

**Assessment tools for
Infection Prevention and Control Programmes
&
Central Line-Associated Blood Stream Infections**

Prepared by:

**All India Institute of Medical Sciences, New Delhi
Hinduja Hospital, Mumbai
Centers for Disease Control and Prevention, India
Indian Council of Medical Research, India**

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**Adopted from WHO core components for
infection prevention and control programmes
As part of the
Global Health Security Agenda project,
“Capacity building and strengthening of hospital infection control to
detect and prevent antimicrobial resistance in India”**

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Abbreviations

AMR	Antimicrobial resistance
BSI	Bloodstream infection
ESBL	Extended-spectrum β -lactamase
HAI	Health care-associated infection
HCF	Health care facility
HCW	Health care worker
HIV	Human immunodeficiency virus
HR	Human resources
ICU	Intensive care unit
IPC	Infection prevention and control
IT	Information technology
M&E	Monitoring and evaluation
MDR	Multi-drug-resistant
MoH	Ministry of Health
MRSA	Methicillin-resistant <i>Staphylococcus aureus</i>
NDM-1	New Delhi metallo-beta-lactamase-1
PDR	Pan-drug-resistant
PPE	Personal protective equipment
SSI	Surgical site infection
TB	Tuberculosis
XDR	Extensively drug-resistant
VAP	Ventilator-associated pneumonia
VRE	Vancomycin-resistant enterococci

Introduction

The WHO infection prevention and control (IPC) core components assessment tools (IPCAT) are based on the WHO document *Core components for infection prevention and control programmes*¹. They correspond to the 8 core components of IPC programmes, which are essential in strengthening capacity for the prevention of health care-associated infections (HAI) and in preparing an effective response to emergencies involving communicable diseases.

The components of IPC programmes at both the national and the local level (healthcare facility) should be aligned and consistent, but at the same time the respective roles of national and local programmes should be distinct. A national IPC programme is intended to regulate, provide guidance, promote and supervise compliance with regulations, whereas a programme at the local level is focused on providing care in a safe and efficient manner for patients, health-care workers and others. Two separate IPC assessment tools were therefore developed: one for the national level (IPCAT-N) and another for the health-care facility level (IPCAT-H).

Purpose

The purpose of these evaluation tools is to help plan, organize and implement an IPC programme. It is very important to understand that the IPCATs are not intended to be used as audit tools²: they should be used for planning purposes, providing a road map for IPC implementation and strengthening, and for monitoring implementation.

The tools have been developed to provide a general overview rather than specifics on the status of HAI prevention and control activities. Neither specific IPC practices nor the risk of individual patients or specific cases are addressed.

Description of the tools

The tools were designed primarily in Microsoft Excel 2003³. Only very basic features of the software were used, and so it would not be difficult to translate the tools into different languages and adapt them to local requirements if needed. The printed versions of the tools included in this document are provided mainly for easy reference, but they also could be used when use of computers is not feasible or possible. When the printed versions are used, there is still a need to enter the data into the Excel workbook afterwards, in order to calculate the scores and visualize the data.

Both IPCAT workbooks include a title worksheet, site information worksheet, eight separate worksheets for the eight core components, a summary sheet, and several reference worksheets. Each component is divided into several sections with essential elements (indicators) of IPC programmes. Every element is a true/false statement. “1” is assigned if the element exists (implemented, introduced etc.), and “0” means the statement is false (i.e. the element does not exist).

¹ Core Components for Infection Prevention and Control Programmes: Report of the Second Meeting of the Informal Network on Infection Prevention and Control in Health Care, Geneva, Switzerland, 26-27 June 2008, WHO/HSE/EPR/2009.1. Available at

http://www.who.int/csr/resources/publications/WHO_HSE_EPR_2009_1/en/index.html

² For the audit purposes we suggest using the PAHO Nosocomial Infection Program Rapid Evaluation Guide (see the reference in the list of other WHO tools below)

³ The instructions below are based on the assumption that the user is familiar (even if at a beginner level) with the Microsoft Excel software.

