimodal thinking and consult the multimodal strategy guiding questions (Box 4 and Annex 2) and refer to Part III for more practical information on the “how” of implementation.



Core component 6. Monitoring/audit of IPC practices and feedback

WHAT

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

WHY

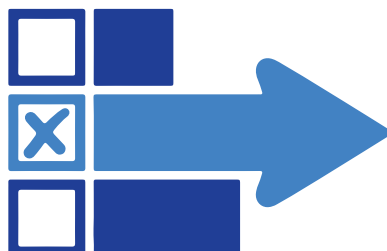
- The main purpose of monitoring/auditing practices and other indicators and feedback is to support the achievement of behaviour or system change to improve practices and the quality of care with the goal of reducing the risk of HAI and AMR spread as part of a multimodal approach.
- It can include an assessment of the extent to which standards are being met, goals accomplished, activities performed according to requirements, and aspects that may need improvement. Doing this helps to create a “monitoring and learning” culture to identify areas for improvement.
- Hand hygiene has the potential to act as a key indicator, including hand hygiene compliance monitoring.
- Monitoring and feedback are also aimed at engaging stakeholders, creating partnerships and developing working groups and networks.
- Learning from the field of quality improvement, monitoring, audit and feedback can be an important tool for convincing people that there is a problem and that the solution chosen is the right one. This should take place in a blame-free manner to promote a non-punitive institutional culture.
- Time investment in stakeholder engagement, data collection, monitoring, audit and feedback systems, particularly timely feedback, are important success factors in driving improvement.

WHEN

- Monitoring, audit and feedback activities should be first considered during the establishment of an IPC programme and subsequently should become an integral part of the implementation process.
- The implementation sequence of the core component recommendations for evidence-based guidelines, education and training, monitoring, audit and feedback, and surveillance should be determined according to the specific local context.

WHO

- Audit and feedback is a key activity of the IPC team (lead and members) supported by the IPC committee who should be trained in auditing techniques.



Core component 6. Monitoring/audit of IPC practices and feedback, continued

HOW

- A well-defined monitoring plan with clear goals, targets and activities including tools to collect data in a systematic way should be developed.
- Monitoring/auditing should be conducted on a range of processes and indicators (Box 5);
- The WHO HHSAF survey and the IPCAF are ready-to-use tools to audit hand hygiene improvement according to a multimodal strategy and the Core Component guideline implementation, respectively. Both the HHSAF and IPCAF can be used to monitor programme activities over time.
- The WASH Facility Improvement Tool (WASH FIT) supports the continuous improvement of WASH as part of wider quality improvements in health care facilities.
- Establish feedback mechanisms to the IPC team, department leaders and managers being audited, frontline health workers, IPC committee or quality of care committees or equivalent, and health care facility management and senior administration. Methods such as leaflets, bulletins, newsletters and journals can be used to disseminate monitoring and audit findings.
- Establish regular (at least biannual) reporting of monitoring data and consider the use of trend analysis (for example, by month, quarter, annually).
- Consider the use of bidirectional feedback and learning (for example, between health care workers and those providing feedback) to support a learning culture and general quality improvement.
- Consider the use of safety culture surveys, for example, Hospital survey on patient safety culture (HSOPSC), Safety attitudes questionnaire (SAQ), Patient safety climate in healthcare organizations (PSCH), Hospital safety climate scale (HSC).
- Remember - use multimodal thinking and consult the multimodal strategy guiding questions (Box 4 and Annex 2) and refer to Part III for more practical information on the "how" of implementation.

Box 5. Recommended processes and indicators to be monitored/audited

1. Hand hygiene compliance (using the WHO hand hygiene observation tool or equivalent)
2. Intravascular catheter insertion and/or care
3. Urinary catheter insertion and/or care
4. Key measures to prevent surgical site infections
5. Transmission-based precautions implementation for MDROs and highly transmissible infectious diseases
6. Cleaning of the ward environment
7. Disinfection and sterilization of medical equipment/instruments
8. Consumption/use of alcohol-based handrub or soap
9. Consumption/use of antimicrobial agents

Core component 7. Workload, staffing and bed occupancy

WHAT

- Bed occupancy should not exceed the standard capacity of the facility (one patient per bed with adequate spacing of >1 metre between patient beds). In exceptional circumstances where bed capacity is exceeded, health care facility management should act to ensure appropriate staffing levels that meet patient demand and an adequate distance between beds.
- Health care worker staffing levels should be adequately assigned according to patient workload.

WHY

- Bed occupancy exceeding the standard capacity of the facility is associated with the increased risk of HAI, nosocomial outbreaks and the spread of AMR in acute care facilities, in addition to inadequate health care worker staffing levels. Overcrowding is also recognized as being a public health issue that can lead to disease transmission.

WHEN

- Consideration of workload, staffing and bed occupancy issues will form part of initial discussions as you start to plan your improvement (step 1). This core component influences the implementation of all other core components. However, it is important to note that the guidelines recognize that adherence to this recommendation may need to be balanced against the immediate need to provide clinical care to as many patients as possible in special circumstances.

WHO

- Decisions regarding workload, staffing and bed occupancy are not directly within the responsibility of the IPC programme, but rather lie with senior managers and directors. Nevertheless, the IPC team should understand the evidence supporting this core component in order to be able to convince and exert influence on decision-makers at the facility and ministry level. Therefore, the development of IPC skills in negotiation and influence are important considerations.
- The successful implementation of this core component will be supported if a national plan for human resource development is in place.

HOW

- Aim for an agreed ratio of health care workers to patients across the facility based on national recommendations where available. 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 thus, help with staffing decisions to optimize human resources available (http://www.who.int/hrh/resources/wisn_user_manual/en/).
- Put in place a system to assess and respond when staffing levels are deemed to be too low.
- Advocate for effective bed management strategies to address one patient per bed in all departments as standard of care, correct placement/location of patients and adequate bed spacing.
- Put in place a system to assess and respond when adequate bed capacity is exceeded.
- Remember - use multimodal thinking and consult the multimodal strategy guiding questions (Box 4 and Annex 2) and refer to Part III for more practical information on the "how" of implementation.



Core component 8. Built environment, materials and equipment for IPC

WHAT

- 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. This includes all elements around the WASH infrastructure and services, as well as the availability of appropriate IPC materials and equipment, for example, alcohol-based hand rubs, soap and water, personal protective equipment (PPE), urinary catheters, etc.
- Materials and equipment to perform appropriate hand hygiene should be readily available at the point of care.
- WHO standards for the following elements should be implemented in all health care facilities: adequate number and appropriate position of hand hygiene facilities; WASH services; health care waste management and environmental health; and appropriate disinfection and sterilization practices (see tools and resources, Part III, Core Component 8).

WHY

- An appropriate environment, WASH services, and materials and equipment for IPC are the cornerstone of effective IPC programmes at health care facilities. In addition, the built environment is important for patient dignity and satisfaction and staff morale.

WHEN

- Consideration of the built environment, as well as materials and equipment for IPC, will form part of initial discussions as you start to plan your improvement (step 1). This core component influences the implementation of all other core components.

WHO

- Ensuring an adequate clean and hygienic environment is the responsibility of senior facility and local (and ultimately national) authorities. Decisions regarding the built environment, materials and equipment for IPC are not solely the responsibility of the IPC programme. However, the IPC team should exert influence in relation to this core component and therefore the development of skills in negotiation and influence are important considerations for the IPC team.

HOW

- Work with WASH, environmental health and facility managers. Where it exists, work with the WASHFIT team and use the WASHFIT Facility Improvement Tool (see tools and resources, Part III, Core Component 8).
- Advocate for the provision of and maintenance of buildings and fixtures according to IPC recommendations. Identify and advocate for locally produced items. Advocate for the input of the IPC programme in the procurement of IPC equipment and logistics. Compile and monitor a tracer list of IPC equipment and logistics.
- Remember - use multimodal thinking and consult the multimodal strategy guiding questions (Box 4 and Annex 2) and refer to Part III for more practical information on the “how” of implementation.



Now that you are familiar with each core component and their requirements, it is important to understand how these components align to support a comprehensive IPC programme (Figure 2). A comprehensive and effective approach to IPC consists of establishing IPC programmes with strong links to other programmes, in particular, those addressing AMR, WASH and quality and safety. The presence of an IPC programme is a necessary, but not a sufficient condition to achieve safe high quality health care. In addition, an adequate built environment (including the necessary infrastructure, materials and equipment, appropriate bed occupancy, adequate human resources or staffing and workload) represents the foundation enabling the implementation of all other core components and the achievement of safe practices. These two prerequisites, that is, an IPC established programme and an adequate built environment, support the effective implementation of IPC guidelines, training and education, monitoring, audit, feedback and surveillance. Implementation success in each of these areas also depends on the adoption of a multimodal approach and multimodal thinking.

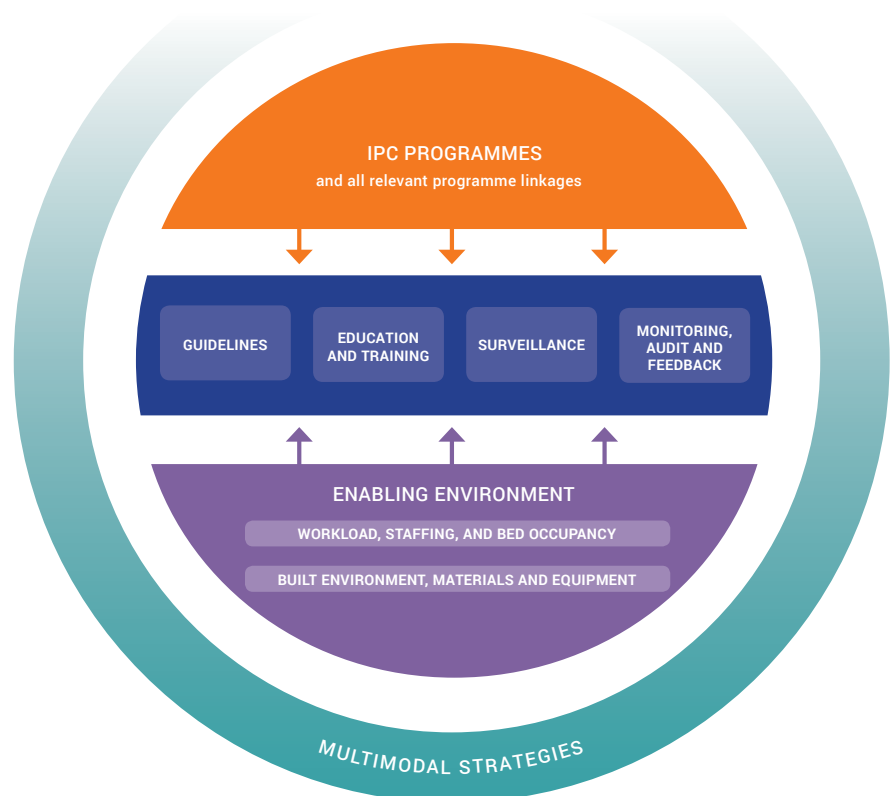
- 1 Standard precautions; hand hygiene; transmission-based precautions; prevention of surgical site infection; prevention of vascular catheter-associated BSI; prevention of hospital-acquired pneumonia; prevention of catheter-associated urinary tract infections; prevention of transmission of multidrug-resistant organisms (MDRO); disinfection and sterilization; health care worker protection and safety; injection safety; waste management; antibiotic stewardship; outbreak preparedness and management.
- 2 Guidelines are developed to improve decision-making by providing guidance and recommendations according to the best available evidence. A standard operating procedure is a set of step-by-step instructions compiled by an organization to help workers carry out routine operations in the most effective manner. A protocol is a detailed plan of a scientific or medical experiment, treatment or procedure.

THE CORE COMPONENTS – A HOLISTIC APPROACH TO IMPROVEMENT

Figure 2 provides a visual representation of the eight core components and highlights how the guideline recommendations interconnect with each other. You might also find this a useful resource to print and carry with you as you work through the rest of the manual.

Note. In Figure 3 (Part III) you will find a sample script that helps to explain these links (or connections).

Figure 2. Visual representation of how the IPC core components interconnect



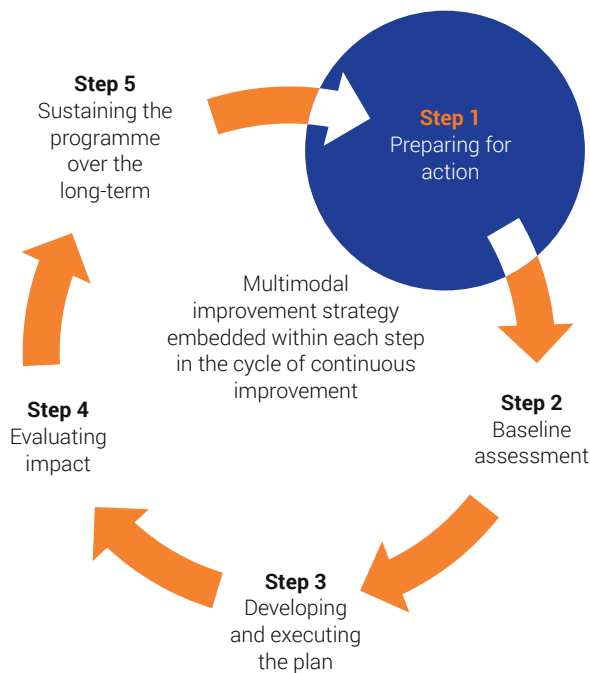


PART III IMPLEMENTATION



STEP 1
**PREPARING
FOR ACTION**

STEP 1 PREPARING FOR ACTION



Purpose of step 1

- This step is concerned with getting ready to assess and improve IPC in your facility. Here you will build the foundations for your improvement journey.
- In Part II, you familiarized yourself with the what, why, who, when and how of each core component. The knowledge gained will empower you to talk about the core components with confidence to senior managers and leaders, whose support is crucial for success.
- Step 1 involves the planning and putting in place of measures that will support successful implementation, as well as the sustainability of an effective IPC programme and its respective components. These include the necessary resources (human and financial), adequate infrastructures, plans and coordination, as well as identifying and engaging key leaders (including opinion leaders), stakeholders and champions (see Box 6), and an overall lead and team (including a deputy) for the IPC improvement work.
- A major part of step 1 will involve meeting and talking to stakeholders. Although you have not yet undertaken the baseline assessment, communication and advocacy are important to prepare the way for the remaining four steps.

Box 6. Involving and influencing key people – working definitions

Health care facility leader: for the purposes of this manual, the health care facility leader or leadership team refers to the facility administrator/chief or CEO or equivalent.

Opinion leader: an individual with the power to influence the opinion and behaviour of others. Securing the support of local opinion leaders for IPC will be a key achievement.

Stakeholder: an individual, group or organization that has an interest in your decision to implement a guideline, including those who will be directly or indirectly affected (Registered Nurses' Association of Ontario [RNAO] Best Practice Guidelines 2012). See table 1A "Stakeholders, communications and advocacy".

Champion: a champion is an influential person who actively supports a new "innovation" and whose influence is a critical driving force behind implementation success. Local champions will vary, but in an IPC context, they could include key professionals, academics, or heads of patient/civil society groups who commit to support the IPC improvement work.



PRACTICAL TIPS, KEY CONSIDERATIONS AND ACTIONS

- During step 1, focus on undertaking the necessary groundwork to support future actions.
 - Pay attention to gaining an understanding of the likely human and financial resource requirements needed to improve one or more IPC core components in your facility.
 - Depending on the current situation in your facility, step 1 may take many months. It is important that day-to-day activities to keep people safe continue during this preparatory step.
- During step 1, you might not currently have the full attention and commitment of your health care facility leadership. Table 1A describes the basic considerations and actions that will support the development of your key messages on the importance of IPC improvement and actions to help convince your facility leadership. You will build on this preparatory work during subsequent steps. Note – many of these considerations and actions are interlinked, for example, the actions required to address communications and advocacy can also be used to secure leadership support.

Table 1A. Key considerations and actions (step 1)

	Key considerations	Actions required
Leadership	National, regional and provincial leadership can influence how receptive health care facility leadership is to IPC improvement.	<ul style="list-style-type: none"> • What action has taken place at the national, regional or provincial level previously? For example, has national action on IPC taken place, including whether an IPC programme exists or is under development? • A national or sub-national approach to IPC will provide legitimacy and a mandate for facility-level plans and any national statements specifically on or related to IPC (for example, AMR) will be helpful in making progress. • Determine whether a national action plan is available for AMR and familiarize yourself with it.
Leadership	Facility leadership is necessary to provide an official mandate for IPC, to drive the culture and all subsequent action, and to ensure the necessary and sustainable human and financial resources, including time to undertake IPC activities.	<ul style="list-style-type: none"> • Develop a script that outlines your vision for IPC and/or for any specific core component by using/adapting the text included in Figure 3. The aim is to help attract and secure support for IPC in your interactions with key stakeholders, including facility leaders and managers, and at the health care facility board/committee meetings or other senior management meetings. • Secure formal written support, for example, a statement of support or memo or e-mail communication, from the facility leadership to senior managers and leaders (that is, clinicians and senior nurses) and the stakeholders you have identified as your target audience (see Stakeholders section below). • Start to prepare content/a script for newsletters, routine meetings of medical, nursing and other health care workers and notice boards. • Consider use of social media (for example, Facebook or other social networks used in your country) and local radio to disseminate messages about the importance of IPC.
Human resources	An IPC team including a lead/focal person is required to drive forward all actions supported by an IPC committee.	<ul style="list-style-type: none"> • Identify at least one competent person to mandate and drive the work (this may be you!). • A competent team to support the IPC lead is required - consider who might fulfill this role (the team will include the nominated IPC lead/focal person and other staff). • Identify people, departments or organizations who have a vested interest in IPC improvement, for example, the potential champions/opinion leaders already mentioned above, and also those working on quality, AMR, occupational health, health care workers' education and water and sanitation improvements in the facility and/or community. In many facilities, an active IPC committee provides this support.

Key considerations and actions (step 1) continued

	Key considerations	Actions required
Stakeholders, communications and advocacy	<ul style="list-style-type: none"> Stakeholder engagement is an important part of the preparatory phase. Key stakeholders (including potential champions/opinion leaders) need to be convinced that HAI is a problem and that the establishment of a functional IPC programme and/or putting in place/strengthening any part of the core component guideline offers a solution. Therefore, a convincing narrative with a suite of advocacy messages and materials is required to “win the hearts and minds” of key people. Remember - IPC (especially hand hygiene) is known to be a topic that can unite multiple disciplines and stimulate discussion in daily meetings. This presents a tangible way to engage stakeholders. 	<ul style="list-style-type: none"> Identify stakeholders at all levels of the facility and in some cases beyond, for example, patient and civil society groups. Pay special attention to identifying potential influential champions/opinion leaders. Undertake a stakeholder analysis (this can also be revisited and revised throughout the process of implementation¹). Engage stakeholders through one-to-one meetings or sensitization and advocacy meetings to discuss the need for strengthened IPC (see sample agenda in Annex 3) – use the pre-prepared script (figure 3). Communicate your IPC vision and objectives, based on the core components, using channels appropriate to your context. Explain what your facility needs to put in place to meet the core component guideline recommendations. Explain how IPC addresses a real problem in the facility (or potential problem), that is, HAI, length of stay, patient outcome, quality and safety (of patients and health workers), the ability of the facility to withstand shocks such as outbreaks of highly transmissible disease. Use the advocacy tools listed at the end of step 1 to support you in your meetings (group and one-to-one). During meetings, discuss with colleagues their previous experience of IPC. Probe whether colleagues have experienced outbreaks. Outbreak experiences can act as catalysts for change and focus attention on the value of IPC as a means to stop outbreaks – implementing IPC will help stop future outbreaks and strengthen the resilience of the facility. Gain support and commitment by using the advocacy materials and “scripts” referred to previously. The aim is to empower others to act on your vision – be specific about the type of support you require, for example, a mandate for action, a commitment to consider funding requirements, etc. Take the time to explain why IPC and the core components are crucial and beneficial - that is, illustrate by using both evidence and simple examples of local practice that may have changed to obtain quick visible results. Find out which local patient groups/civil society groups (for example, groups focused on sepsis, MRSA, HIV, hepatitis B) are connected to IPC and when they will meet and what their strategies and action plans are. Consider how the IPC vision can be connected to these activities and build relationships where they do not already exist.

Key considerations and actions (step 1) continued

	Key considerations	Actions required
Financial resources	<ul style="list-style-type: none"> • A protected, dedicated and adequate budget is necessary to support and sustain the IPC programme. • The mechanism for budget allocation to health care facilities should be discussed with district and national level stakeholders, if not in place. 	<ul style="list-style-type: none"> • Start to consider how to develop a budget case to present to the health care facility leadership/managers in order to implement and sustain the core components – this will be a key action in step 3. • Determine whether there is a need to connect with district and national level stakeholders responsible for health care facility budget allocation, for example, to address WASH or human resources and funding issues under the auspices of the annual health sector review. Their involvement in and awareness of your IPC plans will be important. • Explore whether existing resources (including human resources) or infrastructure can be used to support your IPC programme and present this as a proposal to leadership where relevant (considering that extra resources will not always be available). For example, can IPC be incorporated in the activities of a number of health programmes (AMR, malaria, immunization, TB/HIV, maternal and child health). Focus on how IPC has the potential to support the achievement of programme targets. In this latter example, while the budget may not be given directly to the IPC programme, it may be accessed to support IPC implementation. • Consider sourcing resources from other non-traditional sources, for example, community members/civil society organizations, local politicians, the commercial sector or NGOs, according to your local context. • Start by considering small actions that will not require a lot of resources and then build on this to strengthen your case for finances that will lead to larger, longer term improvements. • Discuss how the budget will be used and reported against, including the need for ongoing budget allocation to ensure IPC action can be sustained and infections reduced (with associated cost savings).
Interlinkages with other programmes	<ul style="list-style-type: none"> • Linkages with quality improvement teams² and programmes and AMR and WASH teams should be established or strengthened. • Linkages with accreditation and regulation programmes should be established or strengthened. 	<ul style="list-style-type: none"> • Use your pre-prepared script in your meetings with other programmes and focus on demonstrating how IPC is relevant to achieve their goals and on strengthening joint working for mutual benefit. • Consider the role of IPC in strengthening accreditation. • The changes needed to improve IPC will have more likelihood of success if you can bring together a cross-disciplinary group with power and commitment to help lead the change effort.

2. In some health care facilities, the IPC lead/focal person is located within the quality improvement team and this team may initially assume responsibility for IPC.

Key considerations and actions (step 1) continued

	Key considerations	Actions required
Use of data	<ul style="list-style-type: none"> • IPC must be seen as critical to the success of a facility's health outcomes. 	<ul style="list-style-type: none"> • The changes necessary to improve IPC are more likely to succeed if you can establish a sense of urgency – data can help you to do this. • Consider whether other assessments relevant to IPC (for example, WASH including WASH FIT, AMR or outbreak preparedness assessments) have already taken place and discuss with leadership what information they provide about the current IPC situation (this will be strengthened by undertaking a targeted IPC baseline assessment in step 2). • Explore the availability of national data to support the need for action.

Figure 3 contains sample text that can be used as a “script” to support initial sensitization discussions with facility managers and leaders and other stakeholders, together with your printed copy of Figure 2.

Figure 3. Sample script for initial sensitization discussions with facility managers and leaders



IMPLEMENTATION BARRIERS AND SOLUTIONS



A number of challenges may be faced as you work through step 1. During your meetings and discussions with key stakeholders, consider the potential barriers and facilitators that might be associated with implementing your IPC programme. Use the resource: Worksheet: questions to guide assessment of facilitators and barriers (see tools and resources).

Table 1B lists some of the common barriers to implementation that IPC leaders and teams have encountered, together with some potential solutions and implementation examples.

Table 1B. Overcoming barriers and challenges to implementation (step 1)

Potential barrier	Potential solution(s)	Implementation examples
<p>IPC is not considered a priority in your facility</p>	<ul style="list-style-type: none"> • Share any available outbreak data and how weaknesses in IPC contributed to the outbreak. • Use data to document a problem you think is ongoing (for example, health care-acquired neonatal sepsis) and to convince leaders. Evaluation and monitoring will be addressed in more detail in step 2, but if you already have existing data to share with leaders – use them! • Regular communication and advocacy with senior leadership/managers is key. • Integrate IPC into relevant meetings and present on IPC, for example, at health care facility doctors’ rounds or nurses’ development meetings. • Keep leaders and managers copied on relevant e-mails/memos. • Start small – explore whether a small budget line is possible – this can be symbolic and demonstrate (even a small) commitment that can then be built on, for example, shared office space, desk and telephone, agreed budget for future training materials. 	<p>Securing IPC as a priority using baseline data</p> <p>“To gain support for an IPC programme, we first needed baseline data to convince leadership so we started with monitoring, audit and feedback as our first activity. We first collected data manually and spent two years regularly discussing the results and needs in rounds and meetings. As we started to convince leadership, we started to copy hospital administrators on key staffing and resource emails to further encourage support. With time, the IPC programme grew to 10 nurses and one infectious diseases doctor. We were able to create a drop-down electronic software for better data collection, became involved in a regional surveillance programme that provided us with regular mentorship, and had great success with bundle implementation focusing on decreasing rates of device-associated infection. We emphasized a culture of “practice what you preach.” India</p> <p>Securing IPC as a priority by leveraging an outbreak</p> <p>“One nurse had previously been responsible for IPC, but it received little attention. It wasn’t until we experienced an outbreak of carbapenem-resistant <i>Klebsiella pneumoniae</i> that we were able to convince the leadership about the importance of IPC and the need for resources to develop our IPC programme. Furthermore, the National IPC committee which includes both the public and private sector helped to drive forward the IPC agenda.” Barbados</p>

Overcoming barriers and challenges to implementation (step 1) continued

Potential barrier	Potential solution(s)	Implementation examples
<p>Leadership for IPC is lacking</p>	<ul style="list-style-type: none"> Health care facilities with no previous IPC programmes found it helpful to start small, identifying a team and convincing leaders to invest in IPC. Focused attention to identify local champions and opinion leaders is critical. Is there a senior nurse or doctor or other health worker who can be convinced that IPC is relevant for his/her work and for patient safety in general, and can be nurtured to speak about the need for IPC improvement? It has been noted that those who are often most resistant to start with can become the greatest advocates once they are convinced and can be very influential over others! Collecting data and leveraging previous outbreaks is a common theme emerging from case study examples that can lead to successful engagement. Leverage of public communication – involving patients/patient or civil society groups can also provide a strong lever for action, for example, by using these voices to promote the need for better IPC, focusing on patient concerns (for example, dirty hospitals, relatives having suffered from HAI that has affected their quality of life) – position IPC as a moral obligation. Build linkages and promote integration, for example, with AMR, with other directorates (such as the nursing directorate), with patient safety, quality management, maternal and newborn care. Integration is key and can be strengthened through joint planning/budgeting, joint review meetings, joint monitoring and supportive supervision. Start to think about how to link IPC performance to other health facility or staff performance management systems, for example, appraisal. 	<p>Securing leadership support step-by-step</p> <p>“At the beginning, it was difficult to gain support for IPC. I wanted to start an IPC programme but had to find a way to build a team step-by-step over time. Eventually, I identified three committed staff and convinced the hospital leadership to support my APSIC (Asia-Pacific Society of Infection Control) training. I then worked with an individual with biostatistics experience to begin to collect data and create a surveillance system as well as an environmental engineer to further support IPC activities. To keep the strong support of the hospital director, we needed to show the data and what we needed. At first, it was difficult to get IPC nurses because IPC was not a recognized field and nurses preferred to work in the clinic rather than for IPC (partly also because of salary differences). Over two years, we promoted IPC awareness and regularly taught others. We now have an IPC department for a hospital with 650 beds. The department is led by an infectious diseases doctor and supported by a team of IPC link nurses. Our department is also part of the ministry of health IPC advisory group and Model Hospitals’ programme.” Viet Nam</p> <p>Securing leadership support using data</p> <p>“Leadership needs to understand the importance of IPC, its ability to improve patient safety and increase cost-effectiveness and this comes from data and evidence-based actions. The IPC nurse kept knocking on the door when he had the opportunity with leadership and gradually people noticed. It required a lot of persistent effort. We hold monthly IPC meetings including hospital leadership, microbiologist, infectious disease physicians and nurses to look at the data, as well as sending out regular emails to senior hospital management. Then we advocated for a small budget line. It doesn’t take a lot to start a good IPC programme. We used the case of hand hygiene to advocate for the importance of regular soap and water and resources for multimodal strategies to improve behavioural change.” Pakistan</p> <p>Securing leadership support by building on small research projects</p> <p>“We became involved in research on surgical site infections, which helped to promote awareness about the importance of IPC. We held regular patient safety rounds with senior executives and discussed the importance of IPC whenever we could. Following this research involvement and intensive advocacy efforts, we started a facility IPC committee that continued to promote the study interventions and worked on resource issues such as the installation of alcohol-based, handrub antiseptic dispensers throughout the hospital and hospital staff education.” Kenya</p> <p>Securing leadership support by integrating IPC with patient safety</p> <p>“Our hospital was the first in Argentina to have an IPC programme (since 1970). We promoted the need for an IPC programme to leadership as the number one patient safety priority and an important moral obligation. All infectious disease doctors have some epidemiological activities for IPC, antibiotic stewardship and MDRO surveillance. We have two certified infectious disease nurses as well as five doctors who have responsibility over IPC and epidemiology; our chief is an infectious diseases physician. Our authorities learned that safety is a priority in our hospital, it’s a moral obligation.” Argentina</p> <p>Securing leadership support by involving patient groups</p> <p>“One of the key challenges is communication and political will. We had success addressing this through patient associations which undertook sensitization activities and training for health workers on IPC.” Burkina Faso</p>

Overcoming barriers and challenges to implementation (step 1) continued

Potential barrier	Potential solution(s)	Implementation examples
Limited IPC and implementation expertise available	<ul style="list-style-type: none"> Consider how to build the capacity of the IPC focal point and team by exploring available training across the country or internationally (online resources might be available). Use a stepwise approach and then scale-up. Secure health workers to work 1-2 days on IPC in the first instance, start with a small group of committed staff, then build on this and expand the team. Connect with national ministry of health leads for IPC, WASH and AMR if in place, or public health to determine whether training or knowledge transfer opportunities already exist. Consider the use of link nurses/practitioners³ – start small and build expertise incrementally. Connect with the national (if it exists) or international IPC community to find out whether others in a similar position can share ideas and lessons learned. Also, remember to explore whether other teams in your facility have already tried to implement guidelines or innovations – there may be some valuable lessons you could learn in your IPC implementation journey. 	<p>Leveraging political commitment to address human resource needs</p> <p>“To build an IPC programme/staffing presence, the ministry of health worked with facilities to convince leadership for the need of IPC focal persons for each department that could dedicate 1-2 days per week on IPC work.” Ghana</p> <p>Connecting with colleagues at a similar stage of implementation across the globe</p> <p>The WHO Global Learning Laboratory IPC/WASH Learning Pod provides a mechanism to connect with colleagues at a similar stage of implementation to share examples of success in addressing the challenges. The IPC/WASH Learning Pod provides a safe space to pose questions and tap into existing expertise (see Box 7) and tools and resources).</p>
Limited financial resources/ infrastructure available	<ul style="list-style-type: none"> During the initial set-up of an IPC programme it will take time to secure the necessary “hardware”, such as an office, desk space and other necessary equipment. Some facilities have addressed this through sharing with already established specialty programmes. 	<p>Interim measures to address lack of equipment for the IPC programme</p> <p>“Availability of equipment specifically for programmes at the facility level is not always readily available in some hospitals. We struggle with office space and computers for our IPC team to conduct the work accordingly. We have tried to share space with the health education unit and diabetic unit, but it is still limited (for example, one shared computer across three units). However, facility expansion is planned for the future and more space and equipment may become available.” Sri Lanka</p> <p>Local production to address lack of supplies for the IPC programme</p> <p>“Our surgical department decided to implement a multimodal strategy to reduce surgical site infections as this seemed to be an ongoing postoperative complication. The local team identified the disinfection of the surgical site skin among the priority prevention measures to be improved. Staff training on best practices for this procedure was refreshed, but the facility was using a disinfectant (an aqueous iodine product) that was not considered of optimal efficacy for this procedure. The gold standard is a chlorhexidine alcohol-based preparation, which was not available in our facility and was expensive to be procured from the market. We contacted the WHO office to enquiry whether local production would have been possible, similar to the WHO formulation for alcohol-based handrubs for hand hygiene. We were given a formula for making a chlorhexidine alcohol-based preparation locally and our pharmacy produced it at low cost. Thus, we were able to improve the performance of surgical skin preparation according to international standards, together with other key measures for SSI prevention.” Uganda</p>

3. A link nurse/practitioner is a unit/ward-based resource that liaises with the IPC team. Their role is to advocate for IPC, raise awareness of IPC at the unit/ward-level and generally support the IPC team in its activities focused on improving practices.

Box 7. The WHO IPC and WASH Learning Pod

The WHO IPC and WASH Learning Pod is a forum for sharing frontline experiences in the field of IPC and WASH within the context of improving quality and universal health coverage (UHC). It is designed to support and facilitate the implementation of IPC and WASH guidelines, recommendations, standards and accountability by fostering focused discussion and learning that supports change. The pod allows “deep dives” into IPC and WASH issues to help explore and facilitate learning. It contributes to achieving the quality of health service delivery that is necessary for quality UHC. The content of the IPC and WASH pod is driven by members who set the agenda of the discussions and activities within it. It also houses resources that are not currently available or accessible via websites including national guidelines and policy manuals. Join the WHO Global Learning Laboratory and access the IPC/WASH Learning Pod (available at: <http://www.who.int/servicedeliverysafety/areas/qhc/schematic-GLL.pdf?ua=1>).



TOOLS AND RESOURCES

Advocacy:

- IPC infographic (<http://www.who.int/infection-prevention/tools/core-components/HAI-Infographic.pdf?ua=1> accessed 3 April 2018)
- IPC/WASH/AMR infographic (http://www.who.int/water_sanitation_health/facilities/amr-ipc-wash-flyer-nov16.pdf accessed 3 April 2018)
- Core components visual summary (http://www.who.int/infection-prevention/tools/core-components/ipc-cc_visual.pdf?ua=1 accessed 3 April 2018)
- Two-page summary of core components (<http://www.who.int/infection-prevention/publications/ipc-cc-summary.pdf?ua=1> accessed 3 April 2018)
- WHO video: Healthcare without avoidable infection – people’s lives depend on it (<https://www.youtube.com/watch?v=K-2XWtEjfl8&app=desktop> accessed 3 April 2018)
- WHO IPC advocacy video on the core components (<https://www.youtube.com/watch?v=LZapz2L6J1Q&feature=youtu.be> accessed 3 April 2018)
- WHO IPC leadership training video (<https://www.youtube.com/watch?v=92bFMeS35vA&feature=youtu.be> accessed 3 April 2018)
- WHO booklet: Health care without avoidable infections: the critical role of infection prevention and control: (<http://www.who.int/infection-prevention/publications/ipc-role/en/> accessed 3 April 2018)
- IPC/hand hygiene and AMR poster for chief executive officers and hospital leaders (<http://www.who.int/infection-prevention/campaigns/clean-hands/poster-ceoLIC.pdf?ua=1> accessed 3 April 2018)
- IPC/hand hygiene and AMR poster for health workers (<http://www.who.int/infection-prevention/campaigns/clean-hands/poster-hworkerLIC.pdf?ua=1> accessed 3 April 2018)
- WHO multimodal improvement strategy (<http://www.who.int/infection-prevention/publications/ipc-cc-mis.pdf?ua=1> accessed 3 April 2018)
- National policy-maker engagement brief (http://www.who.int/infection-prevention/campaigns/clean-hands/campaign_

[policymakers.pdf?ua=1](#) accessed 3 April 2018

- Using an outbreak to drive change: building an IPC program starting from scratch (Barbados) (http://www.paho.org/hq/index.php?option=com_docman&task=doc_download&Itemid=270&gid=41927&lang=en accessed 3 April 2018)
- Parallel lives – delivering babies without WASH/IPC (<https://www.youtube.com/watch?v=pz84KiKAKPs> accessed 3 April 2018)
- Save Lives Clean Your Hands: WHO's Global Annual Campaign Advocacy Toolkit (http://www.who.int/infection-prevention/campaigns/clean-hands/5may_advocacy-toolkit.pdf?ua=1 accessed 3 April 2018)
- Hand hygiene advocacy video WHO Save Lives Clean Your Hands 2015 <https://www.youtube.com/watch?v=u3ZyHczEQV8&feature=youtu.be>
- WHO Safe Hands in Surgery: A patients journey <https://www.youtube.com/watch?v=H1COK9QA3JY&feature=youtu.be>
- WHO Fight antibiotic resistance: it's in your hands <https://www.youtube.com/watch?v=kwJDHW6gm8E&feature=youtu.be>
- Tools for institutional safety climate (including template letters) http://www.who.int/infection-prevention/tools/hand-hygiene/safety_climate/en/

Business/financial case

- Association for Professionals in Infection Control and Epidemiology (APIC) HAI cost calculator (<https://apic.org/Resources/Cost-calculators> accessed 3 April 2018)
- How much do superbugs cost Australian hospitals? An evidence-based open-access tool (<https://www.sciencedirect.com/science/article/pii/S2468045117302274> accessed 3 April 2018)
- Template for State Healthcare-Associated Infections Plans – CDC (<https://www.cdc.gov/hai/pdfs/stateplans/ga.pdf> accessed 3 April 2018)
- Sample IPC plan (Montana State Hospital, United States of America [USA]) (<https://dphhs.mt.gov/Portals/85/amdd/documents/MSH/volumei/infectioncontrol/InfectionPreventionAndControlPlan.pdf>

accessed 3 April 2018)

- Royal College of Nursing (United Kingdom) (2012) The role of a link nurse in infection prevention and control (IPC): developing a link nurse framework (<https://www.rcn.org.uk/professional-development/publications/pub-004310> accessed 3 April 2018)

Facilitators and barriers

- Worksheet: Questions to guide assessment of facilitators and barriers in RNAO toolkit: implementation of best practice guidelines. Second edition 2012 (<http://rnao.ca/bpg/resources/toolkit-implementation-best-practice-guidelines-second-edition> accessed 3 April 2018)
- Water and sanitation for health facility improvement tool (WASH FIT): a practical guide for improving quality of care through water, sanitation and hygiene in health care facilities (http://www.who.int/water_sanitation_health/publications/water-and-sanitation-for-health-facility-improvement-tool/en/ accessed 3 April 2018)
- AMR National Action Plans (<http://www.who.int/antimicrobial-resistance/national-action-plans/en/> accessed 3 April 2018)

IPC Leadership

- WHO IPC training. Leadership module (including leadership, implementation and quality improvement, core components and multimodal strategies, project management and conflict management, adult learning) (<http://www.who.int/infection-prevention/tools/core-components/en/> accessed 3 April 2018)
- WHO e-learning modules on leadership, implementation and quality improvement, core components and multimodal strategies, project management and conflict management, adult learning (<http://www.who.int/infection-prevention/tools/core-components/en/> accessed 3 April 2018)
- Global leader discussing surgical site infection and AMR (<https://youtu.be/wf6MYI5IKPg> accessed 3 April 2018)

Peer support

- Global Learning Laboratory for UHC – IPC/ WASH Learning Pod (<https://extranet.who.int/dataform/848962?lang=en> accessed 7 April 2018)

Stakeholders

- Stakeholder mapping tool (<https://www.k4health.org/toolkits/research-utilization/fhi-360-stakeholder-analysis-tool> accessed 3 April 2018)
- Stakeholder scenario worksheet in RNAO toolkit: implementation of best practice guidelines. Second edition (2012) (<http://rnao.ca/bpg/resources/toolkit-implementation-best-practice-guidelines-second-edition> accessed 20 April 2018)
- International Alliance of Patient Organizations (<https://www.iapo.org.uk> accessed 3 April 2018)

STEP 1 CHECKLIST

At the end of step 1 you should have:

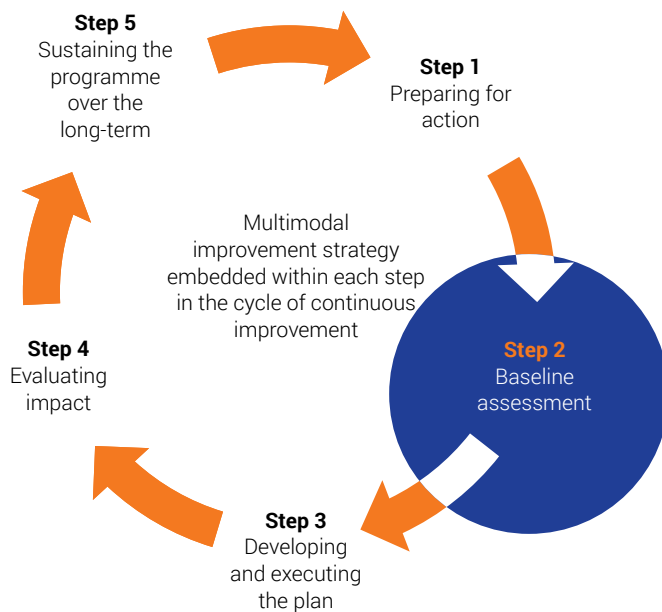


1.	Familiarized yourself with the core component guideline recommendations	<input type="checkbox"/>
2.	Prepared a “script” or key points to guide discussions with management and leadership (using Figures 2 and 3)	<input type="checkbox"/>
3.	Made a list of the exact key stakeholders that will be engaged, based on the local context	<input type="checkbox"/>
4.	Collected any previous assessments/reports and data that address IPC	<input type="checkbox"/>
5.	Investigated any IPC integration possibilities with current activities at the health care facility, for example, with AMR, etc.	<input type="checkbox"/>
6.	Listed any patient or civil society groups that exist and could support IPC advocacy	<input type="checkbox"/>
7.	Held a series of advocacy meetings with leaders, key stakeholders and champions/opinion leaders using the sample script (Figure 3)	<input type="checkbox"/>
8.	Secured verbal and written management and leadership support for IPC	<input type="checkbox"/>
9.	Identified an IPC lead/focal person and team, supported by health care facility managers	<input type="checkbox"/>
10.	Identified possible human and financial resources to support and sustain the work (where necessary)	<input type="checkbox"/>



STEP 2
BASELINE
ASSESMENT

STEP 2 BASELINE ASSESSMENT



The importance of conducting a baseline assessment

- This step is concerned with conducting an exploratory baseline assessment of the current IPC situation in your facility, including identification of existing strengths and weaknesses. A baseline assessment (and repeating assessment regularly) is essential for continuous quality improvement.
- Assessment helps to create a sense of urgency for the changes needed to improve IPC, taking account of

current risks, actual needs and available resources.

- Assessment also helps to identify existing strengths and take stock of achievements made so far to convince decision-makers that success and progress is possible.
- By using a validated tool (WHO IPCAF), you can be confident that the information collected is meaningful and will support improvement. The IPCAF has been developed specifically for the purpose of measuring the situation of a health care facility against

the core component guideline recommendations.

- In addition to the IPCAF, it would be ideal to conduct additional IPC assessments using other reliable tools (for example, the WHO HHSAF and/or IPC practices observational tools listed in the tools and resources section). It is important to use all relevant data available (for example, data gathered from using the WASH FIT tool or during an outbreak).
- The WASH FIT tool complements the IPCAF and provides a greater depth of information on the built environment.
- WASH FIT is a risk-based approach for improving and sustaining WASH and health care waste management infrastructure and services in facilities in low- and middle-income countries.
- WASH FIT is an improvement tool to be used on a continuous and regular basis to help health care facility staff and administrators prioritize and improve services, and to inform broader district, regional and national efforts to improve quality health care. The WASH FIT guide contains practical step-by-step directions and tools for assessing and improving services (see tools and resources).
- The actual process of conducting the baseline assessment, for example, meeting with managers of wards and departments to discuss the assessment and answer questions also facilitates ongoing advocacy and provides an opportunity to strengthen the engagement of key stakeholders.

PRACTICAL TIPS, KEY CONSIDERATIONS AND ACTIONS



About the IPCAF

- The IPCAF is a structured, closed-formatted (closed-ended) assessment tool with an associated scoring system.
- It is a diagnostic tool to assess your existing IPC activities/resources and identify strengths and gaps that will inform step 3 and help prioritization.
- It comprises eight sections reflecting the eight core components and addresses a total of 81 indicators framed as questions with defined answers and a score accordingly.
- Based on the overall score achieved in the eight sections, the facility is assigned to one of four levels of IPC promotion and practice (Box 8).
- The tool can either be self-administered at the facility level, that is, completed by the IPC lead/focal person and team, or completed with the help of colleagues from the ministry of health and/or partner organizations.
- The value of the IPCAF is that it has been developed specifically to assess the implementation of what are considered to be the core components of effective IPC programmes according to international recommendations. However, there are additional tools, both qualitative and quantitative, that can be used to provide valuable information on IPC practices (for example, hand hygiene, standard precautions, transmission-based precautions, HAI prevention bundles, disinfection and sterilization), including through direct observation.
- Monitoring of hand hygiene practices and infrastructures (including monitoring of compliance and the availability of adequate equipment for hand hygiene at the point of care) is also considered a key IPC indicator (and a strong recommendation in the core component guidelines) that should be mandated at the national level as it can indicate how well a facility is performing regarding IPC implementation.
- The IPCAF has been pilot tested in a sample of 181 acute health care facilities in 46 countries across the world (both low- and high-resource settings). Usability, reliability and construct validity were assessed by asking for completion of the tool by two professionals independently in each facility. Extensive feedback on the relevance and easiness to understand both the questions and answers, as well as the overall tool, was incorporated in the production of the final version.

Before undertaking the IPCAF, work through the key considerations and key actions table (Table 2A).

Table 2A. Key considerations and actions (Step 2)

Key considerations	Key actions
Getting to know the IPCAF	<ul style="list-style-type: none"> Print the IPCAF (see tools and resources) and spend time familiarizing yourself with its content, in particular, how the assessment is structured, the scoring system and the meaning of the proposed indicators (Box 8).
Advocating for and promoting the value of the IPCAF	<ul style="list-style-type: none"> Share the IPCAF with the IPC team, IPC committee and senior managers and leaders (for example, at one-to-one or group meetings) – use the sample script (Box 9). If the IPCAF is undertaken as a self-assessment, emphasize that its usefulness depends on being completed as objectively and accurately as possible. Clearly explain that the aim is to drive improvement and not to make negative judgements. Therefore, identifying existing strengths and achievements will help build confidence and convince decision-makers that success and progress is possible. Honestly recognizing gaps will help to create a sense of urgency for the changes needed to improve IPC. For these reasons, it is important to determine the correct score for each section. Explain that the IPCAF will be repeated annually to check on progress and therefore an inflated high score at the baseline stage is not desirable.
Preparing to complete the IPCAF – agreeing roles and responsibilities	<ul style="list-style-type: none"> The IPCAF should be completed by the IPC lead in discussion with the IPC team and/or committee. If the IPC lead position is not yet established, a person with competence in IPC practices from the ministry of health (national or district level) should be consulted to support completion in collaboration with senior facility managers, if possible. Consider whether to coordinate completion of the IPCAF with other relevant departments (for example, quality and safety, WASH, AMR) – this will also assist in securing their support for the overall IPC improvement work. Consider securing someone with informatics skills to support data input, analysis and presentation, if available. Otherwise, the framework completion and the score calculation can also be easily done manually on paper. Agree how and when results will be fed back and outline who would be best to do this, depending also on the target audience.
Timeline for completion	<ul style="list-style-type: none"> During meetings decide on a schedule and timeline for completion (potentially an annual schedule).
Making it easy	<ul style="list-style-type: none"> Gather all necessary information and identify who needs to be contacted to assist with completion of the different sections. Make sure that everyone involved understands the terms used in the IPCAF in advance; this requires an understanding of the WHO IPC core components. Consider meeting with senior nurses of each department (or their nominated representative) to complete the assessment jointly. In this way, consensus can be achieved on the answers to the IPCAF questions and support secured for the development of an action plan in step 3. Collect all previous assessments that have been undertaken relevant to IPC, for example, hand hygiene compliance results, service availability and readiness assessment or equivalent (SARA), joint external evaluation (JEE) reports, AMR-related assessments, WASH assessments and other infrastructure monitoring results.
Completing the IPCAF	<ul style="list-style-type: none"> Use the printed IPCAF to collect your data and discuss which answers best suit your facility for each of the eight sections. Choose the answer(s) that most accurately describe(s) the situation at your facility and remember – this step forms part of an IPC improvement programme – to be useful and meaningful, answers need to be as accurate as possible.
Analyzing the results	<ul style="list-style-type: none"> Using the score chart, complete the scores for each section and calculate your overall score.
Presenting the results	<ul style="list-style-type: none"> Schedule a series of meetings to provide the following groups with feedback of the results by highlighting the strengths and the areas for improvement: <ul style="list-style-type: none"> IPC committee senior managers leaders of the facility clinical services and departments other relevant departments, for example, quality and safety, AMR, WASH. Use the sample presentation outline (link available in the tools and resources section). Prepare a short report summarizing achievements and gaps (see template, Annex 4). Share the report with senior managers and leaders, wards and departments who participated in the assessment and other relevant departments.

Table 2A. Key considerations and actions (Step 2) continued

Key considerations	Key actions
Starting to identify core components that require improvement	<ul style="list-style-type: none"> • While presenting the results, start to identify core components that appear to be defective (in discussion with the IPC committee); choose one or more components that are considered to be urgent to address in step 3. • While doing this, consider resources and expertise available, urgent problems to be faced (for example, a specific type of infection to be reduced, due to its burden locally), available opportunities (for example, partners’ interest in supporting specific relevant projects). • You can also identify core components that are already partially implemented, but for which the score could be improved in specific areas.

Box 8. IPCAF scoring interpretation

Score		Interpretation
0-200	Inadequate	IPC core components’ implementation is deficient. Significant improvement is required.
201-400	Basic	Some aspects of the IPC core components are in place, but not sufficiently implemented. Further improvement is required.
401-600	Intermediate	Most aspects of IPC core components are appropriately implemented. Continue to improve the scope and quality of implementation and focus on the development of long-term plans to sustain and further promote the existing IPC programme.
601-800	Advanced	The IPC core components are fully implemented according to the WHO recommendations and appropriate to the needs of your facility.



A number of barriers may be faced as you work through step 2. Table 2B lists some of the common barriers to implementation that IPC leaders have encountered, together with some potential solutions. While these barriers and solutions apply to any facility, the implementation examples provided are focused (not exclusively) on low-resource settings.