Assessment tools for IPC programmes

The data are entered directly onto the worksheets, and the user interface is shown in Fig. 1. The title of a core component and the resulting score for the whole component are in row 1, and the headings of the main fields are in row 2. In row 3 you can see the section title typeset in bold, and examples of indicators are in rows 4-5.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	
1	3 Human resources									62%							
2	Components for assessment									Score	Comments	Verifiers	Example:				
3	3.1	Training on IPC of all health care personnel								67%							
4	3.1.1	Initial training in IPC for all newly recruited health care personnel is provided							1				Curricula,	Induction t			
5	3.1.2	Periodical basic training in IPC for all health care personnel is provided regularly							0				Curricula,	Periodic re			

Figure 1. Screenshot of the IPCAT interface

A negative answer automatically highlights the element in red for easy reference (see example as shown in Row 5). Evaluation scores are calculated automatically for every subcomponent (see the example in cell J3) and every core component in total (see cell J1 in Fig.1). There is also a field for comments (columns K-N on the figure above), a field with verifiers (column O), and a field with definitions and examples (column P).

The content of the cells with verifiers (column O) and examples/definitions (column P) cannot be seen in full until the cell is selected. Once the cell is selected (as in cell P6 in Fig. 2), the full text can be viewed in the formula bar.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
P6	The Infection Control Committee is comprised of members from a variety of disciplines within the HCF. Representation may include representatives from e.g. surgery, ICU, microbiology, pharmacy, central sterilization, environmental services, etc. The goal of this individuals with expertise in different areas of healthcare and ensure involvement of the senior management															
1	1 Organization of IPC programme									56%						
2	Components for assessment									Score	Comments	Verifiers	Examples			
3	1.1	Designated qualified IPC leadership is established								50%						
4	1.1.1	There is an IPC Team							1				Document s	The HCF has		
5	1.1.2	Authority has been delegated by the administration or equivalent							1				Document s	Person(s) in		
6	1.1.3	There is an Infection Control Committee or an equivalent							0				Document s	The Infectio		
7	1.1.4	The IPC programme responsibilities, goals and functions are clearly defined							0				An official do			

Figure 2. Screenshot of the IPCAT interface with the full text of an example provided in the formula bar

The assessment measurements are summarized for all core components and major subcomponents on a separate Summary page. The data are provided in tables and visualized in the bar and radar charts: see example in Fig.3 below.

3 Human resources

Elements	Score
All staff IPC training	67%
Training for IPC Team	100%
Staffing ratios	33%
Biological risks	86%
Immunization	33%

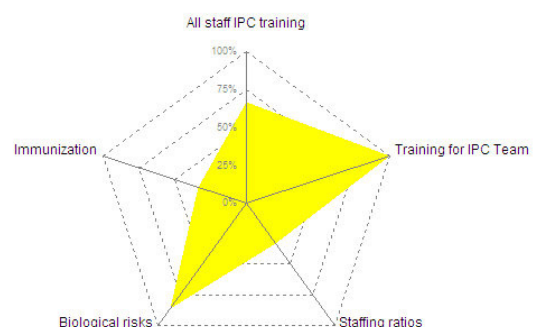


Figure 3. Screenshot of the IPCAT worksheet with the data visualization

General instructions

The IPCAT tools provide a quantitative evaluation of the different components of IPC programmes in a systematic way, allowing changes to be tracked over time. The resulting scores can be used to measure and monitor progress in implementing IPC programmes at all levels. It should be emphasized though that the calculated scores are only percentages that reflect the number of implemented core components: they should not be used for grading programmes/institutions and/or comparing them. A score below 100% simply means that there are certain elements of the IPC programme that are still to be implemented.

The binary nature of the indicators allows for easy interpretation of the results. Any single element is either fully implemented (“1”) or not (“0”): any partially implemented or intermediate progress in achievement can be recorded in the comments fields⁴, as well as any additional information, which may provide further clarification of the situation.

The IPCAT tools are intended to be used both for self-assessment and for external assessment (interview). The self-assessment can be sufficiently objective if the responders fully realize the purpose of the evaluation, which is not to grade nor to establish position in a rating, but to plan and implement.

One or more verifiers have been suggested for each indicator. However, these are just examples of sources of information that can be used to determine whether a certain indicator is present. IPCAT users are free to use other methods to establish the presence of indicators. If an external assessment is planned, it is advisable to inform both the assessors and the interviewees in advance of what documents may be requested as verifiers.

In addition to IPCAT-N and IPCAT-H, which are considered “comprehensive”, rapid assessment tools have been developed: however, their use is limited and intended only for situations when available time is especially limited.