Table 2B. Overcoming potential barriers and challenges (step 2)

Potential barrier	Potential solution(s)	Implementation examples
Difficulties gaining support for the IPCAF process	<ul style="list-style-type: none"> Some managers will need to be convinced that the IPCAF will be used in an improvement perspective to generate actionable results. It is important that the IPCAF is positioned as a critical diagnostic tool that will make it easy to develop a clear plan of action. Use the script (Box 9) to (a) guide initial discussions with managers in the facility or (b) develop e-mail or other written communications on the IPCAF. Modify the script according to your local situation. Consider using previous successful assessment examples to promote the value of assessment as a driver of improvement, for example, WHO HHSAF. 	<p>Building on previous assessment successes – the Hand Hygiene Self-Assessment Framework (HHSAF)</p> <p>“The HHSAF guided successful awareness-raising on the importance of hand hygiene improvement and the need for action. The results enabled a multimodal approach to be implemented initially focused on addressing infrastructures in key areas, then followed by development of a training programme.” Mozambique</p>
“Assessment fatigue”	<ul style="list-style-type: none"> Present the assessment as part of achieving other goals, for example, AMR, WASH, etc., and aim to undertake it with other assessment exercises. Use your IPC vision “script” to emphasize just how important this assessment is with regards to patient safety, public health, etc. 	<p>The role of link nurses in overcoming campaign and assessment fatigue</p> <p>“Campaign fatigue, including facility-wide hand hygiene compliance monitoring by IPC nurses, was evident in a large hospital in Hong Kong after four years of aggressive and varied promotional activities. A new innovative strategy was developed that directly involved clinical nurses in each ward recruited to liaise with the IPC team (infection control link nurses). The link nurses were given a prominent role to promote and monitor hand hygiene practices (including by using a checklist for hand hygiene compliance during their daily routine) at the ward level. The new strategy was successful in increasing hand hygiene compliance from 50% to 83% overall.” Hong Kong, SAR, China</p>
Lack of available in-country IPC expertise in assessment and improvement methods	<ul style="list-style-type: none"> Identify potential IPC leaders from health facilities and develop their skills through a systematic training and competency building programme using a blend of WHO training modules and e-learning materials or other IPC accredited programmes. Twinning partnerships also provide a solution to the limited expertise that exists in some health facilities. 	<p>National support for a cadre of facility-based IPC advanced practitioners</p> <p>“In a number of countries local, facility-based IPC expertise in assessment and quality improvement has been developed through the support of a nationally-driven approach to IPC improvement.” Liberia, Senegal</p> <p>Use of hospital-hospital twinning partnerships to support assessment and improvement</p> <p>“A situational assessment was undertaken to inform strategic planning of a new twinning partnership for improvement between a hospital in Liberia and a hospital in Japan. The assessment allowed for both partners to gain a deeper understanding of factors influencing quality and safety with IPC forming a strong feature of the assessment. A partnership approach enabled sharing of expertise and co-development of solutions.” Liberia, Japan</p>
Challenges in local adaptation	<ul style="list-style-type: none"> Start small – build on existing data collection approaches and introduce the concept of audit and feedback slowly. 	<p>Making audit and feedback part of everyday routines</p> <p>“We still have a gap in local adaptation. Healthcare workers are not used to the climate of audit and feedback. They feel it is linked to punitive actions (that is, fault-finding) and have resisted its implementation. We have tried to adapt this intervention to our local context by starting with surveillance data (that is, the problem) and slowly building awareness concerning the need for audit and feedback.” Sri Lanka</p>

SAMPLE SCRIPT TO GUIDE DISCUSSIONS ON THE IPCAF

The script in Box 9 provides a series of possible talking points that can be modified according to your local circumstances.

Box 9. Sample script to introduce the IPCAF

- As you are aware, our health facility (insert name) has recently started a programme aimed at IPC continuous improvement.
- I would like to personally thank you for your commitment to this work so far. There is strong support for IPC improvement from our health care facility leadership (insert name) and the IPC team/committee and I am very committed and motivated to lead and facilitate this effort.
- In recent months, we have worked across specialties to prepare the groundwork for this improvement and are now at the stage to undertake a baseline assessment of our facility to gain an accurate picture of the state of IPC in our hospital.
- We shall be using the WHO-validated IPCAF tool for this assessment and we may also make direct observations of hand hygiene and other IPC practices.
- The IPCAF tool was developed with input from experts around the world and has been widely tested in multiple countries.
- Having reviewed the tool (attach with this email/memo OR provide a printed copy if face-to-face), I am extremely confident that the information provided will help us to strengthen every aspect of IPC and guide us in the development of a focused, sustainable action plan. It will also help us to highlight that we are a health facility that provides quality care and may help with accreditation.
- It is simple to complete – however, in order to collect accurate data, I may need to discuss certain sections with colleagues across the facility. Please note that this is for our internal use, it is not for use by the government or WHO to scrutinize our situation, but we may take the opportunity to present our progress at future meetings outside of the facility.
- We shall be starting the assessments during (insert month) and I look forward to your cooperation and support.
- Thank you once again for your support for IPC, we shall keep you fully informed and share the results of this important assessment.

TOOLS AND RESOURCES

Advocacy

- WHO IPC advocacy video on the core components (<https://www.youtube.com/watch?v=LZapz2L6J1Q&feature=youtu.be> accessed 3 April 2018)
- The WHO HHSAF brought to life by Professor Didier Pittet (https://www.youtube.com/watch?v=wEpX_V3bBF0 accessed 3 April 2018)

Assessment

- WHO IPCAF (includes all documents referred to in the IPCAF) (<http://www.who.int/infection-prevention/tools/core-components/en/> accessed 2 May 2018)
- WHO Hand Hygiene Self-Assessment Framework (http://www.who.int/gpsc/country_work/hhsa_framework_October_2010.pdf?ua=1 accessed 3 April 2018)
- WHO hand hygiene tools for evaluation and feedback (http://www.who.int/infection-prevention/tools/hand-hygiene/evaluation_feedback/en/ accessed 4 April 2018)
- SARA (http://www.who.int/healthinfo/systems/sara_introduction/en/ accessed 4 April 2018)
- WHO Water and sanitation for health facility improvement tool (WASH FIT) (http://www.who.int/water_sanitation_health/publications/water-and-sanitation-for-health-facility-improvement-tool/en/ accessed 3 April 2018)
- WASH in health care facilities core monitoring questions and indicators (<https://www.washinhc.org/documents/161125-FINAL-WASH-in-HCF-Core-Questions.pdf> accessed 3 April 2018)
- Injection safety tools for evaluation and feedback (<http://www.who.int/infection-prevention/tools/injections/evaluation-feedback/en/> accessed 3 April 2018)
- WHO Eastern Mediterranean Regional Office patient safety assessment manual (http://applications.emro.who.int/dsaf/emropub_2011_1243.pdf?ua=1 accessed 3 April 2018)

- Selected guidance, policies/standards
- WHO Guidelines on core components of IPC programmes at the national and acute health care facility level (<http://www.who.int/infection-prevention/publications/core-components/en/> accessed 3 April 2018)
- Guidelines on hand hygiene in health care (<http://www.who.int/infection-prevention/publications/hand-hygiene-2009/en/> accessed 4 April 2018)
- Global guidelines on the prevention of surgical site infection (<http://www.who.int/infection-prevention/publications/ssi-guidelines/en/> accessed 3 April 2018)
- Guidelines for the prevention and control of carbapenem-resistant Enterobacteriaceae, Acinetobacter baumannii and Pseudomonas aeruginosa in health care facilities (<http://www.who.int/infection-prevention/publications/focus-amr/en/> accessed 3 April 2018)
- Injection safety evidence, guidelines and publications (<http://www.who.int/infection-prevention/publications/injection-safety/en/> accessed 4 April 2018)
- WHO Decontamination and reprocessing of medical devices for health-care facilities (<http://www.who.int/infection-prevention/publications/decontamination/en/> accessed 4 April 2018)

Data presentation

- Sample IPCAF results presentation slides template (<http://www.who.int/infection-prevention/tools/core-components/en/> accessed 2 May 2018)
- Template report (Annex 4)

Partnerships

- Twinning partnerships for improvement (<http://www.who.int/servicedeliverysafety/twinning-partnerships/en/> accessed 3 April 2018)
- Partnerships for safer health service delivery: evaluation of WHO African Partnerships for Patient Safety 2009 – 2014 (<http://www.who.int/patientsafety/implementation/apps/evaluation-report.pdf> accessed 4 April 2018)

Selected publications

- Stewardson AJ, Allegranzi B, Perneger TV, Attar H, Pittet D. Testing the WHO Hand Hygiene Self-Assessment Framework

for usability and reliability. *J Hosp Infect.* 2013;83: 30–5.

- Situational assessment report: quality improvement and patient safety – Tellewyan Memorial Hospital and Lofa County Health System. Geneva: World Health Organization; 2017 (<http://apps.who.int/iris/bitstream/10665/253523/1/9789241511872-eng.pdf?ua=1> accessed 4 April 2018).
- WHO Hand Hygiene Self-Assessment Framework global survey summary report (2012) (http://www.who.int/gpsc/5may/summary_report_HHSAF_global_survey_May12.pdf?ua=1 accessed 3 April 2018)
- WHO Summary report: Hand Hygiene Self-Assessment Framework survey 2015/2016 (<http://www.who.int/gpsc/5may/hand-hygiene-report.pdf> accessed 3 April 2018)



STEP 2 CHECKLIST

At the end of step 2 you should have:

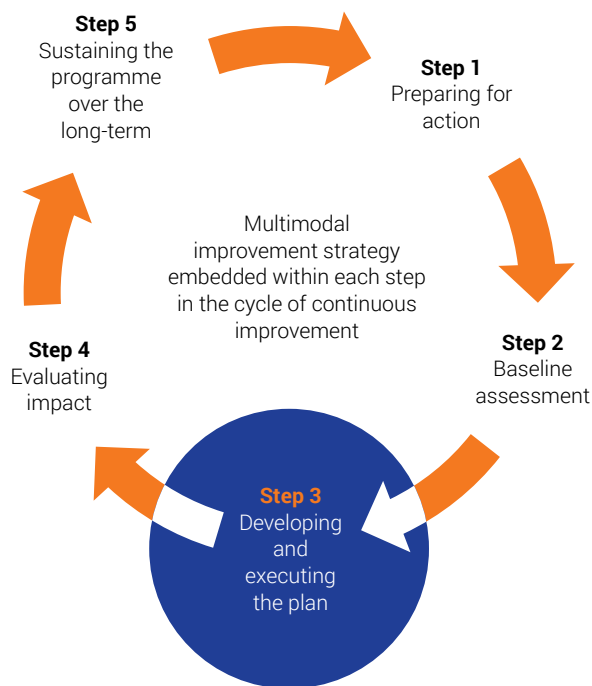


- | | | |
|----|---|--------------------------|
| 1. | Familiarized yourself and your team with the IPCAF | <input type="checkbox"/> |
| 2. | Communicated with key stakeholders and leaders on the plan for undertaking the IPCAF | <input type="checkbox"/> |
| 3. | Decided who will collect the data and a date for completion | <input type="checkbox"/> |
| 4. | Collected information and completed the IPCAF for all areas being assessed | <input type="checkbox"/> |
| 5. | Analyzed the IPCAF results | <input type="checkbox"/> |
| 6. | Presented findings to leaders and other stakeholders | <input type="checkbox"/> |
| 7. | Agreed on a frequency of repeat IPCAFs (and other assessments) – at least annually | <input type="checkbox"/> |
| 8. | Prepared and presented a report to senior managers and leaders, wards and departments who participated in the assessment and other relevant departments | <input type="checkbox"/> |



STEP 3
**DEVELOPING
AND EXECUTING
THE PLAN**

STEP 3 – DEVELOPING AND EXECUTING THE PLAN



Introduction to step 3

- Step 3 is informed by the results of your baseline assessment.
- The IPCAF results together with other IPC assessments/observations enable you to identify priority areas for action and gain consensus on how to address these priorities and maximise identified strengths.
- The multimodal strategy and associated guiding questions (see Annexes 1 and 2) will help in the development of your action plan.

- It is important to focus initially on achieving short-term wins - start small and think big! A realistic, priority-driven action plan based on your local context is key.
- In addition – it is worth remembering that a longer-term strategic plan is also important in terms of evaluating the overall impact of the IPC programme (for example, a five-year strategy) and the action plans addressed within step 3 can feed in to this plan.

PRACTICAL TIPS, KEY CONSIDERATIONS AND ACTIONS

The aim of step 3 is to develop a list of actions, responsibilities, timelines, budgets and expertise needed, and review dates for each core component to be implemented using the IPCAF results and based on the needs of your facility.

Review the IPCAF results for each core component with the IPC team and committee. You may decide to focus on one component only for initial action or focus on more. Your decision will depend on your IPCAF results, your local context (for example, available resources and expertise) and discussions with leaders and managers. You may also consider urgent problems to be faced (for example, a specific type of infection to be reduced due to its burden locally) and available opportunities (for example, partners' interest in supporting specific relevant projects). You can also identify core components that are already partially implemented, but for which the score could be improved in specific areas. Regardless of the core components chosen, a comprehensive action plan should be developed and presented to health facility leaders and senior managers for their approval.

In this section, you will find information on suggested action planning for each component. First, work through the general key considerations and actions table to ensure successful development and execution of the plan (Table 3A).

Table 3A. Key considerations and actions (step 3)

Key considerations	Key actions
Momentum for improvement	<ul style="list-style-type: none"> • Constantly refer to the IPCAF or other assessment results to build on your vision for IPC and to further create the necessary sense of urgency for developing and executing the plan. • Continue to communicate your IPC vision and narrative through regular meetings with health care facility leaders and managers as you develop your plan. • Consider joining up with other improvement activities within the facility to present how your IPC action plan will ultimately feed in to overall quality indicators and reports.
Establishing a plan and considering where to target action using multimodal thinking	<ul style="list-style-type: none"> • Work with the IPC team and/or the IPC committee and review the subtotal score for each core component. Is there an obvious core component with a very low or zero score? You can choose to focus on low or zero scores if it is not possible to work on all core components – these will most likely be your immediate priorities for action. • Refer to Figure 2 during your review – it is important that everyone is aware of the interlinkages and synergies between the different core components. • Discuss with the team/committee which core component(s) should form the initial focus area for further in-depth review and discussion; make a list of agreed target areas for each action taking into consideration the ease of implementation, time required, cost, impact and perceived urgency for action. • Use the multimodal guiding questions (Annex 2) to help you to clarify specific actions that will need to be addressed in your action plan. • Consider all existing, available IPC expertise, resources and timelines in your discussions with leaders and managers (while this will have been part of step 1, discussing specifics will be important at this stage to support momentum) for each area that requires improvement. • Are the necessary expertise and resources available? If there are many gaps, it is better to start from the components that can be improved more easily and quickly to ensure ongoing support. • Use results of any other assessments conducted, for example, on IPC-related practices, knowledge or processes, to further inform the focus of core component implementation. These will help to highlight areas requiring urgent action, in addition to the IPCAF results. • Consider what type of support is available at the national level (for example, existence of guidelines or standard operating procedures not yet implemented in your facility) or whether other facilities in your area are already focusing on specific components/actions that can help you to decide on your core component focus as there there might be opportunities for support or sharing experiences/resources.
Securing support and approval for the action plan – revisiting your stakeholder list	<ul style="list-style-type: none"> • Determine who needs to be involved in the development and sign-off of the action plan – reach out to relevant departments or programmes to achieve the greatest impact with proposed actions. • The stakeholder list developed in step 1 will be useful to review. As your plans become more focused and targeted, informed by the results of the IPCAF, you may need to revise your stakeholder list according to the gaps and priorities identified. It will be helpful to consider developing a new list for each core component you decide to focus on. • Make a list of what needs to be done to guide discussions and help with the development of your action plans. • For all core components you will focus on improving, it is imperative that the health care facility manager and senior leaders are closely involved and agree to the proposed actions and associated resource requirements. You can do this by constantly referring to the IPCAF results and using the “scripts” and resources you prepared in step 1 during meetings that will have to be established at the outset (recommended in step 1). • Share the draft plan with identified colleagues to secure their support (for example, patient safety, quality improvement, AMR, WASH). • Arrange a meeting with the health care facility manager and senior staff to present the final draft plan and seek approval, ensuring you give them a deadline for when this is required by – leadership approval is important for ultimate success. • While in development, do not keep the plan ‘secret’ if others are interested, it is important that everyone feels part of what will happen next.
Securing the necessary resources to address the gaps identified by the IPCAF	<ul style="list-style-type: none"> • Consider whether there are specific resource implications (human or financial) related to specific core component implementation that have not already been considered in step 1. Note that not all improvements require resources – in some cases, low or no cost improvements can be made quickly. • Clearly highlight the necessary additional resources (no matter how small) both verbally and in writing to leaders and managers before the action plan is signed off. • If necessary, explore if any external partner/NGO could help support the plan.

Table 3A. Key considerations and actions (step 3) continued

Key considerations	Key actions
Use a systematic approach	<ul style="list-style-type: none"> • Overall, the aim of developing and evaluating your plan is to systematically take the ‘problems’ or gaps identified from the IPCAF, outline a response to these, and then assess the effectiveness of the response implemented – this is at the core of your action planning, so: <ul style="list-style-type: none"> ▶ Translate the findings of the IPCAF into an action-focused and impact-focused plan taking the local context into account. ▶ Ensure that the written action plan (see the action plan templates in Annex 5 and multimodal guiding questions in Annex 2) is available and signed off before you progress. ▶ Try to develop specific, measurable, achievable, realistic and time-bound (SMART) objectives to guide the development of your plan (see sample action plans below for each core component). ▶ Agree upon a schedule of reporting to leaders and managers to assess progress. ▶ Put the plan into action and monitor progress at regular operational meetings. ▶ Communicate and hold meetings with key stakeholders at set time intervals to investigate how actions are progressing and identify any barriers to progress – although common barriers have been outlined in this document, local barriers will arise and must be addressed to ensure staff engagement.

The next section provides detailed information to help you develop, finalize and evaluate your action plan for each core component including:

- A rapid recap on the core component
- A sample action plan
- Tips on overcoming barriers and challenges and implementation examples
- A list of tools and resources.

- The sample action plan will help you build your own SMART plan according to your facility needs and priorities.
- To guide planning an estimate has been provided of the likely budget/resource needs of each action (low, moderate and high).
- Timelines, lead persons/team members, budget/resources and review and completion dates are best estimates and will need careful consideration according to your situation.
- Implementation examples provided are sometimes relevant to multiple core components and therefore may be repeated.
- The tools and resources listed aim to be useful in the development and execution of your action plan.
- The resources are diverse and span, but not exclusively, advocacy, business/financial aspects, guidance/policies/standards, templates, toolkits and selected academic publications.
- The resources are included after careful review of WHO and CDC materials, a cross-section of international IPC organizations and the input of regional and facility-based colleagues in the field of IPC, quality and WASH.
- Inclusion of a resource is based on its perceived usefulness and availability.
- Resources that are not easily available via website links can be accessed using the IPC and WASH Learning Pod (Box 7).
- Inclusion of a resource does not imply endorsement by WHO of any specific organization associated with the resource.



The diagram below will help you navigate the next section.

	Rapid recap	Sample action plan	Potential barriers and solutions	Tools and resources
Core component 1: IPC programmes	Page 56	Page 57	Page 58	Page 61
Core component 2: IPC guidelines	Page 64	Page 65	Page 66	Page 69
Core component 3: IPC education and training	Page 70	Page 71	Page 72	Page 74
Core component 4: HAI surveillance	Page 75	Page 76	Page 79	Page 83
Core component 5: Multimodal strategies	Page 84	Page 85	Page 86	Page 88
Core component 6: IPC monitoring/audit of IPC practices and feedback	Page 89	Page 90	Page 92	Page 93
Core component 7: Workload, staffing and bed occupancy	Page 94	Page 95	Page 96	Page 97
Core component 8: Built environment, materials and equipment for IPC	Page 98	Page 99	Page 101	Page 102

CORE COMPONENT 1**IPC PROGRAMMES**
– Rapid recap

The existence of an IPC programme with a dedicated IPC lead/focal person and team with a clear mandate, dedicated budget and supported by an IPC committee is a critical first step that will support the implementation of all core components and will enable the prioritization and implementation of other core components according to the local context, as well as baseline and regular assessments. It is important that the health care facility manager and senior leaders/managers are closely involved and agree to the proposed actions and associated resource requirements in order to build an IPC programme – build on all of the work you have undertaken so far and maintain regular communication channels.



SAMPLE ACTION PLAN: IPC PROGRAMMES

To support the development of your action plan, refer to the “what, why, when, who, how” tables presented in Part II.

Priority gap	Action required and link to available tools/resources	Lead person and other team members	Timeline	Budget/resources
Lack of IPC lead/team/dedicated staff or IPC lead is in place, but not adequately skilled	<ul style="list-style-type: none"> Develop a business case for IPC staff (modify existing business cases within the facility if available) to address, such as an IPC or infectious disease specialist, microbiologist or other specialty doctor motivated to improve IPC, including an IPC nurse. 	<ul style="list-style-type: none"> Chief executive officer Senior manager Human resource department chief 	3 months	Low
No job description(s) for IPC professionals	<ul style="list-style-type: none"> Develop an IPC job description based on Table 3C. 	<ul style="list-style-type: none"> IPC lead/focal person Senior manager(s) Human resource department chief 	3 months	Not applicable
IPC team does not have defined responsibilities	<ul style="list-style-type: none"> Review and adapt the examples of roles and responsibilities listed in Table 3C. 	<ul style="list-style-type: none"> IPC lead/focal person Senior managers(s) Human resource department chief 	3 months	Not applicable
IPC programme is not defined and does not have a written annual work/activity plan	<ul style="list-style-type: none"> Review IPCAF and other assessments, including surveillance results where available, and develop a written activity plan for a defined period (for example, annual work plan) based on the identified priorities. Use the multimodal guiding questions in Annex 2 to guide development of the plan. 	<ul style="list-style-type: none"> IPC lead/focal person and team Microbiologist/infectious disease specialist (if different from lead) Associated department leads such as facility management/WASH 	3 months	Low
There is no IPC committee	<ul style="list-style-type: none"> Establish a committee, meeting schedule and terms of reference or link to an existing committee, for example, WASH or quality. Use the example for the constitution and roles and responsibilities of the IPC committee in Table 3C. 	<ul style="list-style-type: none"> IPC lead/focal person and team Microbiologist/infectious disease specialist (if different from lead), senior managers 	3 months	Low
An allocated budget for the IPC programme is not available	<ul style="list-style-type: none"> Present the 'script' with the IPC vision and plan of work (including any data if available) to highlight that IPC is a priority (building on previous success where examples are available). Calculate a budget estimate to address office equipment, including computer and printer, telephone, internet, and planned activities, for example, training on IPC can be calculated according to the planned number of participants, duration of training, printing requirements, travel expenses, and external fees where applicable. 	<ul style="list-style-type: none"> IPC lead/focal person Senior management/chief executive officer 	6 months	High
There is no/a lack of demonstrable support for IPC activity at the facility	<ul style="list-style-type: none"> Hold discussions with senior managers/leaders, including with other relevant programmes such as quality assurance, environmental and occupational health, the TB and HIV programmes, comprehensive care, and communicable disease control. Look at their objectives and plans and highlight how IPC can be instrumental to achieve them; discuss this with your colleagues. Use all available information and opportunities to secure champions to promote IPC discussions at key opportunities – be solution-focused in discussions – IPC is the solution to the problem that is HAI and the support of champions will help reduce harm. Use a standard script to report and discuss IPC at rounds, meetings, etc. 	<ul style="list-style-type: none"> IPC lead/focal person and other team staff, including doctors 	3 months	Low

Table 3B lists some of the common barriers to implementation of an IPC programme that IPC leaders have encountered, together with some potential solutions. Implementation examples provided are focused (not exclusively) on low-resource settings.