Although comprehensive, the full IPCAT tools are not exhaustive in their scope and they are not intended to be so. Other existing assessment/evaluation tools may be utilized when there is a need to evaluate a certain component of an IPC programme in greater depth. Several other WHO assessment tools related to IPC are listed below.

Other published WHO assessment tools

- *Protocol for Assessing National Surveillance and Response Capacities for the International Health Regulations (2005): A Guide for Assessment Teams Information*⁵
- *Checklist and indicators for monitoring progress in the development of IHR core capacities in States Parties*⁶
- *PAHO Nosocomial Infection Program Rapid Evaluation Guide*⁷
- *Hand Hygiene Self-Assessment Framework Tool*⁸

⁴ E.g. when there is no yet a full-time IPC professional, but there is just a clinical microbiologist working part-time for the IPC programme, the score is not 0.5 (or any other value between 0 and 1): it remains 0 until the requirements for the IPC programme are fully met. Scoring 0 should never be a case for blaming people: this simply means that a certain element is missing and its implementation should be planned.

⁵ http://www.who.int/ihr/publications/who_hse_ihr_201007/en/index.html

⁶ http://www.who.int/ihr/IHR_Monitoring_Framework_Checklist_and_Indicators.pdf

⁷ <http://www.paho.org/English/AD/DPC/CD/amr-guiaInfecIH.pdf>

⁸ http://www.who.int/gpsc/country_work/hhsa_framework_October_2010.pdf

Assessment tools for IPC programmes

- *Tool for the Assessment of Injection Safety and the Safety of Phlebotomy, Lancet Procedures, Intravenous Injections and Infusions*⁹
- *Health care waste management assessment tool*¹⁰
- *Implementing the WHO Policy on TB Infection Control in Health-Care Facilities, Congregate Settings and Households: A framework to plan, implement and scale-up TB infection control activities at country, facility and community level*¹¹

Further development of the tools

Comments and suggestions from the IPCATs users continue to be received from all over the world. We welcome this input which will allow us to revise and update the tools regularly. Minor changes will be reflected in the Excel documents, and major updates will be provided both in the Excel files and in the printed versions from time to time. The WHO Regional Office for the Eastern Mediterranean Region is in the process of developing an electronic version of the IPCATs on the Adobe AIR platform.

⁹ http://www.who.int/injection_safety/Injection_safety_final-web.pdf

¹⁰ http://www.who.int/entity/injection_safety/toolbox/en/Healthcarewastemanagementtool.xls

¹¹ http://www.stoptb.org/wg/tb_hiv/assets/documents/TBICImplementationFramework1288971813.pdf. The document contains several example assessment tools and sets of indicators

Assessment tool for hospital IPC programmes

IPCAT-H

Modified by AIIMS/ICMR/CDC

HEALTH CARE FACILITY CHARACTERISTICS

Evaluation date:			
Name of the hospital:			
City:		Country:	
Administrative status: state private university Other:			
Beds:		Annual discharges:	
Average daily bed occupancy (%):			
Beds in Intensive Care Unit (ICU)		Microbiology laboratory	
ICU beds for adults:		Number of isolations/year:	
ICU beds for paediatrics:		Number of ASTs performed/year:	
ICU beds for neonatology:		Number of antibiograms/year:	
Mark the clinical or surgical services that the hospital has	Clinical Service	# Annual discharges	# Annual major surgeries or childbirths
	Surgery		
	Obstetrics		
	Paediatrics		
	Internal medicine		
	Neonatology		
	Adult intensive care		
	Other subspecialties		
Names of evaluators:			
Names and positions of the people interviewed:			

1 Organization of an IPC programme

Components for assessment		<input checked="" type="checkbox"/> Suggested verifiers	Comments
1.1	Designated qualified IPC leadership is established		
1.1.1	There is an IPC Team ¹	<input type="checkbox"/>	<i>Document signed by local authority</i>
1.1.2	Authority has been delegated by the administration or equivalent ²	<input type="checkbox"/>	<i>Document signed by local authority</i>
1.1.3	There is an Infection Control Committee or an equivalent ³	<input type="checkbox"/>	<i>Document signed by local authority, agenda and meetings minutes/reports</i>
1.1.4	The IPC programme responsibilities, goals and functions are clearly defined	<input type="checkbox"/>	<i>An official document (programme, plan or annual report)</i>