Table 3B. Potential barriers and solutions (core component 1)

Potential barrier	Potential solution(s)	Implementation examples
<p>Leadership still not convinced that an IPC programme is a priority for a safe, quality health facility</p>	<ul style="list-style-type: none"> Data play a critical role in convincing leadership to act: “no data, no problem”. You now have substantial data from the IPCAF results – use this to secure support for developing and executing the plan for an IPC programme. Focus on structure and process measures. Start small – gather a team, communicate your vision of IPC and use all available data to demonstrate that an IPC programme is critical. Build a strong narrative for change based on your available data. Look outside your facility to the regional and national level – is there government support for IPC? Are there any organizations with established programmes leading on IPC improvement and who can help your facility? Emphasize the importance of IPC as a core standard recognized worldwide by leading accreditation bodies. Community groups and civil society can play a role in lobbying for an IPC programme and improvement - promote IPC as a moral obligation. 	<p>Communicate the critical role of IPC in quality and safety “Leadership needs to understand the importance of IPC, its ability to improve patient safety and increase cost-effectiveness and this comes from data and evidence-based actions. The IPC nurse kept knocking on the door when he had the opportunity with leadership and gradually people noticed. It required a lot of persistent effort. We hold monthly IPC meetings including hospital leadership, microbiologist, infectious disease physicians and nurses to look at the data as well as send out regular emails to senior hospital management. Then we advocated for a small budget line. It doesn't take a lot to start a good IPC programme. We used the case of hand hygiene to advocate for the importance of regular soap and water and resources for multimodal strategies to improve behavioral change.” Pakistan</p> <p>Raise awareness through small projects “We became involved in IPC through research on surgical site infections, which helped to promote awareness about the importance of IPC. We held regular patient safety rounds with senior executives and discussed the importance of IPC whenever we could. Following this research involvement and intensive advocacy efforts, we started a facility IPC committee that continued to promote the study interventions and worked on resource issues such as the installation of alcohol-based handrub dispensers throughout the hospital and hospital staff education.” Kenya</p> <p>Develop a strong advocacy message for IPC “The key challenge with IPC programme development is political will. To address this challenge, the first step is good training of IPC professionals in a way that will support them to do advocacy and better understand the epidemiological situation meaning.” Pan American Health Organization</p> <p>Leverage the power and support of UN agencies and local and international NGOs “Our programme was started from a combination of different collaborations. Initial technical support for the development of the IPC programme development was given by the WHO Regional Office for Europe and CDC to the National Centre for Disease Control and Public Health. Other hospitals started on in their own initiative and then later given support by the National Centre for Disease Control and Public Health.” Georgia</p> <p>Promote IPC as a moral obligation “Our hospital was the first in Argentina to have an IPC programme (since 1970). We promoted the need for an IPC programme to leadership as the number one patient safety priority and an important moral obligation. All infectious disease doctors have some epidemiological activities for IPC, antibiotic stewardship and MDRO surveillance. We have two certified infection control nurses as well as five doctors who have responsibility over IPC and epidemiology; our chief is an infectious diseases physician. Our authorities learned that safety is a priority in our hospital, it's a moral obligation.” Argentina</p>

Table 3B. Potential barriers and solutions (core component 1) continued

Potential barrier	Potential solution(s)	Implementation examples
<p>An IPC programme not valued across all levels of health care</p>	<ul style="list-style-type: none"> • Explore the feasibility of securing a senior, respected leader to champion the IPC programme. • Explore the existence of national IPC bodies/societies/professional organizations and their potential role in supporting local IPC programmes, e.g. providing example documents and connections to those who have already had some success. 	<p>Securing senior leaders to act as champions of IPC</p> <p>“The provision of a dedicated deputy director of nursing in charge of ICP, based in the quality assurance team, enabled strong leadership for IPC, initially focused on improving hand hygiene – advocating for improvement across the facility. The deputy director of nursing was highly visible in clinical areas.” Ghana</p> <p>Working across all three levels of health care</p> <p>“We have a decentralized health system so it is important to work on advocacy at all three levels of care. We first formed a national association for IPC and brought together stakeholders from academia, industry and other health care workers. We started by holding annual conferences to which we invited government officials, which has helped with advocacy and political will. We have also focused on health care workers and dialogue exploring local adaptation solutions (for example, substituting one-foot square pieces of calico (Baft) for disposable tissue, kegs with spigots for bucket and bowl).” Nigeria</p> <p>Infection control is everyone’s business</p> <p>“We are one of the largest tertiary care hospitals in the country and considered one of the earliest hospitals to implement IPC. In the beginning it was difficult to gain support for IPC. We started with only small team of four dedicated medical staff, a nurse and a secretary. At this time, our national guideline was not even published and yet we started to use the published CDC and WHO tools at that time, customized them for our circumstances, translated them, and began to collect data and create a primitive surveillance system to further support IPC activities. At first, it was difficult to get IPC nurses because IPC was not a recognized field. Over three years, we promoted IPC awareness and regularly taught others. We select nurses in each department as a link nurse, we started competitions between them encouraging them by offering certificates and choosing the best of them monthly. Eventually, after being only five persons, we built a department of more than 15 persons supported by an infection control training centre and a highly specific environmental laboratory with more than 150 link nurses and doctors all over the entire hospital. The real support for us was the publishing of the first Egyptian national guideline in 2004 and certain governmental laws, including not to give a license for any health care facility not applying an infection control programme.” Egypt</p> <p>Leverage the power of community groups and civil society to advocate for change</p> <p>“One of the key challenges is communication and political will. We had success addressing this through patient associations which undertook sensitization activities and training for health workers on IPC.” Burkina Faso</p>

Table 3B. Potential barriers and solutions (core component 1) continued

Potential barrier	Potential solution(s)	Implementation examples
Lack of IPC expertise to implement an IPC programme	<ul style="list-style-type: none"> Start small – identify at least one person (for example, a nurse) to develop, execute and lead the IPC programme and use on-the-job training and development of a job description as a first step. 	<p>Building a programme step-by-step</p> <p>“At the beginning, it was difficult to gain support for IPC. I wanted to start an IPC programme but had to find a way to build a team step-by-step over time. Eventually, I identified three committed staff and convinced the hospital leadership to support my APSIC training. I then worked with an individual with biostatistics experience to begin to collect data and create a surveillance system, as well as an environmental engineer, to further support IPC activities. To keep the strong support by the hospital director, we needed to show the data and what we needed. At first, it was difficult to get IPC nurses because IPC was not a recognized field and nurses preferred to work in the clinic rather than for IPC (partly also because of salary differences). Over two years, we promoted IPC awareness and regularly taught others. We now have an IPC department for a hospital with 650 beds. The department is led by an infectious diseases doctor and supported by a team of IPC link nurses. Our department is also part of the ministry of health IPC advisory group and the Model Hospitals programme.” Viet Nam</p> <p>Use of on-the-job training</p> <p>“Our approach in countries has been to first appoint an eager and professional nurse as IPC nurse even if not trained, and then prioritize on-the-job training. We have also sent this IPC nurse to training outside the country. We have had success in convincing hospital management of the need for the IPC team by first creating a comprehensive job description and prioritized process measures to break the cycle of ‘no data, no problem.’” Médecins Sans Frontières/Doctors Without Borders</p>
Lack of funds and infrastructure for IPC programme activity	<ul style="list-style-type: none"> Consider using funds from a range of departments/wards to support IPC activities. Use your narrative/“script” to highlight how important an IPC programme is and why it should be funded, always returning to the IPCAF results. Focus on small-scale changes and quick wins, for example, installing handwashing and drinking water stations forms the first stage of a longer-term improvement that would include implementing piped water into every room where care is provided. Explore if any external partner/NGO has an interest and/or expertise in IPC and could help support the plan. Explore also any possibility of partnership with another well-resourced health care facility. 	<p>Reprioritizing spending</p> <p>“Two hospitals have had success with instituting an IPC budget by reprioritizing spending (not through new sources of funding) so that the IPC team knows they have a monthly budget for key IPC consumables. So we have tried to leverage these success stories and encourage other managers to establish this.” Zimbabwe</p> <p>Sharing office space and equipment</p> <p>“Availability of equipment specifically for programmes at the facility level is not always readily available at some hospitals. We struggle with office space and computers for our IPC team to conduct the work accordingly. We have tried to share space with the health education unit and diabetic unit but it is still limited (e.g. one shared computer across three units). However, facility expansion is planned for the future and more space and equipment may become available.” Sri Lanka</p>

TOOLS AND RESOURCES

Business/financial case

- Association for Professionals in Infection Control and Epidemiology HAI cost calculator (<http://www.apic.org/Resources/Cost-calculators> accessed 4 April 2018)
- How much do superbugs cost Australian hospitals? An evidence-based open-access tool (<https://www.sciencedirect.com/science/article/pii/S2468045117302274> accessed 4 April 2018)
- Planning tools
- Action plan templates (Annex 5)
- Multimodal strategy guiding questions (Annex 2)
- Example of roles and responsibilities of the IPC team, necessary to develop and execute the plan for an IPC improvement programme (Table 3C)
- WHO hand hygiene tools for system change (http://www.who.int/infection-prevention/tools/hand-hygiene/system_change/en/ accessed 16 April 2018)
- Example of the constitution, roles and responsibilities of the IPC committee (Table 3D)
- WHO Eastern Mediterranean Regional Office patient safety toolkit (2015) (http://applications.emro.who.int/dsaf/EMROPUB_2015_EN_1856.pdf accessed 4 April 2018)

Selected guidance/policies/standards

- Egyptian national infection control guideline 2016 (https://www.moh.gov.sg/content/moh_web/home/Publications/guidelines/infection_control_guidelines/national-infection-control-guidelines--2016-draft-for-consultati/_jcr_content/entryContent/download/file.res/National%20Infection%20Control%20Guidelines%20-%202016%20Draft%20for%20Consultation.pdf accessed 4 April 2018)
- Gulf Cooperation Council infection prevention and control manual, 2nd edition (2013) (<http://icttraining.net/index.php/policy/gulf-cooperation-council> accessed 4 April 2018)

- Quality assurance strategic plan for Ghana health service 2007-2011 (<http://www.moh.gov.gh/wp-content/uploads/2016/02/GHS-Quality-Assurance-Strategic-Plan-FINAL.pdf> accessed 4 April 2018)

Training

- WHO advanced IPC training modules related to different aspects of an IPC programme (leadership, surgical site infection, BSI, catheter-associated urinary tract infection, IPC programme management, injection safety, decontamination, surveillance, AMR, respiratory tract infections, outbreak) (<http://www.who.int/infection-prevention/tools/core-components/en/> accessed 4 April 2018)

Selected publications

- Haley RW, Culver DH, White JW, Morgan WM, Emori TG, Munn VP, et al. The efficacy of infection surveillance and control programs in preventing nosocomial infections in US hospitals. *Am J Epidemiol.* 1985;121:182-205.
- Zingg W, Holmes A, Dettenkofer M, Goetting T, Secci F, Clack L, et al. Hospital organisation, management, and structure for prevention of health-care-associated infection: a systematic review and expert consensus. *Lancet Infect Dis.* 2015;15:212-24.



ROLES AND RESPONSIBILITIES OF THE IPC TEAM

Table 3C presents a model list of the roles and responsibilities of the IPC team, but this can be modified according to the development of your own team.

Table 3C. Example of the roles and responsibilities of the IPC team

Roles of the IPC team	Responsibilities of the IPC team
<ol style="list-style-type: none"> 1. Develop and execute the IPC programme, including setting formal objectives and plans, a review cycle, and establishing a formal IPC group or committee. 2. Develop/adapt and disseminate guidelines and support implementation. 3. Develop and coordinate a programme of continuous education and training. 4. Develop and coordinate systems for HAI surveillance, including an alert system for outbreak detection and the monitoring, audit and feedback of IPC indicators. 5. Facilitate access to the essential infrastructures, materials and equipment necessary for safe IPC practices, including addressing procurement and ongoing maintenance. Support and promote adequate workloads, staffing and bed occupancy levels (that is, an enabling environment). 6. Build effective linkages with related programmes. 7. Promote, lead and support the implementation of multimodal strategies to achieve IPC improvements. 	<ol style="list-style-type: none"> 1. IPC programme, objectives and plans <ol style="list-style-type: none"> a. Formulate clear goals for the prevention and control of endemic and epidemic infections. b. Prepare plans for the prevention of HAI aligned with the IHR (2005) and AMR programmes involving key players and partners. c. Conduct monitoring and evaluation of the programme and disseminate feedback of the results. d. Establish an official multidisciplinary IPC group, committee or an equivalent structure to support the integration of IPC across all departments (Table 3D). e. Ensure that an outbreak prevention plan is in place. 2. Guidelines <ol style="list-style-type: none"> a. Develop or strengthen policies and standards of practice (including technical, evidence-based guidelines for the prevention of relevant risks informed by local risk assessment and/or adapted to local conditions) regarding IPC activities in the health care facility. b. Prepare dissemination plans and a programme of support for local implementation. c. Ensure that a system is in place for the documentation and dissemination of successful local or national initiatives to highlight examples of effective interventions and their implementation. 3. Continuous education and training <ol style="list-style-type: none"> a. Support the development and enhancement of educational programmes on IPC. 4. Surveillance, monitoring, audit and feedback <ol style="list-style-type: none"> a. Formulate processes to monitor the implementation of and adherence to policies and standards and put in place feedback mechanisms. b. Establish a system of surveillance of HAIs, as well as AMR (including definitions and methodology), including early outbreak detection and the associated dissemination of data. c. Initiate and conduct epidemiological investigations relating to infection-related adverse events/incidents including in the context of occupational health. 5. Enabling environment <ol style="list-style-type: none"> a. Ensure continuous procurement of an appropriate selection of adequate supplies relevant for IPC practices, for example, PPE, hand hygiene products, disinfectants, etc. b. Ensure effective waste management and adequate access to safe water, sanitation and environmental cleaning across health care facilities. 6. Programme linkages <ol style="list-style-type: none"> a. Ensure that effective relationships are built with related teams, programmes and departments, for example, WASH, AMR, quality and safety, laboratories, environmental health, biomedical engineering, occupational health, patients' associations/civil society bodies. 7. Multimodal strategies <ol style="list-style-type: none"> a. Provide coordination and support in the development and implementation of multimodal strategies aligned with other quality improvement programmes or health facility accreditation bodies, including providing support and the necessary resources, policies, regulations and tools.

THE CONSTITUTION AND ROLES AND RESPONSIBILITIES OF THE IPC COMMITTEE

Table 3D presents a list of potential members of the IPC committee and associated roles and responsibilities, but this can be modified according to your own setting.

Table 3D. Example of the constitution and roles and responsibilities of the IPC committee

IPC committee	
<p>Membership</p> <ul style="list-style-type: none"> • Medical superintendent/head of health care facility or representative • Head of nursing • Representative heads of specialty departments (based on local context) • IPC lead • IPC nurse • Head of quality • Head of patient safety • Public health practitioner/disease control officer • Chief pharmacist • Biomedical engineer/equipment technologist/biomedical scientist • Environmental health officer • Head of catering services • Head of WASH • Other members that may be co-opted as necessary, for example, HIV/TB coordinators. 	<p>Roles and responsibilities</p> <ul style="list-style-type: none"> • Monitor, supervise and evaluate all IPC activities based on the eight core components, including the development of annual plans and an annual reporting mechanism. • Oversee the implementation of the IPC programme and plans. • Report to other related committees including quality and safety, risk management, AMR. • Provide advice on IPC and related matters. • Advise on procurement of equipment and consumables for IPC. • Liaise with in-service training coordinators on training programme(s) in IPC at the facility. • Disseminate information and reports on IPC to relevant senior managers and clinical leads across the facility. • Play a lead role in advocacy and resource mobilisation for IPC activities including securing an annual budget for IPC. • Perform any other functions related to IPC.



CORE COMPONENT 2**IPC GUIDELINES**
– *Rapid recap*

Guideline development is complex and requires expertise. However, there is a growing body of international guidelines (for example, WHO and CDC) that can be adapted to your local situation. In addition, based on international standards, many countries have developed or are developing their own national IPC guidelines that can be adapted at health facility level.

The facility level is not usually the place where guidelines should be developed, but rather where international or national guidelines are put into operation. Are there any examples of other programmes or initiatives that have successfully developed and/or disseminated guidelines that you can learn from? Many facilities have linked guideline development to existing standard operating procedures or have created new ones to make the implementation process easier. In addition, many facilities are starting to integrate IPC guidelines across other programmes rather than solely relying on stand-alone IPC guidelines (for example, TB, maternal and child health and HIV). Finally, the format and availability of guidelines are critical, guidelines do not implement themselves – make sure they come to life rather than remaining inside a folder on a shelf and think about electronic formats to make them more easily accessible.



SAMPLE ACTION PLAN: IPC GUIDELINES

To support the development of your action plan refer back to the “what, why, when, who, how” tables presented in Part II.

Priority gap	Action required and link to available tools/ resources	Lead person and other team members	Timeline	Budget/ resources
No (evidence-based, consistent) IPC guidelines available (and no engagement of other clinicians and managers in this process)	<ul style="list-style-type: none"> Source national, regional or international evidence-based guidelines and/or source guidelines developed and approved in other similar facilities. Adapt the content of other guidelines if necessary to the facility needs. Review the sample of national guidelines in the tools and resources section. 	<ul style="list-style-type: none"> IPC lead/focal person Microbiologist or infectious diseases specialist (if different from lead) Public health experts Others with experience of writing guidelines Sample of facility clinicians and managers 	6 months	Low
No expertise available to develop/adapt IPC guidelines	<ul style="list-style-type: none"> Contact national IPC experts where available and/or IPC societies or professional bodies to ask if they have expertise to support the facility in guideline development and adaptation, for example, through remote mentorship, regular telephone calls, etc. Source and seek permission to secure the expertise of those who have written/adapted other (non IPC) guidelines, for example, a consultant (this helps in the guidelines development process, but does not replace the IPC expertise that is needed to develop/adapt guidelines). 	<ul style="list-style-type: none"> IPC lead/focal person Senior manager(s) 	3 months	Moderate-high
IPC guidelines not integrated into other programmes	<ul style="list-style-type: none"> Secure meeting dates with other programme leads and review together their available guidelines to identify where IPC is relevant. Provide (summary) IPC wording for inclusion in other guidelines. Consider developing and providing IPC standard operating procedures to add to other guidelines, for example, (1) how hand hygiene and aseptic technique for wound management should be employed in a surgical guideline, (2) IPC standards embedded in accreditation body standards for general health care accreditation, (3) hand hygiene and other precautions embedded in MDRO management guidelines (https://www.cdc.gov/infectioncontrol/guidelines/mdro/index.html accessed 4 April 2018) 	<ul style="list-style-type: none"> IPC lead/focal person Other IPC team members Senior managers (for validation and approval of the approach) 	1 month	Low
No planned approach to guideline implementation	<ul style="list-style-type: none"> Develop a dissemination and implementation annual work plan using multimodal thinking (see Annex 2) including describing: how to address the necessary resources and infrastructures; how to train staff; how to monitor progress and provide feedback, for example, assessment of knowledge, practice and behaviours among staff; how to communicate about the guidelines; and how to secure role models and champions for the guidelines. 	<ul style="list-style-type: none"> IPC lead/focal person 	4 months	Low

Table 3E lists some of the common barriers related to the development and implementation of IPC guidelines that IPC leaders have encountered together with some potential solutions. The final column signposts the reader to associated implementation examples with a focus (not exclusively) on low-resource settings.

Table 3E. Potential barriers and solutions (core component 2)

Potential barrier	Potential solution(s)	Implementation examples
Limited access to IPC guidelines	<ul style="list-style-type: none"> • Explore availability of national guidelines/policies with the ministry of health if necessary – if they exist, adapt them to your facility needs. • Explore availability of guidelines developed by international organizations, for example, WHO, CDC, ECDC. • Explore if other more advanced facilities have produced evidence-based guidelines. • If an IPC body/society exists, contact them to ask if they have example resources to share. 	<p>Adaptation of international guidelines</p> <p>“To develop guidelines for our IPC programme, we previously took CDC and ECDC guidelines and adapted them to our facility. In 2012, the ministry of health released guidelines on safe injections, universal precautions, health-associated pneumonia, surgical site infection, catheter line-associated BSI and sterilization, so we took these to adapt to our facility. However, some elements of these guidelines are now out-of-date so we need to pay attention to this as well. We expect other guideline topics such as surveillance and IPC in surgery to be forthcoming from the ministry of health. This guideline development at the ministry of health is supported by their IPC advisory group and Model Hospitals programme.” Viet Nam</p> <p>Adaptation of national guidelines</p> <p>“It took one year to formulate our own IPC policy. We adapted our published ministry of health guidelines on IPC according to our needs and the service we offer. We used the template format provided by our quality department. A multidisciplinary team including the end users of the policies revised everything related to the language, the flow of the procedures, the scientific terms and data, etc. After we ensured their dissemination among all the relevant departments, we started an intensive training and education programme for each staff category followed by continuous monitoring of their practices as per policy and after two years our facility acquired the national foundation accreditation level!” Egypt</p>
Ensuring guidelines remain up to date	<ul style="list-style-type: none"> • Regularly check with the ministry of health whether any relevant guidelines/evidence updates are available. • Use regular meetings or workshops where multidisciplinary teams review the latest evidence to inform IPC recommendations as they evolve – note, the evidence for IPC recommendations does not change very often. • Regularly check for IPC systematic reviews produced at country, regional or international level, as well as any new WHO guidelines to make changes to your facility guidelines. 	<p>Ensuring guidelines remain up to date through collaborative workshops</p> <p>“It is challenging to keep them updated on a regular basis, so we decided to set a regular schedule for IPC workshops where we could discuss the current evidence and any needs for guideline updates.” Pakistan</p>

Table 3E. Potential barriers and solutions (core component 2) continued

Potential barrier	Potential solution(s)	Implementation examples
Limited expertise in guideline development	<ul style="list-style-type: none"> • Usually, national guidelines are implemented and not developed at health care facilities in many countries. However, if national guidelines do not exist, assignment could be given to a task team of both internal and external membership to draft IPC guidelines. The task team would conduct a literature review and consider adapting guidelines from other sources, for example, international guidelines where they exist. • Widespread review by stakeholders is recommended, including facility leadership and different categories of health professionals to build consensus/validate the content and to determine its feasibility in the local context. Particular attention should be paid to simplicity of language and usability. • In some cases, it will be sensible to explore sources of external technical support and consider whether other facilities in your country have developed guidelines – this may help prevent “wheel reinvention”. Reach out to your national IPC focal person to explore whether any exemplar facilities exist in your country. • The type of support required to develop guidelines includes finding people with writing and referencing experience, as well as the ability to critique literature/other guidelines. In addition, previous experience of writing guidelines will be helpful. 	<p>Use of external IPC expertise as a catalyst for action “The two requirements are also skilled human resources and integration. The facility needs a dedicated and skilled IPC person to work on this. A similar model could work to receive external technical support to draft the document (if the country does not have one) and the facility then needs to adapt it per their local context.” Pan American Health Organization</p> <p>Adapt to adopt “We used guidelines from CDC/NHSN and WHO and then tried to adapt them to our facility.” Pakistan</p>
Operationalizing (disseminating and implementing) guidelines	<ul style="list-style-type: none"> • In parallel to guideline development, consider how you will disseminate, promote and implement the guidelines including through a range of communications and targeted improvement plans. • Learn from other facilities or the literature on the “how to” of guideline implementation. • Use a multimodal strategy to put into operation guideline recommendations. • Use/develop standard operating procedures (SOPs) to help operationalize guideline recommendations for the facility, including specific wards/units based on risks and needs. 	<p>Make a dissemination plan “The key challenge is operationalizing the guidelines. Two solutions which helped to ensure guideline implementation is making an explicit plan for how the guidelines will be disseminated, used, and monitored during the preparation phase before actual guideline development.” East Africa</p> <p>Learn from other facilities “For the operationalization of the guidelines, we started a facility-level journal with a “how-to” series, which was shared across several facilities. For the adaptation of international guidelines, we found it easier to do this for standard operating procedures.” Nigeria</p> <p>Use a multimodal approach “Training came first. After we had responsible trained IPC persons in place, they were able to develop the guideline, train others on it, and assess its implementation. Leadership of each discipline was also tasked with the implementation of the guideline so that all healthcare workers accountable for the IPC safety work without us constantly on the unit. Process control is a key component. On a regular basis, the IPC team shares key literature with the relevant healthcare workers and leaders (that is, discusses one study at a team meeting) and discusses the need to update the guidelines according to the evidence. This has been an effective process for the intensive care unit and has allowed us to implement bundle interventions.” Argentina</p>

Table 3E. Potential barriers and solutions (core component 2) continued

Potential barrier	Potential solution(s)	Implementation examples
Integrating IPC guidelines into other programmes	<p>Communicate with stakeholders and key facility departments at the start of your guideline development or adoption process, building on the relationships fostered during steps 1 and 2, to understand how IPC guidelines can include references to other facility priorities and to ensure that any other guidelines appropriately reference IPC – this can enhance the likelihood of uptake and success.</p>	<p>Securing guideline integration “Additionally, IPC guidelines need to be integrated in other programme guidelines such as family planning, HIV (for example, voluntary male medical circumcision), maternal and child health services, cervical cancer prevention service delivery, etc. so early discussions across departments should also happen during the preparation phase before actual guideline development.” East Africa</p>

TOOLS AND RESOURCES

Guidance/policies/standards

- National Health and Medical Research Council. A guide to the development, implementation and evaluation of clinical practice guidelines. 1999 (<https://www.nhmrc.gov.au/guidelines-publications/cp30> accessed 4 April 2018)
- Developing and implementing guidelines for health policy and clinical practice in Estonia: interim appraisal of progress September 2015 (<http://www.euro.who.int/en/countries/estonia/publications/developing-and-implementing-guidelines-for-health-policy-and-clinical-practice-in-estonia-interim-appraisal-of-progress-2015> accessed 4 April 2018)
- Health Care Compliance Association. Do's and don'ts of policy writing (<https://www.hcca-info.org/Portals/0/PDFs/Resources/library/DOs%20and%20DONTs%20of%20Policy%20Writing.pdf> accessed 4 April 2018)
- How to write a policy manual (<http://www.templatezone.com/download-free-ebook/office-policy-manual-reference-guide.pdf> accessed 4 April 2018)
- Guidelines on hand hygiene in health care (http://www.who.int/infection-prevention/publications/hh_evidence/en/ accessed 4 April 2018)
- Global guidelines on the prevention of surgical site infection (<http://www.who.int/infection-prevention/publications/ssi-guidelines/en/> accessed 4 April 2018)
- Guidelines for the prevention and control of carbapenem-resistant Enterobacteriaceae, Acinetobacter baumannii and Pseudomonas aeruginosa in health care facilities (<http://www.who.int/infection-prevention/publications/focus-amr/en/> accessed 4 April 2018)
- Injection safety evidence, guidelines and publications (<http://www.who.int/infection-prevention/publications/injection-safety/en/> accessed 4 April 2018)
- WHO Decontamination and reprocessing of medical devices for health-care facilities (<http://www.who.int/infection-prevention/>

[publications/decontamination/en/](#) accessed 4 April 2018)

- National IPC guidelines of Sierra Leone (<http://www.afro.who.int/sites/default/files/2017-05/ipcguide.pdf> accessed 4 April 2018)
- Trinidad and Tobago IPC policies and guidelines for health care services (June 2011) (<http://www.health.gov.tt/downloads/DownloadDetails.aspx?id=245> accessed 4 April 2018)
- Ministry of Health Ghana national policy and guidelines for IPC in health care settings (https://www.ghanahealthservice.org/downloads/National_Policy_and_Guidelines%20for_Infection_Prevention_and_Control_in_Health_Care_Settings_2015.pdf accessed 4 April 2018)
- NHS Scotland national IPC manual (<http://www.nipcm.hps.scot.nhs.uk/> accessed 4 April 2018)
- National Guard Health Affairs, Gulf Cooperation Council IPC manual, second edition, 2013 (<https://www.moh.gov.sa/CCC/Documents/GCC%20Infection%20control%20manual%202013%20revisedOPT.pdf> accessed 4 April 2018)
- National IPC guidelines for acute healthcare facilities, Singapore (https://www.moh.gov.sg/content/moh_web/home/Publications/guidelines/infection_control_guidelines/national-infection-prevention-and-control-guidelines-for-acute-h.html accessed 4 April 2018)
- CDC IPC guidelines library (<https://www.cdc.gov/infectioncontrol/guidelines/index.html> accessed 4 April 2018)
- Association for Professionals in Infection Control and Epidemiology listing of IPC guidelines (<https://apic.org/Professional-Practice/Scientific-guidelines> accessed 4 April 2018)
- Asia Pacific Society for Infection Control IPC guidelines (<http://apsic-apac.org/guidelines-and-resources/apsic-guidelines/> accessed 4 April 2018)

Planning

- Action plan templates (Annex 5)
- Multimodal strategy guiding questions (Annex 2)

Selected publications

- Larson EL, Quiros D, Lin SX. Dissemination of the CDC's hand hygiene guideline and impact on infection rates. *Am J Infect Control.* 2007;35:666-75.
- Rosenthal VD, Guzman S, Safdar N. Effect of education and performance feedback on rates of catheter-associated urinary tract infection in intensive care units in Argentina. *Infect Control Hosp Epidemiol.* 2004;25:47-50.
- Quiros D, Lin S, Larson EL. Attitudes toward practice guidelines among intensive care unit personnel: a cross-sectional anonymous survey. *Heart Lung.* 2007;36:287-97.