1.2	The scope of IPC is defined and includes:		
1.2.1	Endemic HAI, associated or not with the use of devices or procedures during health care ⁴	<input type="checkbox"/>	<i>Related IPC guidelines/policies/procedures, surveillance data</i>
1.2.2	Epidemic HAI, originating within the population of the health-care facility ⁵	<input type="checkbox"/>	<i>Related IPC guidelines/policies/procedures, outbreak reports</i>
1.2.3	HAI which are a consequence of the transmission of community-acquired infections to patients in the HCF ⁶	<input type="checkbox"/>	<i>Related IPC guidelines/policies/procedures, outbreak reports</i>
1.2.4	Early detection and management of HAI epidemics to organize a prompt and effective response ⁷	<input type="checkbox"/>	<i>Related IPC guidelines/policies/procedures, outbreak reports</i>
1.2.5	Preventing the emergence of antimicrobial resistance and/or dissemination of resistant strains	<input type="checkbox"/>	<i>Related IPC guidelines/policies/procedures, surveillance/lab data</i>

¹The HCF has at least designated an infection prevention and control professional who leads the technical team of trained professionals responsible for infection control, including for example medical doctors, nurses, epidemiologists, microbiologists, etc.

²Person(s) in charge has both responsibility and accountability for the programme

³The Infection Control Committee is comprised of members from a variety of disciplines within the HCF.

Representation may include hospital administrators, physicians, nurses, as well as representatives from e.g. surgery, ICU, microbiology, pharmacy, central sterilization, environmental services, etc. The goal of this interdisciplinary task force is both to bring together individuals with expertise in different areas of healthcare and ensure involvement of the senior management

⁴Infections originating within the health care facility associated with or without use of medical devices or procedures. The most common device-related infections are catheter-associated urinary tract infection (UTI), central line-associated bloodstream infection (BSI), ventilator-associated pneumonia (VAP). Examples of endemic infections not associated with medical devices are surgical site infections (except those related to implants), gastrointestinal infections (food poisoning) etc.

⁵Infections originating within the health care facility and spreading like an epidemic to large numbers. Examples: MRSA, NDM-1 etc.

⁶Infections originating in the community and getting transmitted in the health care facility. Examples: SARS, pandemic influenza, human cases of influenza A (H5N1), pulmonary tuberculosis, measles, viral haemorrhagic fevers, etc.

⁷Mechanism in place to ensure early recognition and investigation of number of similar cases or clusters; reinforce the prompt implementation of appropriate infection control precautions and use of personal protective equipment (PPE) by staff working with epidemic; ensure links between health-care facility and public health authorities and immediately report all available information about possible epidemics that represents a public health threat (e.g. pandemic influenza, communicable viral haemorrhagic fevers).

	of microorganisms ⁸			
1.2.6	Minimizing the environmental impact of HAI and HAI control measures ⁹	<input type="checkbox"/>	<i>Related guidelines/policies/procedures</i>	

1.3	There is a budget adequate to meet programmed IPC activities			
1.3.1	There is an identified budget to guarantee functioning of the IPC Team	<input type="checkbox"/>	<i>An official document of the HCF</i>	
1.3.2	There is an identified budget to guarantee activities related to implementation of the IPC programme in HCF	<input type="checkbox"/>	<i>An official document of the HCF</i>	

1.4	Administrative and IT¹⁰ support to the IPC team provided, including:			
1.4.1	A secretary with dedicated time	<input type="checkbox"/>	<i>Interview</i>	
1.4.2	IT equipment	<input type="checkbox"/>	<i>Interview</i>	
1.4.3	Internet access	<input type="checkbox"/>	<i>Interview</i>	
1.4.4	Professional IT support	<input type="checkbox"/>	<i>Interview</i>	

2 Technical guidelines

2.1	Adaptation of technical guidelines to the local level			
2.1.1	The HCF has guidelines for preventing and controlling health care associated infections	<input type="checkbox"/>	<i>The guidelines</i>	
2.1.2	The guidelines are consistent with the national guidelines (if they exist)	<input type="checkbox"/>	<i>Clear reference or national guidelines available for comparison</i>	
2.1.3	The guidelines are adapted to the local needs and resources	<input type="checkbox"/>	<i>The guidelines</i>	
2.1.4	The guidelines in use are evidence-based	<input type="checkbox"/>	<i>The guidelines</i>	
2.1.5	The guidelines are updated within last 5 years	<input type="checkbox"/>	<i>The guidelines</i>	