CORE COMPONENT 3

IPC EDUCATION AND TRAINING – *Rapid recap*

It is important to link education and training to your local evidence-based guidelines and to align education and training efforts with other relevant policies and programmes. The facility should ensure IPC training for all new employees, as well as continuous education with updates at least annually. Training and education should also be linked to job profiles and competences and basic IPC training should be available for all health care workers involved in service delivery and patient care, as well as for other personnel (for example, administrative and managerial staff, auxiliary service staff, cleaners). As you develop your action plan, think: (1) how will training be monitored and evaluated? (2) how will you know that knowledge and also behaviours have improved?

Consider undertaking task-oriented training sessions and lectures to enhance learner motivation, using e-learning modules, simulation-based training, bedside training by dedicated teams or IPC link nurses/practitioners, or group sessions with online modules and lectures within your training and education plans. Furthermore, when developing your action plan, consider how the IPC lead/focal person will be supported to continuously develop his/her knowledge and skills. Finally, consider offering education on basic hygiene measures to patients and their families.



SAMPLE ACTION PLAN: IPC TRAINING AND EDUCATION

To support the development of your action plan refer back to the “what, why, when, who, how” tables presented in Part II.

Priority gap	Action required and link to available tools/resources	Lead person and other team members	Timeline	Budget/resources
No expertise in how to develop and execute effective IPC training	<ul style="list-style-type: none"> Source competencies for IPC training and map to available staff. Develop and submit a report on the competency status of available staff to senior managers highlighting gaps and the need to build capacity through training and mentorship. 	<ul style="list-style-type: none"> IPC lead/focal person 	3 months	Low
No routine programme of IPC training	<ul style="list-style-type: none"> Develop a programme of IPC training using WHO training modules (see tools and resources). 	<ul style="list-style-type: none"> IPC lead/focal person 	3 months	Moderate
No funds to support training	<ul style="list-style-type: none"> See core component 1 action plan template concerning IPC budget. 	<ul style="list-style-type: none"> See core component 1 action plan template concerning IPC budget 		See core component 1
IPC training not routinely integrated into clinical practice training of other specialties	<ul style="list-style-type: none"> Work with clinical teams to create a plan to integrate IPC into their clinical practice training, (for example, hand hygiene practices according to the WHO 5 Moments, training platforms for the insertion of invasive devices, surgical site infections, AMR, etc.). Outline the evaluation plan to assess the success of IPC integrated into other training. 	<ul style="list-style-type: none"> IPC lead/focal person IPC team members Senior managers (to mandate and secure support for this approach) 	6 months	Low
No routine IPC training offered to patients/family members	<ul style="list-style-type: none"> Create a plan for offering training to patient/family members (in a range of formats) – consider targeting high risk areas, for example, the intensive care unit, using a blend of methods (leaflets, posters, verbal information and advice). Hand hygiene can act as a useful starting point for patient and family training. 	<ul style="list-style-type: none"> IPC lead/focal person IPC team members Communications' experts Patient groups/ liaison services 	3 months (and ongoing)	Low
No/poor programme of ongoing development for IPC staff	<ul style="list-style-type: none"> Develop a continuing professional development plan for IPC staff, considering gaps in competences (related to the IPC programme). Explore opportunities to have placements in other facilities where IPC implementation might be more advanced or specific projects have been successfully implemented. Identify national or international conferences or educational workshops. In some countries, available professional development includes short training courses for new IPC practitioners (for example, two-week basic course for beginners), an advanced training course (for example, four-month course), a master's degree programme for IPC practitioners (up to two years), as well as annual national seminars and conferences 	<ul style="list-style-type: none"> IPC lead/focal person Senior manager(s) Quality lead 	3 months and ongoing	Moderate

Table 3F (overleaf) lists some of the common barriers to implementation of an IPC training programme that IPC leaders have encountered together with some potential solutions. Implementation examples provided are focused (not exclusively) on low-resource settings.

Table 3F. Potential barriers and solutions (core component 3)

Potential barrier	Potential solution(s)	Implementation examples
Lack of training material	<ul style="list-style-type: none"> Consider starting small, for example, focus on hand hygiene training as an entry point using already available materials (for example, WHO resources – see tools and resources section). Explore whether standardized training material is available from the national IPC programme, partners, or national or international societies/networks. 	<p>Leverage existing training materials and start small</p> <p>“We used hand hygiene as a starting focus for IPC staff education.” Kenya</p>
Lack of expertise to train all relevant staff	<ul style="list-style-type: none"> Consider the use of train-the-trainer approaches. Seek support from the next level if expertise exists, that is, district/county/regional and national. Consider contracting specialist services to support training and development if feasible and funds permit. 	<p>Train-the-trainer model</p> <p>“As the lead infectious disease doctor, I was able to first get support to be trained by APSIC and we were then able to secure funding for additional staff. We have participated in a “trainer of the trainer” framework which is supported by the ministry of health where regional meetings with experts are organized to keep updated.” Viet Nam</p>
Engaging all relevant disciplines in training including champions and leaders	<ul style="list-style-type: none"> Secure leadership commitment for multidisciplinary training, including health care facility managers, doctors, nurses and support staff. 	<p>Multidisciplinary approaches with training built in to job descriptions</p> <p>“We started small and then slowly scaled-up but the role of a local champion leading this process is critical. At first, there was indifference in South Africa, but we continued talking with national departments of health and got the chief executive officers, managers and nurse managers on board from facilities. The programme is self-sustaining and run on participant contributions (albeit small). The practical piece of the training is critical (that is, go to the ward in the middle of the training, look at risk, analyze it, interpret it, and create change). In our experience, it is not good to separate doctors, laboratorians, and waste officials in training as multidisciplinary training takes down hierarchy and builds respect that can be taken back to the hospital. The training requirements should also be incorporated into job descriptions because this can encourage appropriate training. For example, managers should attend a five-day IPC course within three to four months of starting their post. Overall, from the work of the Infection Control Africa Network (ICAN), there is now a cadre of health care workers trained in IPC from university-level courses and postgraduate diplomas. These existing resources and initiatives should be used and built upon.” ICAN</p> <p>Training for all new starters and IPC as a core element of performance review</p> <p>“We have integrated IPC education and new employee orientation. Additionally, we have discussed including as part of annual performance reviews.” Nigeria</p>

Table 3F. Potential barriers and solutions (core component 3) continued

Potential barrier	Potential solution(s)	Implementation examples
Lack of time for training (training not a priority)	<ul style="list-style-type: none"> • Consider on-the-job training and supervision and mentorship. • Build IPC into staff orientation. • Include IPC in staff performance review. 	<p>On-the-job training</p> <p>“We have prioritized sending people to give on-the-job training and organized regional workshops on IPC.” Médecins Sans Frontières/Doctors Without Borders</p> <p>Use of a “demonstration room”</p> <p>“The Swedru District Hospital in the central region of Ghana has established a demonstration room after the IPC training filled with all items of IPC ranging from equipment on hand hygiene, instrument processing, waste management, PPEs, a bed and a dummy. This serves as a continuous training ground for all categories of health staff.” Ghana</p>
Engaging medical staff in IPC training	<ul style="list-style-type: none"> • Consider use of simulation. 	<p>Use of simulation</p> <p>“We have an annual programme for our health care workers, which is currently being transitioned to a virtual platform. Until last year, we had monthly meetings with our nurses during their shift, as well as other special meetings for doctors, technical staff, and housekeeping staff. For new residents, we provide a simulation and training in their new employee orientation.” Argentina</p>

TOOLS AND RESOURCES

Action planning

- Action plan templates (Annex 5)
- Multimodal strategy guiding questions (Annex 2)

Training

- WHO advanced IPC training modules (<http://www.who.int/infection-prevention/tools/core-components/en/> accessed 4 April 2018)
- WHO hand hygiene improvement training materials (http://www.who.int/infection-prevention/tools/hand-hygiene/training_education/en/ accessed 4 April 2018)
- WHO tools for the institutional safety climate with a focus on patient participation (http://www.who.int/infection-prevention/tools/hand-hygiene/safety_climate/en/ accessed 4 April 2018)
- European Centre for Disease Prevention and Control list of Training courses on IPC (<https://ecdc.europa.eu/en/publications-data/directory-guidance-prevention-and-control/training/training-courses-infection> accessed 16 April 2018)
- Ghana Health Service IPC facilitator's guide – available via IPC and WASH Learning Pod (<http://www.who.int/servicedeliverysafety/areas/qhc/schematic-GLL.pdf?ua=1> accessed 4 April 2018)
- Public Health Ontario (Canada) (<https://www.publichealthontario.ca/en/LearningAndDevelopment/OnlineLearning/InfectiousDiseases/Pages/default.aspx> accessed 4 April 2018)

Selected international conferences

- Association of Professional for Infection Control and Epidemiology (APIC) (www.apic.org accessed 4 April 2018)
- APSIC (<http://apsic-apac.org>) accessed 26 April 2018)
- European Congress of Clinical Microbiology and Infectious Diseases (<http://www.eccmid.org/> accessed 4 April 2018)
- Infection Control Africa Network (<http://www.icanetwork.co.za/> accessed 16 April 2018)
- Institute of Public Administration of Canada

(<https://ipac-canada.org/canadian-ipac-course.php> accessed 4 April 2018)

- International Conference on Prevention and Infection Control (<http://www.icpic.com/> accessed 4 April 2018)
- International Federation of Infection Control (www.theifc.org accessed 4 April 2018)

Selected publications

- Allen GB, Miller V, Nicholas C, Hess S, Cordes MK, Fortune JB, et al. A multitiered strategy of simulation training, kit consolidation, and electronic documentation is associated with a reduction in central line-associated bloodstream infections. *Am J Infect Control.* 2014;42:643-8.
- Sherertz RJ, Ely EW, Westbrook DM, Gledhill KS, Streed SA, Kiger B, et al. Education of physicians-in-training can decrease the risk for vascular catheter infection. *Ann Intern Med.* 2000;132:641-8.



CORE COMPONENT 4

HAI SURVEILLANCE

– *Rapid recap*

Conducting HAI surveillance activities requires the support and agreement of the facility leadership and the chiefs of targeted clinical services because it is linked to patient safety and performance assessment and it may require some additional resources (for example, dedicated time of trained staff and, in some cases, microbiological investigations). Building surveillance capacity will require some degree of training of the person identified as the lead for surveillance (most likely, the IPC lead) and those dedicated to data collection, usually the nurses and doctors working in the wards or departments where surveillance is conducted. If this expertise does not yet exist, this should form the initial priority focus for your plans. Consider what expertise is available in nearby health facilities and nationally to support this activity.

In some countries, national surveillance experts provide site support visits/mentorship to help in training, including assessment of case finding, completion of surveillance forms and support for data collection and analysis. Surveillance covering all types of HAIs is not necessary – well-defined goals and indicators should be identified focusing on, for example, BSI, surgical site infection for specific procedures or urinary tract infection in patients with urinary catheters. Many health facilities with zero surveillance capacity started with small projects, for example, to address surgical site infection in women with caesarean sections or a common procedure with a known infection-related problem. In addition, some health facilities have used existing data on other infectious conditions, for example, HIV and/or TB, to demonstrate the value of data overall to address improvement. Most learning from the field suggests a stepwise approach, deciding carefully on evidence-based methods, starting with small projects and then scaling up.



SAMPLE ACTION PLAN: HAI SURVEILLANCE

To support the development of your action plan refer back to the “what, why, when, who, how” tables presented in Part II.

Priority gap	Action required and link to available tools/ resources	Lead person and other team members	Timeline	Budget/ resources
<p>No/limited resources for surveillance including:</p> <ul style="list-style-type: none"> No/limited financial resources No/limited human resources (for example, no/limited staff who have been trained and able to apply a standardized data collection process) No/limited informatics support to conduct surveillance (for example, equipment, mobile technologies, electronic health records) 	<ul style="list-style-type: none"> Refer to core component 1 action plan template. Develop a business case to address: <ul style="list-style-type: none"> required epidemiology/surveillance expertise (if not already included in the IPC team business case) using the multimodal strategy guiding questions; need for increased informatics capacity and resources. Identify whether expertise can be accessed from national or regional programmes including whether there is an AMR programme of work that IPC can integrate with. Explore the option of using existing epidemiological expertise from other programmes where available. Explore availability of web-based courses to support training. Consider starting with targeted prevalence surveys as an exercise for staff to practice diagnosis of HAI, collect and analyze data and recognize HAI epidemiology and problems in their setting (see below). 	<ul style="list-style-type: none"> IPC lead, IPC lead and health care facility epidemiologist if present, working with senior management/chief executive officer 	3-6 months	Low
<p>No/limited information about the burden of HAI in the facility</p>	<ul style="list-style-type: none"> Ideally, conduct a point prevalence survey (PPS) to identify the most frequent HAIs in your facility and to orient future surveillance approaches. Explore whether a PPS protocol, data collection forms and a data entry database are available from the national IPC or surveillance programmes, or develop these by referring to international standards. Pilot PPS in several units including the intensive care unit and surgical wards. Informed by the pilot, undertake PPS across the entire health care facility. Feedback results to heads of units and the IPC committee and focus on securing support for the identification of priority areas for continuous surveillance. Use results to support the ongoing need for an IPC programme. 	<ul style="list-style-type: none"> IPC doctor IPC nurse 	3-6 months	Moderate

Sample action plan: HAI surveillance continued

Priority gap	Action required and link to available tools/resources	Lead person and other team members	Timeline	Budget/resources
No (reliable) case definitions for surveillance	<ul style="list-style-type: none"> • Where available, refer to national definitions in the development of local definitions and a surveillance protocol. In the absence of national definitions, develop definitions using: <ul style="list-style-type: none"> ▶ available international definitions in your region, for example, ECDC HAI surveillance protocol (see tools and resources); ▶ US CDC/NHSN surveillance definitions for specific types of infections (see tools and resources, page 83); ▶ WHO Protocol for surgical site infection surveillance with a focus on settings with limited resources (see tools and resources). 	<ul style="list-style-type: none"> • IPC lead/focal person 	1-2 months	Low
Standardized surveillance is not yet a well-defined component of the IPC programme (including on a range of recommended topics)	<ul style="list-style-type: none"> • Using trained IPC professionals, use evidence-based definitions, methods and data collection forms as a reference and host an expert meeting with heads of units, doctors and nurses (especially high risk units, for example, intensive care unit, surgery, neonatology, burns unit, infectious diseases, etc.) to discuss a careful locally-adapted approach to establish regular surveillance in priority areas and what methods should be used. 	<ul style="list-style-type: none"> • IPC lead/focal person 	3 months	Moderate
General lack of awareness across the facility of the value of surveillance - surveillance activities are not well-aligned with health care facility needs and priorities	<ul style="list-style-type: none"> • Develop short advocacy materials highlighting the advantages of HAI surveillance - focus on how surveillance information can help reduce HAI across the facility and how to effectively utilize surveillance information to improve patient care practice and early detection of HAI outbreaks. Include cost-effectiveness data from studies demonstrating the economic benefit of detecting and preventing HAIs. • Where available, use PPS data to support advocacy and training. • Informed by meetings with heads of departments and discussions in the IPC committee, make a list of priorities and evaluate surveillance plans according to these current priorities - plans and resources for surveillance should be firmly established as a key part of the general IPC programme including addressing data collection, analysis and reporting requirements. 	<ul style="list-style-type: none"> • IPC lead/focal person 	1-2 months	Low

Sample action plan: HAI surveillance continued

Priority gap	Action required and link to available tools/resources	Lead person and other team members	Timeline	Budget/resources
No microbiology/laboratory capacity to support surveillance	<ul style="list-style-type: none"> • Explore realistic possibilities to establish a microbiology laboratory. • In the short term – if no laboratory is present – explore the possibilities to send microbiological samples to another laboratory, for example, regional or tertiary care hospital. • Develop and present a case for HAI surveillance to senior managers. Use available costing tools (APIC HAI cost calculator (see tools and resources, page 83)). 	<ul style="list-style-type: none"> • IPC lead, IPC lead and health care facility epidemiologist if present, working with senior management/chief executive officer 	3 months	High

Table 3G (overleaf) lists some of the common barriers to implementation of an IPC surveillance programme that IPC leaders have encountered, together with some potential solutions. Implementation examples provided are focused (not exclusively) on low-resource settings.

Table 3G. Potential barriers and solutions (core component 4)

Potential barrier	Potential solution(s)	Implementation examples
<p>Lack of expertise in surveillance</p>	<ul style="list-style-type: none"> • Explore national or regional programmes that already exist and how your facility might be supported to join these to get learning experience and access expertise to execute your plans. • Explore what is already being addressed, for example, through your AMR programme of work – can IPC build on and integrate with this? • Explore the option of using other epidemiological expertise to help interpret your results once these are collated and gather examples of how data on other subjects have been presented to use these for HAI. 	<p>Connect with regional/national programmes to build local capacity</p> <p>“We were able to work with a regional programme supported by CDC. The programme used a “train-the-trainer” model. Certain hospitals were trained and then were able to provide us with mentorship support. There are regular support visits that focus on staff training/interviews (including IPC team, microbiology laboratory, clinicians), consistent application of definitions, assessment of case finding and denominator data collection practices, review of completed surveillance forms to assess quality, discussion of use of data for local action. To encourage feasibility and sustainability, we have started with only one surveillance outcome, catheter line-associated BSI. We also communicated with the International Nosocomial Infection Control Consortium (INICC) about benchmark rates for low- and middle-income countries, which then allowed us to create our own benchmarks, prioritize and show metrics to leadership, comparing overall and intensive care unit rates.”</p> <p>India</p> <p>Connect with existing approaches, for example, AMR, TB, HIV</p> <p>“Setting up clinical and laboratory-based surveillance was laborious. We started with selected HAI surveillance including blood culture, wound and respiratory disease surveillance. Establishing a method for automated surveillance could be a large step forward. Another opportunity will be through the AMR work to carry about more surveillance with the support of the national level. Facilities could start to assess health care-acquired TB and HIV data to show the HAI burden. We started with HAI BSI, namely weekly feedback to paediatric and neonatal departments on blood culture results, and the outcome and identification of possible sources/causes of sepsis. Most importantly, surveillance without feedback is a waste. We feedback our surveillance data to clinical staff every two weeks or once a month at Tuesday morning ward meetings.” ICAN</p>

Table 3G. Potential barriers and solutions (core component 4) continued

Potential barrier	Potential solution(s)	Implementation examples
<p>Unsure where to start</p>	<ul style="list-style-type: none"> • Target high risk areas, for example, intensive care units (device-associated infections) and/or surgical services (surgical site infection as a complication of major surgery) as a natural entry point. • Start small. Identify one IPC nurse to visit selected wards on a daily basis and collect surveillance data together with local teams or a link nurse and use results to build support. Focus on more frequent procedures, with well-known and evidence-based preventive measures or infections that can be easily accessed/supported by the resources of your health facility. • Consider a phased approach to implementation - for example, surgical site infection surveillance could be limited to some commonly performed general or obstetric surgical procedures in the initial stages. • Perform PPS to detect the most frequent HAIs. Set up meetings with heads of units, doctors and nurses to identify, what are the major IPC and HAI problems for them and discuss how IPC can help solve these issues. • Relationship building is important – particularly with the microbiology laboratory, clinical laboratory, pharmacy, doctors focused on AMR. Probe the perception of these key stakeholders on what constitutes the major HAI/IPC problem in their unit and across the health care facility – this will help secure support and sustainability. • If surveillance data already exist, even if limited, use the data and identify areas where there is a higher incidence of for example, ventilator-associated pneumonia, surgical site infection, BSI or catheter-associated urinary tract infection. • Use the evidence and explanations provided as the reasons for investing in surveillance. • Link to AMR surveillance and describe HAI surveillance as a necessary component in stopping the spread of AMR. 	<p>Start small – focus on agreed high-risk areas</p> <p>“We have two IPC nurses responsible for the surveillance followed up a third who is coming shortly. We use CDC/NHSN methodology and electronic software. It is active prospective surveillance conducted daily. We focus the surveillance on our intensive care units, surgery for most complex procedures, and haemodialysis. We also have surveillance methodology for MDROs and Clostridium difficile for our antimicrobial stewardship programme. Our microbiology laboratory is a reference laboratory in the country and reports to the WHONET system. We regularly do feedback at meetings as well as a formal annual report.” Argentina</p> <p>Start small – focus on surgical site infection</p> <p>“We focused on starting with surgical site infection surveillance given our involvement with a research study on this topic. We found surgical site infection to be a good priority surveillance outcome as data suggests that it is one of the most common HAIs in low- and middle-income countries. The key points for surveillance are what data to collect, over what time period, and by whom, how to evaluate the data, what will you do with the data, and how can it be done at low cost. For surgical site infections infections and relevant/feasible process/risk stratification (US National Nosocomial Infection Surveillance System [NNIS] criteria) data should be collected by IPC staff if possible for 30 days, including post-discharge phone calls, because surgical site infections are defined as infections occurring at the operation site within 30 days of the procedure. Data should be risk-stratified to account for operation-, patient-, microbiological- and institutional-related factors. We used the data to evaluate our quality improvement efforts. During this process, we faced challenges of a lack of IPC staff and resources, limited microbiology services and excessive antibiotic use.” Kenya</p> <p>Start small – “shoe leather surveillance”</p> <p>“In the beginning, everything was by paper and pencil. We started first with clinical surveillance. Staff would go to the ward each day, check on the patient and their medical record. Next, we added laboratory surveillance where the laboratory would send us the information. We invested in two statisticians that could help us with the data management and analysis. Later, the ministry of health supported a protocol and regional programme with model hospitals for shared hospital mentorship for catheter line-associated BSI and catheter-associated urinary tract infection, which we have participated in while continuing to do surveillance for ventilator-associated pneumonia and surgical site infection using our own methods (laboratory information and data from the medical chart). Each month, we produce a surveillance report that is sent to the hospital board of directors and head nurse of every ward. This includes the selected HAI rates and pathogen resistance profile (also used for treatment decisions).” Viet Nam</p>

Table 3G. Potential barriers and solutions (core component 4) continued

Potential barrier	Potential solution(s)	Implementation examples
<p>Securing support for the value of surveillance</p>	<ul style="list-style-type: none"> • Establish frequent communication of surveillance results to wards/units and managers at key meetings, for example, medical rounds, to highlight “data for action”. • In discussions with clinical staff, emphasize the confidentiality of surveillance data and the positive value of surveillance. • Communicate with the team working on quality improvement to secure their support – explain how surveillance data supports ongoing quality improvement. • Link with AMR surveillance and describe IPC surveillance as a necessary part of AMR prevention. • Use available data to communicate with the ministry of health. • Determine the amount of time required to conduct infection surveillance, prevention and control activities based on several parameters, including the needs of the patient population, risk factors associated with the patient population, complexity of the services, staff educational needs and resource and support services available. 	<p>Securing support</p> <p>“We have started with the adaptation of standardized definitions, which takes significant dialogue. The most important part is the feedback strategy. We display infection rates according to the unit on the noticeboards. These data are discussed with units in grand rounds and management is informed of the data as well.” Nigeria</p> <p>Surveillance is an endless path</p> <p>“It was like a missing boat in an ocean – how we should start our surveillance system. We had a will, but we did not have tools, only three IPC doctors, a nurse, informatics personnel of a very limited capability, and a huge tertiary care hospital (1500-bed capacity). First, we developed passive surveillance, depending only on the microbiology laboratory data supported by some sort of simple active surveillance activities as point prevalence rounds for infections in critical care areas. Then we shifted to another more active targeted surveillance including surveillance of surgical site infection in the surgical units, ventilator-associated pneumonia in intensive care units, and catheter-associated urinary tract infection and BSI in all units. Link nurses in each ward checked on the patient and their medical records daily and sent a notification form of the infected cases following the CDC definitions of HAIs. Next, we as the IPC team checked the laboratory data for these cases; however the process was manual and very laborious till at the end we were able to join the first national surveillance programme supported by CDC that used an automated surveillance system for HAI in the intensive care units. This method greatly improved the accuracy and the competency of the surveillance system by providing a regular feedback to the clinicians. In addition, it allowed the golden chance of benchmarking between all joined facilities.” Egypt</p>

Table 3G. Potential barriers and solutions (core component 4) continued

Potential barrier	Potential solution(s)	Implementation examples
<p>Lack of laboratory facilities / microbiology capacity to provide microbiological testing and results</p>	<ul style="list-style-type: none"> • Explore microbiological laboratory support from the regional, national or sub-national level, including from reference laboratories or microbiology laboratories of a tertiary care hospital. • Refer to and use the Strengthening Laboratory Management Toward Accreditation (SLMTA). This is a structured quality improvement programme that teaches laboratory managers how to implement practical quality management systems in resource-limited settings using available resources and comprises short courses and work-based improvement projects. SLMTA is designed to achieve immediate, measurable improvement in laboratories. • Explore the possibility to employ a microbiologist to support the establishment of a laboratory. • Also refer to the methods and requirements of the Global AMR Surveillance System (GLASS) which indicates methods for AMR detection and reporting for priority pathogens, including in inpatients. This will ensure alignment with recognized standards that all countries are encouraged to follow. 	<p>Building laboratory capacity</p> <p>“Laboratories in Ghana were taken through the SLMTA programme. They were assisted with training of their staff and logistics for the laboratory. This was followed with assessment of their capacity and then the various laboratories were upgraded. All 10 regional hospital laboratories were upgraded together with 37 military hospitals and Kintampo Health Research Centre. The Korle- Bu Teaching Hospital, Komfo Anokye Teaching Hospital, Tamale Teaching Hospital, and the Takoradi Hospital were upgraded into reference laboratories. Also, in 2016, 295 laboratory personnel were trained in malaria microscopy to test for outpatient department malaria cases. This has raised the positivity of malaria testing from 39% to 77.3% and results show that laboratory work activities have improved in the above-listed facilities.” Ghana</p>

TOOLS AND RESOURCES

Business/financial

- APIC HAI cost calculator (<http://www.apic.org/Resources/Cost-calculators> accessed 4 April 2018)
- How much do superbugs cost Australian hospitals? An evidence-based open-access tool (<https://www.sciencedirect.com/science/article/pii/S2468045117302274> accessed 4 April 2018)

Guidance/policies/standards

- WHO Protocol for surgical site infection surveillance with a focus on settings with limited resources (http://www.who.int/infection-prevention/tools/surgical-evaluation_feedback/en/ accessed 4 April 2018)
- WHO Surgical site infection surveillance peri-operative data collection form (<http://www.who.int/infection-prevention/tools/surgical/SSS-pre-op-form.pdf?ua=1> accessed 4 April 2018)
- WHO Surgical site infection surveillance post-operative data collection form (<http://www.who.int/infection-prevention/tools/surgical/SSI-post-op-form.pdf?ua=1> accessed 4 April 2018)
- CDC/NHSN surveillance definitions for specific types of infections. 2017 (https://www.cdc.gov/nhsn/pdfs/pscmanual/17pscnosindef_current.pdf accessed 4 April 2018)

- ECDC HAI surveillance protocol (<https://ecdc.europa.eu/en/healthcare-associated-infections-acute-care-hospitals/surveillance-disease-data/protocol> accessed 4 April 2018)
- Pan American Health Organization HAI definitions (http://www1.paho.org/hq/dmdocuments/2011/ENG_Modulo%20I%20final.pdf accessed 4 April 2018)
- WHO Global guidelines for the prevention of surgical site Infection. Geneva: World Health Organization; 2016 – chapter 3 (3.2) (<http://www.who.int/gpsc/global-guidelines-web.pdf> accessed 4 April 2018)
- Global AMR Surveillance System (GLASS) (<http://www.who.int/glass/en/> accessed 4 April 2018)

Planning

- Action plan templates (Annex 5)
- Multimodal strategy guiding questions (Annex 2)

Training

- WHO surgical site infection training module (<http://www.who.int/infection-prevention/tools/core-components/en/> accessed 4 April 2018)
- SLMTA (<https://slmta.org/> accessed 4 April 2018)
- Webinar on the experience of Colombia in developing surveillance capacity across its hospital networks “Surveillance of infections associated with health care and consumption of antibiotics in the hospital setting”. (http://www.paho.org/hq/index.php?option=com_docman&task=doc_

[download&Itemid=270&gid=42491&lang=en](#)) Pan American Health Organization accessed 26 April 2018)

Selected publications

- Centers for Disease Control and Prevention Guidelines for evaluating surveillance systems. *Morb Mortal Wkly Rep.* 1988;37:1-18.
- Allegranzi B, Aiken AM, Kubilay Z, Nthumba P, Barasa J, Okumu G, et al. A multimodal infection control and patient safety intervention to reduce surgical site infections in Africa: a multicentre, before–after cohort study. *Lancet Infect Dis.* 2018 Mar 5 [Epub ahead of print].
- Barwolff S, Sohr D, Geffers C, Brandt C, Vonberg RP, Halle H, et al. Reduction of surgical site infections after caesarean delivery using surveillance. *J Hosp Infect.* 2006;64:156-61.
- Geubbels EL, Nagelkerke NJ, Mintjes-De Groot AJ, Vandenbroucke-Grauls CM, Grobbee DE, De Boer AS. Reduced risk of surgical site infections through surveillance in a network. *Int J Qual Health Care.* 2006;18:127-33.
- Stempluk V. Surveillance of healthcare-associated infections in low- and middle-income countries: from the need to a reality. *Curr Treat Options Infect Dis.* 2018. (<https://doi.org/10.1007/s40506-018-0148-x>).



CORE COMPONENT 5

MULTIMODAL STRATEGIES

– *Rapid recap*

Some health facilities may not yet be familiar with the concept of the multimodal strategy and its potential to support IPC improvement. Many may have used other approaches (for example, the Comprehensive Unit-based Safety Program (CUSP) for IPC implementation (see tools and resources) and do not realize that they include very similar concepts.

Consider how the multimodal approach can be promoted, for example, through the use of workshops, small training sessions and one-to-one conversations. If you have used a multimodal approach to support hand hygiene improvement, build on this and adapt the approach to all of the IPC core components and to specific IPC improvement programmes.



SAMPLE ACTION PLAN: MULTIMODAL STRATEGIES

To support the development of your action plan refer back to the “what, why, when, who, how” tables presented in Part II.

Priority gap	Action required and link to available tools/resources	Lead person and other team members	Timeline	Budget/resources
Lack of awareness, engagement, knowledge and value of a multimodal strategy	<ul style="list-style-type: none"> Review carefully the chapter on multimodal strategies in the WHO core components guidelines and Part II of this manual to understand fully the philosophy and the evidence underpinning this approach. Read the scientific publications listed below to understand how multimodal strategies were implemented to support successful IPC improvement programmes. Consider undertaking a formal audit or informal exploration of staff knowledge of multimodal strategies. Establish a series of short awareness-raising/training sessions with all relevant staff, including senior managers – use a multimodal strategy hand-out to engage staff during meetings and training sessions (see tools and resources). Ensure IPC training (orientation and ongoing) sensitizes trainees to the multimodal strategy (see tools and resources). Print out the scientific publications listed in the tools and resources section on the use of a multimodal strategy where it has improved IPC/ reduced HAI to present as evidence. Embed multimodal thinking into promotional materials for IPC. Develop champions across wards and health care facility management teams to develop multimodal thinking and promote the use of multimodal strategies. 	<ul style="list-style-type: none"> IPC lead 	3 months	Moderate
Strategies for IPC improvements do not systematically address all elements of a multimodal strategy (system change, education and training, monitoring and feedback, communication and reminders and culture change)	<ul style="list-style-type: none"> Raise awareness of multimodal strategy guiding questions as a prompt for incorporating multimodal approach into all IPC improvement, for example, direct dissemination of the guiding questions to senior nurses and doctors, IPC link nurses/practitioners; inclusion in IPC guidelines; inclusion in training. Develop leaflets or other documents to show concrete examples of the need for each element of the strategy to achieve behavioural change and the outcome impact in the context of a specific IPC programme you want to implement. 	<ul style="list-style-type: none"> IPC lead working with heads of departments 	3 months	Moderate
Linkages to colleagues from quality improvement and patient safety to help develop and promote IPC multimodal strategies is lacking	<ul style="list-style-type: none"> Set up meetings with relevant colleagues to advocate for a multimodal approach to IPC improvement and discuss how the WHO multimodal strategy is similar to other quality improvement approaches and explore how this strategy can be embedded within other quality initiatives. During meetings, start to role model multimodal thinking, for example, when discussing IPC challenges and potential solutions with colleagues, use the language of system change, training and education, audit and feedback, reminders and communications and safety climate. 	IPC lead	1 month	NA

Table 3H lists some of the common barriers to implementation of multimodal strategies that IPC leaders have encountered, together with some potential solutions. The final column signposts the reader to associated implementation examples, with a focus (not exclusively) on low-resource settings.

Table 3H. Potential barriers and solutions (core component 5)

Potential barrier	Potential solution(s)	Implementation examples
<p>Lack of understanding of multimodal strategies</p>	<ul style="list-style-type: none"> Describe to managers the critical role that a multimodal approach has in supporting implementation and behaviour change. Use hand hygiene as an example of what a multimodal approach means and develop a narrative to describe each of the five elements. 	<p>Raise awareness through workshops “We provided workshops for facility administrators to build awareness about this approach and its importance.” Senegal</p> <p>Use existing approaches, for example, hand hygiene to describe the multimodal approach “We used the case of hand hygiene. We advocated leadership for the need of regular soap and water. We asked doctors and nurses to be hand hygiene champions that other staff could follow. Each month, we have a hand hygiene champion award, one for a doctor and one for a nurse. The results are posted on the wall. These awarded champions become the real driver for hand hygiene improvement as people respect their award and those champions are then responsible for monitoring others on the wards. We hold regular hand hygiene workshops to train staff. We have also worked on bundles for catheter line-associated BSI and catheter insertion/maintenance. We also post the number of catheter line-associated BSI-free days on the wall per ward as another encouragement effort. We regularly monitor the implementation of these multimodal strategies and hold monthly IPC meetings including hospital leadership, microbiologist, infectious disease physicians and nurses to look at the data.” Pakistan</p> <p>Link to existing campaigns, for example, hand hygiene “We used an annual hand hygiene campaign to drive our multimodal approach. Leadership made a commitment to safety and allowed modest resources to implement the multimodal strategy. We have a quality indicator for hand hygiene adherence and we perform the self-assessment in different services throughout the year. We have conducted a range of training sessions and made staff observations across shifts. We are just starting to apply this multimodal strategy to other HAI objectives.” Argentina</p> <p>Start with hand hygiene “We are starting with a hand hygiene multimodal approach including training, the use of the self-assessment hand hygiene tool, feedback/publishing of results and communication and buy-in of the district medical officers. We have tried to advocate for the importance of the application of data. Technical assistance may be needed to analyze the data, but partners can sit with the relevant government officials to mentor on interpretation, use for action, and accountability.” WHO African Region</p>

Table 3H. Potential barriers and solutions (core component 5) continued

Potential barrier	Potential solution(s)	Implementation examples
<p>Difficulties addressing the “culture change” part of the multimodal strategy</p>	<ul style="list-style-type: none"> Consider use of existing adaptive approaches such as the CUSP and its practical adaptation to surgical services, that is, the Surgical Unit Safety Program (SUSP) that has been used in a number of health facilities in the USA and Africa. 	<p>Use adaptive approaches to focus on culture change</p> <p>“We were involved with a research study on surgical site infection and this gave us an opportunity to think carefully about designing a multimodal strategy to reduce it in our hospital. We first looked at a series of surgical site infection prevention measures that could be feasible and not too resource-intensive for our hospital, such as organization of the operating room, quality checklists and protocols for pre-operative bathing, avoiding hair removal, surgical hand and skin preparation and appropriate antibiotic prophylaxis. We wanted to design it in a way that could be sustainable and effective, with the hope that it could also be a model for other resource-constrained hospitals. We adapted CDC/NHSN case definitions and surveillance protocol to our setting for standardized data collection. Our site had a surgeon champion that could encourage the programme and provide mentorship to others. We conducted a patient safety questionnaire, which helped us to better discuss improved teamwork, communication and patient safety culture. We held regular patient safety rounds with senior executives and advocated for resources such as those for hand hygiene, including local production of alcohol-based products for surgical hand and surgical site preparation, and staff education. These elements made up the adaptive work to improve the safety culture of which the prevention measures were embedded in.” Kenya</p>

TOOLS AND RESOURCES

Advocacy

- Multimodal strategy 1-page handout (<http://www.who.int/infection-prevention/publications/ipc-cc-mis.pdf?ua=1> accessed 4 April 2018)
- Case study example from the National Children's Hospital Costa Rica (<http://www.who.int/features/2014/costa-rica-hand-hygiene/photos/en/index3.html> accessed 4 April 2018)

Planning

- Action plan templates (Annex 5)
- Multimodal strategy guiding questions (Annex 2)

Toolkits

- WHO Hand hygiene tools and resources (<http://www.who.int/infection-prevention/tools/hand-hygiene/en/> accessed 4 April 2018)
- WHO Surgical site infections tools and resources (<http://www.who.int/infection-prevention/tools/surgical/en/> accessed 4 April 2018)
- US Agency for Healthcare Research and Quality toolkit to promote safe surgery (<https://www.ahrq.gov/professionals/quality-patient-safety/hais/tools/surgery/index.html> accessed 4 April 2018)
- WHO Injection safety tools and resources (<http://www.who.int/infection-prevention/tools/injections/en/> accessed 4 April 2018)
- Comprehensive Unit-based Safety Program (CUSP, <https://www.ahrq.gov/professionals/education/curriculum-tools/cusptoolkit/index.html> accessed 4 April 2018)

Training

- WHO multimodal strategy slides - IPC training: leadership module (<http://www.who.int/infection-prevention/tools/core-components/en/> accessed 4 April 2018)
- WHO surgical site infection training tools and resources (http://www.who.int/infection-prevention/tools/surgical/training_education/en/ accessed 4 April 2018)
- WHO injection training tools and resources (<http://www.who.int/infection-prevention/>

[tools/injections/training-education/en/](http://www.who.int/infection-prevention/tools/injections/training-education/en/) accessed 4 April 2018)

Selected publications

- Allegranzi B, Aiken AM, Kubilay Z, Nthumba P, Barasa J, Okumu G, et al. A multimodal infection control and patient safety intervention to reduce surgical site infections in Africa: a multicentre, before–after cohort study. *Lancet Infect Dis.* 2018 Mar 5 [Epub ahead of print].
- Allegranzi B, Gayet-Ageron A, Damani N, Bengaly L, McLaws ML, Moro ML, et al. Global implementation of WHO's multimodal strategy for improvement of hand hygiene: a quasi-experimental study. *Lancet Infect Dis.* 2013;13:843-51.
- Johnson L, Grueber S, Schlotzhauer C, Phillips E, Bullock P, Basnett J, et al. A multifactorial action plan improves hand hygiene adherence and significantly reduces central line-associated bloodstream infections. *Am J Infect Control.* 2014;42:1146-51.
- Marra AR, Guastelli LR, de Araujo CM, dos Santos JL, Lamblet LC, Silva M, Jr., et al. Positive deviance: a new strategy for improving hand hygiene compliance. *Infect Control Hosp Epidemiol.* 2010;31:12-20.
- Talbot TR, Johnson JG, Fergus C, Domenico JH, Schaffner W, Daniels TL, et al. Sustained improvement in hand hygiene adherence: utilizing shared accountability a financial incentives. *Infect Control Hosp Epidemiol.* 2013;34:1129-36.
- Fuller C, Michie S, Savage J, McAteer J, Besser S, Charlett A, et al. The feedback intervention trial (FIT)—improving hand-hygiene compliance in UK healthcare workers: a stepped wedge cluster randomised controlled trial. *PloS One.* 2012;7:e41617.
- Provonost PJ, Berenholtz SM, Needham DM. Translating evidence into practice: a model for large scale knowledge translation. *BMJ.* 2008;337:a1714. doi: 10.1136/bmj.a1714
- Pronovost P, Needham D, Berenholtz S, Sinopoli D, Chu H, Cosgrove S, et al. An intervention to decrease catheter-related bloodstream infection in the ICU. *New Engl J Med.* 2006;355:2725-302.
- Pronovost PJ, Goeschel CA, Colantuoni E, Watson S, Lubomski LH, Berenholtz SM, et al. Sustaining reductions in catheter related bloodstream infections in Michigan intensive care units: observational study.

BMJ. 2010;340:c309.

- Pronovost PJ, Watson SR, Goeschel CA, Hyzy RC, Berenholtz SM. Sustaining reductions in central line-associated bloodstream infections in Michigan intensive care units: a 10-year analysis. *Am J Med Qual.* 2016; 31:197-202.
- Saint S, Greene MT, Krein SL, Rogers MA, Ratz D, Fowler KE, et al. A program to prevent catheter-associated urinary tract infection in acute care. *N Engl J Med.* 2016;374:2111-9.



CORE COMPONENT 6

MONITORING/AUDIT OF IPC PRACTICES AND FEEDBACK

– *Rapid recap*

According to the IPCAF results, you will be considering whether to establish a monitoring/audit and feedback programme or strengthen your existing programme. Based on the IPC/WASH indicators recommended to be monitored by WHO as part of this core component, consider what practices/processes will be evaluated and what will be the level of feedback of results. The monitoring/audit of IPC practices and feedback is a key element of multimodal strategies. Therefore, always consider what practices you aim to prioritize for improvement in your facility when selecting your indicators to be monitored.

Results should be shared with health care facility management, senior administration and wards and departments. The identification of clear roles and responsibilities, a schedule of feedback and the frequency of monitoring/audit are important considerations. If you have undertaken previous monitoring of hand hygiene, what lessons were learned that can feed in to this renewed effort and also on other indicators? If you have never undertaken IPC monitoring/audits before, consider starting with hand hygiene using the WHO HHSAF.



SAMPLE ACTION PLAN: MONITORING/AUDIT OF IPC PRACTICES AND FEEDBACK

To support the development of your action plan refer back to the “what, why, when, who, how” tables presented in Part II.

Priority gap	Action required and link to available tools/resources	Lead person and other team members	Timeline	Budget/resources
<p>No/limited resources for performing monitoring and audit:</p> <ul style="list-style-type: none"> no/limited financial resources no/limited human resources no/limited informatics support (for example, equipment, mobile technologies, electronic health records) 	<ul style="list-style-type: none"> Refer to core component 1 action plan template. Develop a business case to address: <ul style="list-style-type: none"> required monitoring/audit expertise (if not already included in the IPC team business case) using the multimodal strategy guiding questions; need for increased informatics capacity and resources. Identify whether expertise can be accessed from national or regional programmes. Explore the option of using existing monitoring/audit expertise from other programmes where available. Consider whether IPC indicators were already measured as part of other assessments in your facility (for example, WASH or JEE assessments). Explore the availability of web-based courses to support training. Consider starting with hand hygiene audits using the Hand Hygiene Technical Reference Manual and HHSAF to build the case for action (see tools and resources). Identify gaps using the IPCAF. 	<ul style="list-style-type: none"> Chief executive officer, senior manager Human resource department chief IPC lead 	2-3 months	Moderate
Lack of a well-defined, targeted plan for audit and monitoring (with clear goals, targets and activities)	<ul style="list-style-type: none"> Host an expert meeting to decide on evidence-based methods. Use known or suspected defects in practice/processes to target monitoring and audit activity and link to available HAI surveillance data. Ensure that monitoring and audit forms an essential part of the annual plan of the IPC team, contributing to continuous quality improvement and informing IPC activity. 	<ul style="list-style-type: none"> IPC lead and team 	2-3 months	Moderate
Lack of/limited support across the facility	<ul style="list-style-type: none"> Establish awareness-raising sessions with all relevant staff, including senior managers. Retrieve academic articles on the use of IPC monitoring and audit where it has improved IPC and reduced HAI to present as evidence (see tools and resources). Reflect on what is the time and resource investment and the procedures needed to be in place for IPC monitoring and audit in order to be able to explain to others and convince them. 	<ul style="list-style-type: none"> IPC lead and team 	2-3 months	Low

Sample action plan: Monitoring/audit of IPC practices and feedback continued

Priority gap	Action required and link to available tools/resources	Lead person and other team members	Timeline	Budget/resources
No feedback mechanism/frequency in place for reporting audit results	<ul style="list-style-type: none"> Identify all stakeholders who should receive feedback. Ensure feedback processes are an essential part of the annual plan of the IPC team and of the performance evaluation in the facility. Secure or create a range of feedback tools and presentation formats to ensure information will engage all relevant staff groups and use well-established communication means in the facility or innovative approaches. 	<ul style="list-style-type: none"> IPC lead and team 	2-3 months	Moderate
No assessment of safety culture in place (that facilitates monitoring in a blame-free culture)	<ul style="list-style-type: none"> Use culture assessment surveys (see tools and resources), for example, Agency for Healthcare Research and Quality, Hospital survey on patient safety culture. 	<ul style="list-style-type: none"> IPC lead and team 		Low

Table 3I lists some of the common barriers to implementation of IPC monitoring/audit and feedback programmes that IPC leaders have encountered, together with some potential solutions. Implementation examples provided are focused (not exclusively) on low-resource settings.

Table 3I. Potential barriers and solutions (core component 6)

Potential barrier	Potential solution(s)	Implementation examples
Securing support for audit	<ul style="list-style-type: none"> • Explain that monitoring/audit and feedback are key elements of multimodal improvement strategies and continuous quality improvement. • Narrow down the focus of your monitoring plan to an agreed area, use a multidisciplinary approach (including health care facility leaders), establish regular meetings and inform about monitoring and auditing activities and publicize results. • Participate in other audit programmes at sub-national and national level. • Collaborate with other established programmes to ensure that IPC is integrated within monitoring and supervision tools of different programmes, for example, quality improvement teams. • The linkage of IPC data to the health facility information systems is a prerequisite – talk to the information technology/audit personnel in the health care facility to explore how this can be achieved. • Advocate for monitoring and audit to take place as part of a culture of learning. • Consider the use of facilitative/supportive supervision including coaching and teaching to support professionals in strengthening monitoring and audit. 	<p>Multidisciplinary engagement</p> <p>“We regularly monitor the implementation of our multimodal strategies and hold monthly IPC meetings including hospital leadership, microbiologist, infectious disease physicians and nurses to look at the data. We also regularly email data results to senior management. We post the number of catheter line-associated-free days per ward and hand hygiene champion awards on the wall in the wards as data feedback and incentives.” Pakistan</p> <p>The power of data to make the case for an IPC programme</p> <p>“To gain support for an IPC programme, we first needed baseline data to convince leadership so we started with monitoring, audit and feedback as our first activity. We initially collected data manually and spent two years regularly discussing the results and needs in rounds and meetings. As we started to convince leadership, we started to copy hospital administrators on key staffing and resource emails to further encourage support. With time, the IPC programme grew to 10 nurses and one infectious diseases doctor. We were able to create a drop-down electronic software for better data collection, became involved in a regional surveillance programme that provided us with regular mentorship, and had great success with bundle implementation focusing on decreasing rates of device-associated infection. We emphasized a culture of “practice what you preach.” India</p>
Audit considered too time-consuming	<ul style="list-style-type: none"> • Start with small audits and manual data collection. • Consider the use of available technology to simplify the process and make data collection and dissemination of results easy, for example, using mobile technology (apps). • Consider using different approaches to enable a tailored approach to the local context, for example, direct observation of staff, processes or items. Other approaches are: focus group discussions; client satisfaction surveys (patient and staff); patient complaint systems; patient record reviews; clinical audits; review of adverse events including accidents and needlestick injuries; use of a “mystery client”- a process whereby an individual is engaged to present as a patient to a health facility in order to observe practices. 	<p>Start small and focus on one area</p> <p>“We had to start by manually collecting the data on a daily basis. During rounds in the intensive care unit, we would monitor catheter insertion and there would be shift duties 24/7. We developed our own benchmarks and goals. Once we gained support, we were able to create a drop-down electronic software. We expanded monitoring to bundle compliance and stewardship where antibiotics also needed a justification to prescribe.” India</p> <p>Use of mobile technologies to support audit</p> <p>“We have a smart phone app for hand hygiene observations. A hand hygiene team completes a ward audit every month according to a schedule for the entire hospital. We received the hand hygiene excellence award in 2015 for this work after having failed in 2013, so a large improvement was seen. After the award, other hospitals contacted us to learn from our experience.” Viet Nam</p>

TOOLS AND RESOURCES

Assessment

- WHO IPCAF (includes all documents referred to in the IPCAF) (<http://www.who.int/infection-prevention/tools/core-components/en/> accessed 2 May 2018)
- CDC Infection control assessment tools (<https://www.cdc.gov/hai/prevent/infection-control-assessment-tools.html> accessed 4 April 2018)
- Hand Hygiene Technical Reference Manual (http://apps.who.int/iris/bitstream/10665/44196/1/9789241598606_eng.pdf accessed 4 April 2018)
- WHO hand hygiene tools for evaluation and feedback (http://www.who.int/infection-prevention/tools/hand-hygiene/evaluation_feedback/en/ accessed April 16 2018)
- HHSAF (http://www.who.int/gpsc/country_work/hhsa_framework_October_2010.pdf?ua=1 accessed 4 April 2018)
- Agency for Healthcare Research and Quality Hospital Survey on Patient Safety Culture (<https://www.ahrq.gov/sops/quality-patient-safety/patientsafetyculture/hospital/index.html> accessed 4 April 2018)
- Safety attitudes questionnaire (<https://psnet.ahrq.gov/resources/resource/3601> accessed 4 April 2018)
- Patient safety climate in healthcare organizations (http://www.midss.org/sites/default/files/pscho_survey_2006.pdf accessed 4 April 2018)
- Safety climate scale (<https://www.hsl.gov.uk/products/safety-climate-tool> accessed 4 April 2018)

Planning

- Action plan templates (Annex 5)
- Multimodal strategy guiding questions (Annex 2)

Selected publications

- A.J. Stewardson, B. Allegranzi, T.V. Perneger, H. Attar, D. Pittet. Testing the WHO Hand Hygiene Self-Assessment Framework for usability and reliability. *J Hosp Infect.* 2013;83:30-5.
- Measuring safety culture. The Health Foundation. 2011 (<http://www.health.org.uk/sites/health/files/MeasuringSafetyCulture.pdf> accessed 4 April 2018)

- Charrier L, Argentero P, Farina EC, Serra R, Mana F, Zotti CM. Surveillance of healthcare-associated infections in Piemonte, Italy: results from a second regional prevalence study. *BMC Public Health.* 2014;14: 558.
- Fisher D, Tambyah PA, Lin RT, Jureen R, Cook AR, Lim A, Ong B, et al. Sustained meticillin-resistant *Staphylococcus aureus* control in a hyper-endemic tertiary acute care hospital with infrastructure challenges in Singapore. *J Hosp Infect.* 2013;85:141-8.
- Moongtui W, Gauthier DK, Turner JG. Using peer feedback to improve handwashing and glove usage among Thai health care workers. *Am J Infect Control.* 2000;28:365-9.
- Yinnon AM, Wiener-Well Y, Jerassy Z, Dor M, Freund R, Mazouz B, Lupyan T, et al. Improving implementation of infection control guidelines to reduce nosocomial infection rates: pioneering the report card. *J Hosp Infect.* 2012;81:169-76.



CORE COMPONENT 7

WORKLOAD, STAFFING AND BED OCCUPANCY – *Rapid recap*

Assessing this core component and taking action to ensure that the WHO recommendation is adequately addressed will involve close discussions and synergy between the IPC team and facility senior managers and directors. You play a key role in explaining to the senior managers why these aspects are crucial for reducing the transmission risk and ensuring patient and health care worker safety in the context of both the endemic and the epidemic burden of HAIs and AMR. Identifying appropriate staffing levels according to patient workload and decisions regarding workload, staffing and bed occupancy are a challenge.

The support of your regional and national colleagues in this field (heads of health services, human resources, workforce planning or equivalent) will be a key consideration. The WHO Workload Indicators of Staffing Need (WISN) (see tools and resources) is a human resource planning and management tool that gives health managers a simple way to analyze and calculate staff distribution, workload and productivity. The WISN approach is based on a health worker's workload, with activity (time) standards applied for each workload component. If national standards regarding workload, staffing and bed occupancy are available, these should be the reference, although a comparison with WISN requirements could be useful.



SAMPLE ACTION PLAN: WORKLOAD, STAFFING AND BED OCCUPANCY

To support the development of your action plan refer back to the “what, why, when, who, how” tables presented in Part II.

Priority gap	Action required and link to available tools/resources	Lead person other team members	Timeline	Budget/resources
No mechanism in place to assess appropriate staffing levels and no national standards available	<ul style="list-style-type: none"> Refer to the WISN user manual (see tools and resources). Calculate the required number of staff according to planned responsibilities, activity workload and available time. 	<ul style="list-style-type: none"> Head of nursing Head of human resources/personnel 	1 week	Not applicable
No mechanism in place for reporting/acting on ratio of health workers to patients	<ul style="list-style-type: none"> Raise this matter during planned meetings with the head of nursing, medical director/superintendent, chief executive officer/health care facility administrator, head of patient safety and quality and head of human resources/personnel. Discuss the results of the IPCAF and explain the importance of these parameters to reduce the transmission risk and ensure patient and health care worker safety in the context of both the endemic and the epidemic burden of HAIs and AMR. Listen to their observations and the challenges they may encounter and seek their proposed solutions. Document discussions and proposed actions. Make a reasonable plan for improving workload and staffing including estimation of budget implications. 	<ul style="list-style-type: none"> Head of nursing Medical director/superintendent Head of patient safety Head of quality Head of human resources/personnel 	3-6 months	High
No system in place to address, for example, bed occupancy levels routinely exceeding one patient to one bed and/or bed spacing between patients routinely less than 1 metre	<ul style="list-style-type: none"> Raise this matter during planned meetings with the head of nursing, medical director/superintendent and chief executive officer/health care facility administrator. Discuss the results of the IPCAF and explain the importance of not exceeding one patient per bed and ensuring adequate bed locations (for example, no beds in the corridor, no patients on the floor) and space between beds (> 1 metre) to reduce the transmission risk and ensure patient safety. Outline optimal ward design in accordance with international standards regarding bed capacity, bed spacing and seek their proposed solutions. Document discussions and proposed actions. Make a reasonable plan for improving bed occupancy including estimation of budget implications. 	<ul style="list-style-type: none"> Head of nursing Medical director/superintendent Head of patient safety Head of quality 	3-6 months	High

Table 3J lists some of the common barriers to implementation of approaches to address workload, staffing and bed occupancy that IPC leaders have encountered, together with some potential solutions. Implementation examples provided are focused (not exclusively) on low-resource settings.

Table 3J. Potential barriers and solutions (core component 7)

Potential barrier	Potential solution(s)	Implementation examples
Insufficient human resources, including insufficient human resources for IPC	<ul style="list-style-type: none"> • Use of link nurses/practitioners can add extra human resource capacity as an interim measure and build IPC champions at the local level. • Consider task sharing. 	<p>Use of link nurses/practitioners to achieve one IPC nurse to 250 beds</p> <p>“We have found the way to achieve 1 IPC person/250 beds is through the link nurse system and it is being introduced accordingly. This has necessitated continued advocacy to push for this system. For large central hospitals, this is not ideal and it is where we face major challenges in organizing a well-integrated effective IPC programme including appropriate staffing.” Zimbabwe</p> <p>Task sharing to increase IPC capacity</p> <p>“We have explored different task-sharing models.” Liberia</p>
Demand for beds exceeds current capacity	<ul style="list-style-type: none"> • Smaller beds in paediatric wards. • Review of admission and discharge processes. • Leverage outbreak and AMR transmission risks to lobby for one patient to one bed. 	<p>Creative solutions to create extra space and capacity</p> <p>“Adaptation is an opportunity here. For bed occupancy, we encourage putting smaller beds in paediatric wards, decentralizing care to outside the hospital when possible, and removing other support facilities from the hospital compound to create additional space there. We also wrote guidance on staffing levels that we recommend.” Médecins Sans Frontières/Doctors Without Borders</p> <p>Demonstrating leadership skills to address overcrowding</p> <p>“We had more patients coming in than beds available and, especially in the mornings, it meant we couldn’t cope if, for example, we had a problem like lots of diarrhoea. Our local community had a lot of trust in the clinic and community leaders were concerned about the overcrowding. As the IPC focal person, I made it a priority to address this challenge. I heard about using smaller beds for paediatrics and convinced the managers to let me do it, explaining that overcrowding won’t help us stopping spread from occurring. We also looked at streamlining admission and discharge processes and how this can affect bed availability. Getting the patients in and out of the clinic reduces the number of beds used, allows the staff to stay organized, and helps patients feel better faster. We of course had to train staff on these changes in policy, on how these improvements can help manage increased numbers of patients and prevent spread of infection. Getting our leaders’ support was so important to help to build a culture that values the importance of stopping overcrowding.” WHO African Region</p> <p>Leverage outbreaks to support the case for stopping multiple bed occupancy</p> <p>“For bed occupancy, it is now generally accepted that floor beds and sharing of incubators is a recipe for infection and has been avoided (that is, impressions, learned lessons through outbreaks, not audits).” Zimbabwe</p>

TOOLS AND RESOURCES

Assessment

- WISN user manual; software manual and case studies (http://www.who.int/hrh/resources/wisn_user_manual/en/ accessed 6 April 2018)
- Applying the WISN method in practice - Case studies from Indonesia, Mozambique and Uganda (http://www.who.int/hrh/resources/wisn_case_studies/en/ accessed 6 April 2018)
- WHO Human resources for health tools and guidelines (http://www.who.int/hrh/tools/situation_analysis/en/ accessed 6 April 2018)
- Ghana staffing norm tool (Excel sheet) – available via IPC and WASH Learning Pod (<http://www.who.int/servicedeliverysafety/areas/qhc/schematic-GLL.pdf?ua=1> accessed 4 April 2018)

Planning

- Action plan templates (Annex 5)
- Multimodal strategy guiding questions (Annex 2)

Selected publications

- Ravhengani NM, Mtshali NG. Implementing Workload Indicators of Staffing Need (WISN) Tool to determine human resources in primary health care settings in South Africa: a concept analysis. *J Nurs Health Sci.* 2017; 6: 65-73.
- Govule P, Mugisha JF, Katongole SP, Maniple E, Nanyingi M, Anguyo R, et al. Application of Workload Indicators of Staffing Needs (WISN) in determining health workers' requirements for Mityana General Hospital, Uganda. *Int J Public Health Res.* 2015;3: 254-63.
- Borg MA. Bed occupancy and overcrowding as determinant factors in the incidence of MRSA infections within general ward

settings. *J Hosp Infect.* 2003;54:316-8.

- Borg MA, Suda D, Scicluna E. Time-series analysis of the impact of bed occupancy rates on the incidence of methicillin-resistant *Staphylococcus aureus* infection in over-crowded general wards. *Infect Control Hosp Epidemiol.* 2008;29(6):496-502.
- Hugonnet S, Chevolet JC, Pittet D. The effect of workload on infection risk in critically ill patients. *Crit Care Med.* 2007;35:76-81.
- Zingg W, Holmes A, Dettenkofer M. Hospital organisation, management, and structure for prevention of health-care-associated infection: a systematic review and expert consensus. *Lancet Infect Dis.* 2015;15:215-24.



CORE COMPONENT 8

**BUILT ENVIRONMENT,
MATERIALS AND
EQUIPMENT FOR IPC**
– Rapid recap

Without a supportive built environment, materials and equipment for IPC, improvement will be challenging. To identify infrastructure and supply gaps that hamper IPC implementation is one of the key tasks of the IPC lead/team. It is important to connect with colleagues working in the field of WASH to build a strong case for addressing identified gaps. Start small – focus on one area such as waste management.



SAMPLE ACTION PLAN: BUILT ENVIRONMENT, MATERIALS AND EQUIPMENT FOR IPC

To support the development of your action plan refer back to the “what, why, when, who, how” tables presented in Part II.

Priority gap	Action required & link to available tools/resources	Lead person & other team members	Timeline	Budget/resources
Water (for example, for hand hygiene, drinking, personal hygiene, medical activities, sterilization, decontamination, cleaning and laundry) not available consistently (less than 5 days per week) and/or not of good quality	<ul style="list-style-type: none"> • Talk to district health officer, district and local water engineer/committee about securing additional water through drilling new boreholes, connecting to existing piped supply or supplementing with rainwater. • Make microbiological water sampling to assess its quality and examine the results in comparison with international drinking water standards. • Explore possibilities of adding water storage for ensuring supplies are available during periods of supply problems. • Explore recognized methods for producing safe drinking-water. 	<ul style="list-style-type: none"> • WASH focal person (if they exist) 	2-3 months	Moderate
Functioning hand hygiene stations not available or available, but not sufficient at all points of care	<ul style="list-style-type: none"> • Install simple hand hygiene stations comprising ABHR and handwashing materials e.g. a Veronica bucket with tap soap and single use towels, at all points of care and next to toilets as an effective measure to improve accessibility while longer-term piped water solutions are being sought. 	<ul style="list-style-type: none"> • Head nurse • Head of management 	1-3 months	Low Approximately 10-15 USD/station
No cleaning records available, for example, for floors, horizontal work surfaces, toilets	<ul style="list-style-type: none"> • Create cleaning record forms and work with cleaning staff to ensure the forms are used effectively. 	<ul style="list-style-type: none"> • Cleaning lead • IPC lead 	1 week	Not applicable
No single rooms available for patient isolation	<ul style="list-style-type: none"> • Establish a contingency to use cohort areas within wards/cohort wards if available. • Plan and standardize procedures for patient placement in case of need for isolation. 	<ul style="list-style-type: none"> • IPC lead • Clinical director • Head of nursing 	2-3 months	Low
Functioning environmental ventilation (natural or mechanical ¹) is not available in patient care areas	<ul style="list-style-type: none"> • Undertake critical review of all available areas with a plan to improve natural ventilation. 	<ul style="list-style-type: none"> • IPC lead • Clinical director • Head of nursing 	2-3 months	Not applicable

¹ Natural ventilation: outdoor air driven by natural forces (for example, winds) through building purpose-built openings, including windows, doors, solar chimneys, wind towers and trickle ventilators. Mechanical ventilation: air driven by mechanical fans installed directly in windows or walls or in air ducts for supplying air into, or exhausting air from, a room. More information at: http://www.who.int/water_sanitation_health/publications/natural_ventilation/en/, accessed 7 April 2018.

Sample action plan: Built environment, materials and equipment for IPC continued

Priority gap	Action required & link to available tools/resources	Lead person & other team members	Timeline	Budget/resources
Appropriate and well-maintained materials for cleaning (for example, detergent, mops, buckets, etc.) are not available	<ul style="list-style-type: none"> Put forward case for dedicated budget for stocks. Ensure system is in place to procure materials and replenish stocks. Prepare and put in place cleaning schedules and protocols to address planning, frequency, products and procedures. 	<ul style="list-style-type: none"> Cleaning lead IPC lead 	2-3 months	Low
Functional waste collection containers for non-infectious (general) waste, infectious waste and sharps waste in close proximity to all waste generation points are not or poorly available	<ul style="list-style-type: none"> Inform health care facility administrators/managers about identified problems. Explain the advantages of appropriate waste management and the impact of ineffective segregation of infectious and non-infectious waste. Develop and implement a waste management policy informed by the multimodal guiding questions that addresses availability of simple, leak-proof colour-coded and/or labelled containers that meet international and national standards (usually black, red and yellow) at all points of care, segregation, training, audit and feedback, promotion and communication and a culture of safety. 	<ul style="list-style-type: none"> Head nurse Head of management Health care waste technician 	3-6 months	Low
General appearance of the facility is untidy, with debris and litter visible throughout	<ul style="list-style-type: none"> Develop a plan for improving cleaning informed by the multimodal guiding questions. Consider the role and value of a “clean hospital” campaign as part of the multimodal approach. 	<ul style="list-style-type: none"> All members of WASH FIT team (where in place) IPC team 	3-6 months	Low - little financial cost, other than time

Table 3K (overleaf) lists some of the common barriers to implementation of approaches to strengthen the built environment, materials and equipment for IPC that IPC leaders have encountered, together with some potential solutions. Implementation examples provided are focused (not exclusively) on low-resource settings.

Table 3K. Potential barriers and solutions (core component 8)

Potential barrier	Potential solution(s)	Implementation examples
Lack of expertise on the built environment and IPC	<ul style="list-style-type: none"> Explore the existence of training for IPC professionals and/or clinical engineers/architects on IPC related to the built environment, for example, at the national level. 	<p>Seek access to national training and capacity building courses</p> <p>“District hospitals are usually well designed but renovations of old buildings have created IPC problems. Challenges related to lack of WASH, waste management (for example, shortage of functional incinerators) and linen management (for example, non- functioning or semi-functional laundries) are common. We have established a working group on infrastructure under the national IPC committee. The first activity is training for architects and engineers from the ministry of construction planned for 2017, specifically to highlight IPC issues. We have also conducted training in hospital design for certified facility IPC trainers, which has raised the profile of IPC for renovations. Other funding has allowed for the purchase of one incinerator, for minor renovations (for example, ensuring windows open in outpatient departments) and for shelters to reduce overcrowding. We also tried to link with water projects and hand hygiene school projects.” Zimbabwe</p>
Poor compliance with waste management	<ul style="list-style-type: none"> Use simple, small scale quality improvement approaches based on a multimodal approach to enhance compliance with waste management guidelines. 	<p>Small scale quality improvement projects for improving waste management</p> <p>“(One) hospital has implemented a quality improvement project to increase waste management compliance. As part of the intervention, they started using coloured bin markers (or marked bin liners with a marker) to segregate waste at the point of disposal. The nurses responded that it makes less work for them, so it easy to sustain and continue.” Sierra Leone</p>
Lack of reliable water supply for hand hygiene	<ul style="list-style-type: none"> Consider local production of alcohol-based handrub and/or installing simple handwashing stations. 	<p>Lobby for the use of alcohol-based handrub for hand hygiene to overcome water shortages</p> <p>“Despite resource constraints, we advocated with leadership to install alcohol-based handrub antiseptic dispensers and support local production of alcohol-based products for surgical hand and surgical site preparation.” Kenya</p> <p>Install simple handwashing stations at all points of care and next to toilets</p> <p>“Even though we did not have water at the health facility, with support from an NGO and community leaders, we purchased simple handwashing stations and soap and placed them at all points of care and next to the toilets. The cleaner is responsible for filling them daily by taking water from a nearby community well. Both staff and patients alike appreciate having water and soap available at all times, and for all handwashing purposes.” Mali</p> <p>Conduct cleaning campaigns to improve the general appearance of the facility environment</p> <p>“Once a month, the whole team is involved in a cleaning campaign to tidy the facility grounds and communal and waiting areas. This improves the overall appearance of the facility, which makes people want to come to use the services. By removing rubbish, it also reduces risk of infection and breeding sites for mosquitos.” Ethiopia</p>

TOOLS AND RESOURCES

Action planning tools

- Action plan templates (Annex 5)
- Multimodal strategy guiding questions (Annex 2)

Templates

- Example roles and responsibilities of the IPC team (Table 3C)
- Assessment
- WHO Water and sanitation for health facility improvement tool (WASH FIT) (http://www.who.int/water_sanitation_health/publications/water-and-sanitation-for-health-facility-improvement-tool/en/ accessed 6 April 2018)
- WASH FIT digital (<https://washfit.org/#/> accessed 6 April 2018)
- Planning, design, and construction of health care facilities. Addressing Joint Commission and JCI standards and other considerations— from planning to commissioning. Third edition. 2015 (<http://www.jointcommissioninternational.org/assets/1/14/EBPDC15Sample.pdf> accessed 4 April 2018)
- WHO hand hygiene tools for system change (http://www.who.int/infection-prevention/tools/hand-hygiene/system_change/en/ accessed 16 April 2018)

Sample policies/guidelines/guidance and training

- WHO Safe management of wastes from health-care activities (http://www.who.int/water_sanitation_health/publications/wastemanag/en/ accessed 4 April 2018)
- WHO Essential environmental health standards in health care (http://www.who.int/water_sanitation_health/publications/ehs_hc/en/ accessed 26 April 2018)
- American Institute of Architects. Guidelines for design and construction of hospital and health care facilities. 2001. (<https://www.fgiguide.org/wp-content/uploads/2015/08/2001guidelines.pdf> accessed 4 April 2018)
- WHO Guidelines for drinking-water quality. Fourth edition, incorporating the 1st addendum (http://www.who.int/water_sanitation_health/publications/drinking-water-quality-guidelines-4-including-1st-addendum/en/ accessed 4 April 2018)

- Guidance for producing safe drinking-water (http://www.who.int/water_sanitation_health/publications/potable-reuse-guidelines/en/ accessed 7 April 2018)
- Second edition of cholera standard operating procedures train of trainers - available via IPC and WASH Learning Pod (<http://www.who.int/servicedeliverysafety/areas/qhc/schematic-GLL.pdf?ua=1> accessed 7 April 2018)

Advocacy materials

- Tackling antimicrobial resistance: supporting national measures to address IPC and WASH in health care settings (https://www.washinhc.org/fileadmin/user_upload/documents/AMR_IPC_WASH_FlyerNov2016-1.pdf accessed 7 April 2018)

Selected publications

- Bannister B, Puro V, Fusco FM, Heptonstall J, Ippolito G. EUNID Working Group Framework for the design and operation of high-level isolation units: consensus of the European Network of Infectious Diseases. *Lancet Infect Dis.* 2009;9:45-56. ([https://www.thelancet.com/journals/laninf/article/PIIS1473-3099\(08\)70304-9/fulltext?code=lanacet-site](https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(08)70304-9/fulltext?code=lanacet-site) accessed 4 April 2018)
- Abrampah NM, Montgomery M, Baller A, Ndivo F, Gasasira A, Cooper C, et al. Improving water, sanitation and hygiene in health-care facilities, Liberia. *Bull World Health Organ.* 2017;95:526-30.



STEP 3 CHECKLIST

At the end of step 3 you should have:

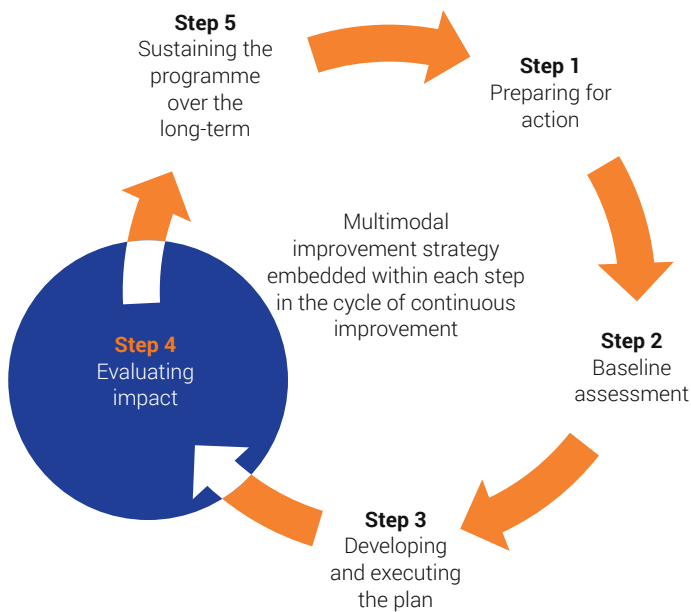


1.	Printed the action plan template and multimodal strategy guiding questions	<input type="checkbox"/>
2.	Prioritized actions for each priority core component	<input type="checkbox"/>
3.	Reviewed the key considerations for each relevant core component	<input type="checkbox"/>
4.	Reviewed the potential barriers and solutions and implementation examples	<input type="checkbox"/>
5.	Checked on the available tools and resources to support implementation	<input type="checkbox"/>
6.	Completed your action plan for each priority core component	<input type="checkbox"/>
7.	Arranged to meet with health care facility leaders to discuss your action plan	<input type="checkbox"/>
8.	Ensured that the action plan forms an agenda item at the IPC committee or equivalent health care facility committee and will be regularly updated/reviewed for progress	<input type="checkbox"/>



STEP 4
ASSESSING
IMPACT

STEP 4 ASSESSING IMPACT



PRACTICAL TIPS, KEY CONSIDERATIONS AND ACTIONS

Before repeating the IPCAF and other assessments work through the key considerations and key actions table (table 4A).

Introduction to step 4

- Step 4 is a critical step for decision-making, sustainability and modifying IPC annual plans. It is concerned with collecting the evidence/data to determine what has worked, what actions still need to be undertaken and what resources are needed to make the necessary ongoing improvements.
- This step involves conducting a follow-up assessment to evaluate whether your action plans have worked and to identify the achievement of any impact. It involves reviewing each of your action plans and repeating the IPCAF and any other relevant assessments (for example, WHO HHSFAF) using the same methodology and tools used for step 2 or previously. Step 4 will provide the necessary data to highlight where improvements have been made and where gaps remain. This step will also help consolidate the improvements made through the implementation of your action plans developed in step 3 and provide the basis for step 5.

Table 4A. Key considerations and actions (step 4)

Key considerations	Key actions
Tracking progress	<ul style="list-style-type: none"> • First, gather together your action plan and IPCAF results from step 2. • Review the IPCAF scores and review the action plan with your team. • Gather together any existing or routinely collected data relevant to IPC.
Agreeing on roles and responsibilities	<ul style="list-style-type: none"> • Decide with colleagues and managers who will undertake the repetition of the IPCAF – mirror the approach taken in step 2. • Consider involving individuals working on the wards if possible to secure ongoing engagement for IPC improvement and help to foster a culture of learning.
Timeline for completion	<ul style="list-style-type: none"> • During meetings decide on a schedule and timeline for completion.
Analysing the results	<ul style="list-style-type: none"> • Using the scoring chart, complete the scores for each section and calculate your overall score. • Compare results with the baseline assessment and discuss with the IPC team where progress has been made and where gaps still exist - overall and according to each core component. • Using the information in the repeated IPCAF, review each action from the original action plan and make a note of achievements and gaps. • What are the results telling you about what is working and what is not working? • Discuss with the IPC committee and make summary notes to guide your discussions with facility leadership and stakeholders. • Prepare a presentation using the sample IPCAF presentation slides (see tools and resources).
Presenting the results and developing a regular schedule of evaluation	<ul style="list-style-type: none"> • Arrange a series of meetings to communicate the findings of the repeated IPCAF to senior managers, leaders of the facility clinical services (including medical and nursing leads of the clinical areas where IPC action plans were implemented) and departments and other relevant departments, for example, quality and safety, AMR, WASH. • Use the IPCAF presentation and encourage group discussion, constructive feedback and problem solving. • Ask leaders and stakeholders for their feedback on the results – what do they think is working/not working? What actions do they think are required for further improvement? • Develop a new plan of action, where required, to address new or continuing gaps and challenges. • Agree a regular schedule of evaluation to assess the impact of your revised action plan, including an agreed frequency of repeat IPCAFs. At a minimum it is suggested that you repeat the IPCAF annually. • Prepare a short report summarizing achievements and gaps (see template, Annex 4). • Share the report with senior managers and leaders, wards and departments who participated in the assessment and other relevant departments. All those involved in implementing IPC improvements should receive feedback on what has worked and what has not – this is important for ongoing engagement and sustainability. • Make sure that achievements and team/champion efforts are recognized by rewarding them in a culturally sound manner (for example, prizes, best performing team pictures displayed at the entrance of the facility, celebration party, participation in conferences).

UPDATING YOUR ACTION PLANS

You are now ready to modify your action plans or develop new plans, informed by the results of the IPCAF and other repeated assessments and the key actions listed above using the action plan template in Annex 5.

TOOLS AND RESOURCES

Refer to all tools listed in step 2



STEP 4 CHECKLIST

At the end of step 4 you should have:

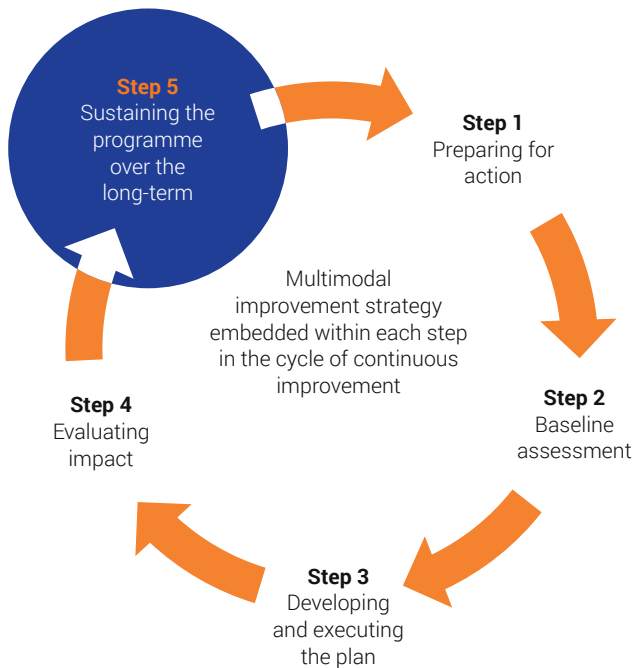


1.	Reviewed your baseline assessment results from step 2	<input type="checkbox"/>
2.	Reviewed your action plan from step 3	<input type="checkbox"/>
3.	Reviewed your IPC annual plan (where one exists)	<input type="checkbox"/>
4.	Printed new copies of the IPCAF (and other relevant assessment tools)	<input type="checkbox"/>
5.	Agreed a schedule and timeline for repeating the IPCAF (and other assessments)	<input type="checkbox"/>
6.	Completed the repetition of assessments	<input type="checkbox"/>
7.	Reviewed results in comparison with baseline assessment results from step 2 and presented findings to leaders and other stakeholders	<input type="checkbox"/>
8.	Developed a new action plan based on the identified gaps and challenges	<input type="checkbox"/>
9.	Agreed a frequency for repeating IPCAFs (and other assessments) in the future – at least annually	<input type="checkbox"/>
10	Prepared and presented a report to senior managers and leaders, wards and departments who implemented improvement action plans and participated in the assessments, and other relevant departments	<input type="checkbox"/>



STEP 5
**SUSTAINING
THE PROGRAMME
OVER THE
LONG TERM**

STEP 5 SUSTAINING THE PROGRAMME OVER THE LONG TERM



- Based on the information obtained in step 4 you can now see clearly where improvements have been made and where gaps remain.
- Step 5 is concerned with regularly reviewing and improving IPC with new actions (for example, projects, themes, campaigns) to help institutionalize IPC improvement.
- It is important to build on the communication channels and the organization of the IPC programme established so far to ensure that IPC is considered a critical part of the business of your health facility.
- If regularly involved and consulted, the IPC committee will have an important role in supporting this effort.
- During this step, you will establish an ongoing review and engagement cycle to support the long-term impact and benefits of the programme and ensure it is embedded in existing processes across your health facility, thus contributing to its overall impact and sustainability.
- Even if you have not systematically worked through each of the steps in this practical manual, it may still be beneficial to consider the practical tips, key considerations and actions in step 5.



PRACTICAL TIPS, KEY CONSIDERATIONS AND ACTIONS

Table 5A lists a series of interlinked key considerations and suggested actions.

Table 5A. Key considerations and actions (step 5)

Key considerations	Key actions
Building on the momentum generated during steps 1-4 to drive forward a sustainable plan	<ul style="list-style-type: none"> • Use the revised action plan and IPCAF results to develop a long-term (5- year) plan including a regular (at least annual) review cycle to address long-term sustainability. • Ask the IPC committee to review this approach and incorporate its input for its finalization.
Maintaining leadership support for long-term IPC improvement	<ul style="list-style-type: none"> • Arrange meetings with health care facility managers and leaders to secure long-term leadership and management support for the IPC programme. • Discuss the process, actions and impact so far by building upon success and progress. Highlight current challenges and areas for further improvement and risks if sustainability is not ensured and maintained – share the new action plan and long-term approach – encourage discussion and feedback. • Arrange meetings with identified champions and opinion leaders to thank them for their support, gather their advice on the long-term plans, and discuss how they can continue to support IPC in the facility. • Use the “scripts” you developed in step 1 or have created since then as part of your ongoing engagement strategy, particularly when you need to keep messages short and to continue to outline and reiterate the IPC vision. • Establish a process to provide regular feedback on action plan progress, for example, through the IPC committee and other relevant committees, for example, safety and quality.
Maximising a multimodal approach for success	<ul style="list-style-type: none"> • Highlight the current situation and ongoing plans from your revised action plan and encourage group discussion and problem solving in relation to: <ul style="list-style-type: none"> ▸ financial, human and other necessary resource requirements - encourage discussion on how to secure the necessary resources; ▸ current and future training and education needs; ▸ planned monitoring and feedback; ▸ communication about the IPC journey so far and emerging successes - build a portfolio of success stories and communicate examples of success to key stakeholders inside the facility and external groups and networks, for example, community/civil society bodies, as part of ongoing awareness raising; ▸ ongoing leadership support.
Celebrating and communicating success	<ul style="list-style-type: none"> • In addition to meetings with stakeholders, consider other creative ways to continue to celebrate and communicate success, for example, is it feasible to write-up your improvement journey for academic publication or presentation at a national (or international) conference? • Is there an opportunity to publicize the work in the health care facility newsletters or intranet (where it exists) or via the local media (newspaper, radio or television). • What about the potential use of social media/social networks such as YouTube to show videos or podcasts if these are relevant to your setting? • Where appropriate for your context, consider the use of incentives to motivate staff as part of an ongoing approach for rewarding progress (for example, offering educational opportunities, such as participation in national or international IPC courses/workshops).

Table 5B lists some of the common barriers that IPC leaders have encountered, together with some potential solutions. The final column signposts the reader to associated implementation examples with a focus (not exclusively) on low-resource settings.

Table 5B. Potential barriers and solutions and implementation examples (step 5)

Potential barrier	Potential solution(s)	Implementation example
Key leaders and/or champions leave the facility	<ul style="list-style-type: none"> Consider periodic refreshing or re-launching of the IPC improvement programme – build this into your long-term plans. Think about succession planning – improvement cannot rely solely on one person. Encourage leaders/champions to coach others before leaving the facility. Leverage and inspire the young human resources in your facility, that is, stimulate young doctors/nurses to invest in the development of their leadership skills and ask them to take on responsibilities. Meet new leaders and present the story of your facility, highlighting successes and benefits for the facility. Consider using the advocacy resources detailed in step 1 in your interaction with new leaders and champions. Encourage leaders/champions to publicize their support for IPC using newsletters or other channels. Target potential future champions for one-to-one meetings and use advocacy materials (see step 1) to “sell” the case for IPC. 	<p>The power of an inspirational leader in supporting long-term improvement</p> <p>“In the middle of the implementation of an ambitious surgical site infection prevention project (SUSP), we lost our senior, very respected lead, Dr Peter Ongom. This project was very important for the safety of our surgical patients as the infection rate was high. Dr Ongom was an outstanding role model and he left a remarkable legacy behind him. After an initial confused period, we (his young surgeon fellows) started to meet and discuss his style and approaches in leading the programme. Subsequently, we began to take up the challenge and to play his role. As a result, the SUSP project has been very successful in our facility and has decreased the surgical site infection rates by more than 60%, which is also a fitting tribute to the commitment and memory of Dr Ongom.”</p> <p><u>Uganda</u></p>
IPC fatigue – other perceived priorities emerge	<ul style="list-style-type: none"> Continue to connect with and link IPC improvements with AMR, quality and safety and health service resilience (that is, to prevent catastrophic outbreaks) to refresh messages to present IPC as a priority and build a strong case for a continued focus on IPC – emphasize the risks if IPC is no longer prioritized, including financial and human costs. Promote IPC as an important part of regulation and accreditation. Leverage national and international campaigns to ensure IPC maintains a profile, for example. WHO 5 May SAVE LIVES: Clean Your Hands campaign. Disseminate information about the programme and its successes to patient and civil society groups and gain their engagement to actively contribute to sustainability. Consider the use of twinning partnerships to support IPC improvement. Discuss with other IPC teams and committees from other facilities to learn how they have overcome fatigue and refreshed their programmes. Use the WHO Global Learning Laboratory IPC/WASH Learning Pod network to pose questions on sustainability and what has worked in other facilities. 	<p>Infection control is a process of continuous renewal</p> <p>“My hospital is one of the accredited hospitals in my country. Although we were able to achieve the utmost infection control standards to obtain such accreditation, we continue to evaluate and update our action plan, infection control programme, training programme, organization of the infection control committee and the surveillance programme annually, based on the yearly risk assessment, as well as our infection control policies and procedures every two years. During these long processes of revising and updating, we always find a new touch to be added and many areas still need improvement.”</p> <p><u>Egypt</u></p> <p>Using peer comparison and review</p> <p>“For hospitals to continue to see IPC as the pivot of health care, we have instituted annual peer review and one of the models is IPC. Facilities are scored and compared with their peers on how they are doing and this is keeping all the facilities on their toes.” <u>Ghana</u></p>
Budget reallocation – funds diverted away from IPC	<ul style="list-style-type: none"> Refresh your data and business case for IPC. Engage with patients and collect patient stories of the impact of infection on patients and their families to build the case for ongoing funding. Explore all avenues for funding to sustain the work, including NGOs and grant applications. 	

Box 10. Case study – implementation success in an Indian health care facility

In a health facility in India, a small group of passionate IPC champions started a long process of improvement from virtually no IPC programme to progressing to the successful establishment of a fully functional programme that addresses the eight core components – here is a summary of their story.

- At the start of the journey was an acknowledgement that leadership support was critical. During their preparatory discussions (step 1), the team agreed that baseline data was critical in order to support IPC advocacy and to convince decision-makers of the need for action.
- The team therefore started by undertaking a series of audits and monitoring of practices and put in place a feedback mechanism to share the results widely (step 2). This step took almost two years in order to collect data and build the case for support and action.
- Results were regularly communicated and discussed for example during ward rounds and in key meetings.
- A small, achievable plan of action was developed (step 3) and communicated to hospital leaders. This was a critical stage in convincing leadership that there was a problem and that an IPC programme was the solution.
- The team also communicated with hospital administrators on the staffing and resource requirements needed to support implementation of their proposed plans.
- This regular communication resulted in senior leadership being convinced of the need to support investment in nurse-to-patient ratios and IPC supplies and resources.
- As the facility progressed with its IPC actions over time, the IPC programme grew to 10 nurses and one infectious diseases doctor.
- Regular review and revision of plans and ongoing engagement with hospital and ward and department leaders and managers (steps 4 and 5) resulted in incremental successes, for example, the creation of electronic software to support data collection.
- Through their growing networks, the team became aware of and involved in a regional surveillance programme that provided regular mentorship and exposure to new implementation ideas. Based on the growing success with surveillance, the team introduced bundles and a multimodal approach to decrease rates of device-associated infections, adapted to their setting.
- With a strong baseline assessment process and strengthened surveillance mechanisms, the team also set about developing standard operating procedures for microbiology and a range of IPC activities.
- These were then translated into training modules for orientation and regular in-service courses, which were also developed for nurses.



TOOLS AND RESOURCES

Action planning

- Action plan templates (Annex 5)
- Multimodal strategy guiding questions (Annex 2)

Advocacy

- Revisit all advocacy tools listed in step 1
- Partnerships/peer support
- Twinning partnerships for improvement (<http://apps.who.int/iris/bitstream/10665/253523/1/9789241511872-eng.pdf?ua=1> accessed 4 April 2018)
- Partnerships for safer health service delivery: evaluation of WHO African Partnerships for Patient Safety 2009–2014 (<http://www.who.int/patientsafety/implementation/apps/evaluation-report.pdf> accessed 7 April 2018)
- Global Learning Laboratory for UHC – IPC/WASH Learning Pod (<https://extranet.who.int/dataform/848962?lang=en> accessed 7 April 2018)

Sustainability

- Sustaining Improvement – additional activities for consideration by health-care

facilities (http://www.who.int/entity/infection-prevention/tools/hand-hygiene/Sustaining_Improvement.doc?ua=1 accessed 4 April 2018)

- HHSAF template action plan for WHO framework advanced leadership results (http://www.who.int/gpsc/5may/PSP_GPSC1_AdvancedLeadershipWeb_Feb-2012.pdf?ua=1 accessed 4 April 2018)
- Institute for Healthcare Improvement: How to guide: sustainability and spread (<http://www.ihl.org/resources/Pages/Tools/HowtoGuideSustainabilitySpread.aspx> accessed 7 April 2018)



STEP 5 CHECKLIST

At the end of step 5 you should have:



1. Agreed an annual review cycle through the IPC committee

2. Developed a long-term (5-year) plan with the IPC committee

3. Met with and secured visible long-term commitment to the IPC programme (including regular budget) by health care facility managers and leadership

4. Met with champions/opinion leaders to convey thanks and secure ongoing support

5. Publicised successes and the IPC vision, via internal communication channels, for example, newsletters, podcasts, emails, meetings and one-to-one encounters

6. Publicized successes externally to patient/civil society bodies and NGOs, for example, through the local radio or newspapers

ANNEXES

Annex 1. The multimodal strategy

Multimodal implementation strategies are a core component of effective infection prevention and control programmes according to the WHO Guidelines on Core Components of IPC programmes at the National and Acute Health Care Facility Level.

The guidelines' **recommendation 5** states that IPC activities using multimodal strategies should be implemented to improve practices and reduce HAI and AMR. In practice, this means the use of multiple approaches that in combination will contribute to influencing the behaviour of the target audience (usually health care workers) towards the necessary improvements that will impact on patient outcome and contribute to organizational culture change. Implementation of IPC multimodal strategies needs to be linked with the aims and initiatives of quality improvement programmes and accreditation bodies both at the national and facility levels.

Five key elements to focus on when improving IPC

The multimodal strategy consists of several elements (3 or more; usually 5) implemented in an integrated way to guide action and provide a clear focus for the implementer. Targeting only ONE area (i.e. unimodal), is highly likely to result in failure. All five areas should be considered, and necessary action taken, based on the local context and situation informed by periodic assessments.

WHO identifies five elements for IPC multimodal strategies in a health care context:

- 1 the system change** needed to enable IPC practices, including infrastructure, equipment, supplies and other resources;
- 2 training and education** to improve health worker knowledge;
- 3 monitoring and feedback** to assess the problem, drive appropriate change and document practice improvement;
- 4 reminders and communications** to promote the desired actions, at the right time, including campaigns;
- 5 a culture of safety** to facilitate an organizational climate that values the intervention, with a focus on involvement of senior managers, champions or role models.

In other words, the WHO multimodal improvement strategy addresses these five areas:

2. Teach it

(training & education)



- Who needs to be trained? What type of training should be used to ensure that the intervention will be implemented in line with evidence-based policies and how frequently?
- Does the facility have trainers, training aids, and the necessary equipment?
- **Practical example:** when implementing injection safety interventions, timely training of those responsible for administering safe injections, including carers and community workers, are important considerations, as well as adequate disposal methods.

4. Sell it

(reminders & communication)



- How are you promoting an intervention to ensure that there are cues to action at the point of care and messages are reinforced to health workers and patients?
- Do you have capacity/funding to develop promotional messages and materials?
- **Practical example:** when implementing interventions to reduce catheter-associated bloodstream infection, the use of visual cues to action, promotional/reinforcing messages, and planning for periodic campaigns are important considerations.

1. Build it

(system change)



- What infrastructures, equipment, supplies and other resources (including human) are required to implement the intervention?
- Does the physical environment influence health worker behaviour? How can ergonomics and human factors approaches facilitate adoption of the intervention?
- Are certain types of health workers needed to implement the intervention?
- **Practical example:** when implementing hand hygiene interventions, ease of access to handrubs at the point of care and the availability of WASH infrastructures (including water and soap) are important considerations. Are these available, affordable and easily accessible in the workplace? If not, action is needed.

3. Check it

(monitoring & feedback)



- How can you identify the gaps in IPC practices or other indicators in your setting to allow you to prioritize your intervention?
- How can you be sure that the intervention is being implemented correctly and safely, including at the bedside? For example, are there methods in place to observe or track practices?
- How and when will feedback be given to the target audience and managers? How can patients also be informed?
- **Practical example:** when implementing surgical site infection interventions, the use of key tools are important considerations, such as surveillance data collection forms and the WHO checklist (adapted to local conditions).

5. Live it

(culture change)



- Is there demonstrable support for the intervention at every level of the health system? For example, do senior managers provide funding for equipment and other resources? Are they willing to be champions and role models for IPC improvement?
- Are teams involved in co-developing or adapting the intervention? Are they empowered and do they feel ownership and the need for accountability?
- **Practical example:** when implementing hand hygiene interventions, the way that a health facility approaches this as part of safety and quality improvement and the value placed on hand hygiene improvement as part of the clinical workflow are important considerations.

Annex 2. Multimodal strategy guiding questions

PRIORITY:		<BRIEFLY DESCRIBE THE IDENTIFIED PRIORITY>	
Multimodal strategy element	Guiding questions	Use the space below to list your response to the guiding questions	List all required actions to ensure your responses can be achieved. Incorporate these into your action plan
System change – build it	What resources (including budget), infrastructures or supplies are required to make an improvement in this priority area?		
Education and training – teach it	Who needs to be trained/educated to address the identified gap – how will this happen and who will undertake the training/education?		
Monitoring and feedback – check it	How will you know that an improvement has taken place – that is, what will be the key indicators for success?		
Communications and reminders – sell it	How will you publicize action on specific core components and promote improvement and best practice in this area?		
Safety climate and culture change – live it	How will you make and maintain this as a health care facility priority and engage senior leaders/managers/champions and opinion leaders over time?		

Annex 3. Setting up a meeting to advocate for IPC

A. Example approach: follow the suggestions below and modify according to local context

1. Draw up a list of invitees based on your identified key stakeholders and champions/opinion leaders.
2. Talk to key leaders before the meeting and encourage them to speak out in favour of IPC during the meeting, for example, the district medical officer or a chief physician, surgeon or nurse.
3. Secure a meeting room.
4. Send out invitations (ideally from health care facility manager/other key leader).
5. Pre-load WHO videos onto a laptop or computer, such as “Healthcare without avoidable infection – people’s lives depend on it” (<https://www.youtube.com/watch?v=K-2XWtEjfl8&app=desktop>, accessed 7 April 2018) or an IPC advocacy video on the core components (<https://www.youtube.com/watch?v=LZapz2L6J1Q&feature=youtu.be>, accessed 7 April 2018).
6. Print copies of IPC infographics (<http://www.who.int/infection-prevention/tools-core-components/HAI-Infographic.pdf?ua=1> and <http://www.who.int/infection-prevention/tools/focus-amr/en> accessed 7 April 2018) and the core components visual summary (figures 2) and 2-page summary of the core components (<http://www.who.int/infection-prevention/publications/ipc-cc-summary.pdf?ua=1> accessed 7 April 2018)

Print sample script (Figure 3).

B. Example: meeting agenda

- a. Welcome and introductions.
- b. Advocacy video and distribution of hand-outs (see above).
- c. Overview of the current state of IPC in the facility:
 - i. presentation of existing data on HAIs, AMR, IPC practices (if available);
 - ii. summary of outbreaks and previous actions (if any);
 - iii. discussion and questions from those present – make sure that identified champions and leaders pre-agree to make statements outlining their support for IPC and implementation of the core components.
- d. Introduction to the WHO core component guidelines:
 - i. refer to handout;
 - ii. use the “what, why, when, who and how” presented in Part II of the manual as an “aide memoire”;
 - iii. highlight how this connects with national and local IPC and AMR and quality work;
 - iv. play WHO video on the core components (see above);
 - v. Give a status report of (any) progress against the core components and existing IPC programme commitment.
- e. Presentation on proposed approach to improve IPC:
 - i. five-step implementation process, outline;
 - ii. proposal of baseline (and ongoing) assessment to identify critical priorities to shape development of a targeted priority-driven action plan.
- f. Discussion and feedback.
- g. Summary of agreed actions, roles and responsibilities (at all levels) and future reporting mechanisms.
- h. Agreement of date of next meeting.
- i. Close of meeting.
- j. Prepare and distribute a short summary of the meeting using the headings provided below.

C. Example: meeting notes template

Meeting notes – [Health care facility name]

Location: [insert]

Date: [insert]

Time: [insert]

In attendance

[Insert names and designation of all attendees]

Apologies received

[List those not attending]

Agenda items

[List agenda item, summary of discussion and note of conclusions made]

Actions arising/decisions made

[List all agreed actions, decisions, dates and responsible persons]

Date and time of next meeting

[If appropriate give date of next meeting]

Annex 4. Report template for the Infection Prevention and Control Assessment Framework findings

Infection Prevention and Control Assessment Results and Recommendations

<Date>

<Author>

Summary

As part of <insert facility name> efforts to strengthen infection prevention and control (IPC) a baseline assessment was undertaken using the WHO IPC Assessment Framework (IPCAF). The assessment was undertaken on <insert day/month/year>. The assessment indicates that we are at the level of <insert **level (inadequate/basic/intermediate/advanced)** indicated by the IPCAF score>. The interpretation of this result suggests <copy paste interpretation as per IPCAF, for example, if “inadequate” “IPC core components implementation is deficient. Significant improvement is required.”>

IPCAF scoring interpretation

Score		Interpretation
0-200	Inadequate	IPC core components' implementation is deficient. Significant improvement is required.
201-400	Basic	Some aspects of the IPC core components are in place, but not sufficiently implemented. Further improvement is required.
401-600	Intermediate	Most aspects of IPC core components are appropriately implemented. Continue to improve the scope and quality of implementation and focus on the development of long-term plans to sustain and further promote the existing IPC programme.
601-800	Advanced	The IPC core components are fully implemented according to the WHO recommendations and appropriate to the needs of your facility.

Introduction

Supported by the health care facility management, <insert facility name> is undertaking a major effort to improve IPC. A critical part of this improvement effort is to map the progress of <insert facility name> against the WHO IPC guideline recommendations that describe eight core components of IPC programmes. The WHO IPC Assessment Framework (IPCAF) is a diagnostic tool developed to assess existing IPC activities/resources and identify strengths and gaps. It comprises eight sections reflecting the eight core components and addresses a total of 80 indicators framed as questions. The results of the IPCAF allow to assign a score and position on a continuum of improvement from inadequate through to advanced (see below) to health care facilities.

Assessment

The IPCAF was undertaken on <insert day/month/year>. The IPCAF was led by <insert name of lead person undertaking the IPCAF> and supported by <insert names and designations if applicable>.

Results

The overall score for this health care facility was <insert score>. This means that the assigned level for this health care facility is <insert level>. The interpretation of this result suggests <copy paste interpretation as per IPCAF, for example, if “inadequate” “IPC core components implementation is deficient. Significant improvement is required.”>

A breakdown of the sub-scores for each of the eight components can be seen in the table below (insert scores for each component).

Score

Core component	Subtotals
1. IPC programme	
2. IPC guidelines	
3. IPC education and training	
4. HAI surveillance	
5. Multimodal strategies	
6. Monitoring/audit of IPC practices and feedback	
7. Workload, staffing and bed occupancy	
8. Built environment, materials and equipment for IPC at the facility level	
Final total	

Analysis of results

A preliminary analysis of the results highlights that <insert facility name> has strengths in the following areas: <list areas you consider to be strong in IPC based on results>. However, a number of gaps and weakness have been revealed and these are listed below <list what are considered to be gaps based on initial feedback>:

Recommendations

1. Based on an analysis of the results and discussions with key staff and stakeholders, a draft action plan has been developed to address identified priority gaps and weaknesses. The health care facility management team and IPC committee are recommended to support the implementation of the draft action plan and associated funding requirements (attach action plan to the report).
2. A repeat IPCAF is recommended to take place in 12 months' time.

Signed: <insert signature> (on behalf of the IPC committee)

Dated: <insert date>

Annex 5. Action plan templates

Example template 1

CORE COMPONENT: <INSERT NAME OF CORE COMPONENT>						
Priority gaps identified	Action required	Lead person	Start date	End date	Budget (if applicable)	Monitoring and evaluating implementation progress (include review/ completion dates)
<List all gaps identified from baseline assessment and prioritized for action>	<List the actions that are planned using information gathered as you work through the 5 steps of the implementation cycle>	<List the lead person or group driving the action plan>	<State when the action will start to be addressed>	<Estimate the deadline for action to be completed, including periodic review dates if applicable>	<Estimate the budget required to address the required actions>	<Describe the progress that has been made at each review date including decisions and actions taken, and the need for further actions to be taken to achieve completion>
Gap 1:						
Gap 2:						
Gap 3:						
Gap 4:						
<INSERT MORE ROWS AS REQUIRED>						

Example template 2

No.	Activity to be conducted	Objectives	Key performance indicator of the outcome	Target outcome	Target group	Budget/ expenditure	Duration of action	Responsible person(s)
<INSERT MORE ROWS AS REQUIRED>								

Example template 3

No.	Activity	Goal	Month												Budget	Responsible person(s)	
			1	2	3	4	5	6	7	8	9	10	11	12			
<INSERT MORE ROWS AS REQUIRED>																	

Example template 4

Name of facility: Unit: Date: .../.../..... Unit head signature:						
IPC area where gap is identified	Defective practices to be stopped (where appropriate)	Proposed solution(s)	Time for effecting solution(s)	Expected outcome	Person(s) responsible	Resources
<INSERT MORE ROWS AS REQUIRED>						