2.2	Guidelines on standard precautions developed and disseminated, including:			
2.2.1	Hand hygiene	<input type="checkbox"/>	<i>The guidelines</i>	
2.2.2	Use of PPE to avoid direct unprotected contact with blood/body fluids	<input type="checkbox"/>	<i>The guidelines</i>	
2.2.3	Cleaning, disinfection, and sterilization of reusable health care equipment ¹¹	<input type="checkbox"/>	<i>The guidelines</i>	

⁸Work in collaboration with other initiative(s) related to rational use of drugs/treatment of infectious disease. Adapt national policies for control measures for multi-resistant pathogens. In the absence of lab diagnosis, implement control measures based on risk factors.

⁹Policies on management of infectious waste, environmental disinfection etc

¹⁰IT – Information Technology

2.2.4	Prevention and management of injuries from sharp instruments	<input type="checkbox"/>	<i>The guidelines</i>	
2.2.5	Waste management	<input type="checkbox"/>	<i>The guidelines</i>	
2.2.6	Laundry and environmental cleaning ¹²	<input type="checkbox"/>	<i>The guidelines</i>	
2.2.7	Injection safety	<input type="checkbox"/>	<i>The guidelines</i>	
2.2.8	Respiratory hygiene	<input type="checkbox"/>	<i>The guidelines</i>	

2.3	Guidelines on how to apply isolation precautions developed and disseminated, including:			
2.3.1	Contact precautions	<input type="checkbox"/>	<i>The guidelines</i>	
2.3.2	Droplet precautions	<input type="checkbox"/>	<i>The guidelines</i>	
2.3.3	Airborne precautions	<input type="checkbox"/>	<i>The guidelines</i>	

2.4	Guidelines on prevention of device-associated and site specific infections, including:¹³			
2.4.1	Surgical site infections	<input type="checkbox"/>	<i>The guidelines</i>	
2.4.2	Bloodstream infections	<input type="checkbox"/>	<i>The guidelines</i>	
2.4.3	Urinary tract infections	<input type="checkbox"/>	<i>The guidelines</i>	
2.4.4	Lower respiratory tract infections	<input type="checkbox"/>	<i>The guidelines</i>	
2.4.5	HAI of gastrointestinal tract ¹⁴	<input type="checkbox"/>	<i>The guidelines</i>	

2.5	Guidelines on prudent use of antibiotics¹⁵			
2.5.1	Antimicrobial stewardship guideline/programme	<input type="checkbox"/>	<i>The guidelines</i>	
2.5.2	Protocol on antimicrobial prophylaxis in surgery ¹⁶	<input type="checkbox"/>	<i>The guidelines</i>	
2.5.3	Protocols on use of antibiotics for main infectious syndromes	<input type="checkbox"/>	<i>The guidelines</i>	

¹¹It is expected that a recommendation for not re-processing disposable (single use) equipment is included in the guidelines

¹²The term “environmental cleaning” refers to general cleaning of environmental surfaces and to the maintenance of cleanliness in a HCF. It is the physical removal of organic materials such as dust and dirt, which removes a large proportion of microorganisms. Warm water with detergent is usually sufficient to remove all organic contamination. Certain clinical scenarios may require use of disinfectants: indications for use of environmental disinfection should be clearly formulated in the guidelines.

¹³Site specific HAI prevention guidelines, aseptic techniques, device management, prevention bundles etc.

¹⁴Food safety aspects in HCFs; CDI

¹⁵This activity should be implemented in collaboration with a programme dealing with rational use of drugs (if exists)

¹⁶Including obstetrics and gynaecology

2.5.4	Policy on antimicrobials of restricted use ¹⁷	<input type="checkbox"/>	The guidelines	
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3 Human resources

3.1	Training on IPC of all health care personnel is provided regularly			
3.1.1	Initial training in IPC for all newly recruited health care personnel is provided ¹⁸	<input type="checkbox"/>	Curricula, training materials, schedules, training records	
3.1.2	Periodical basic training in IPC for all health care personnel is provided regularly ¹⁹	<input type="checkbox"/>	Curricula, training materials, schedules, training records, certificates	
3.1.3	IPC team is actively engaged in coordination and delivery of the training ²⁰	<input type="checkbox"/>	Curricula, training materials, schedules, training records	

3.2	Specialized training of IPC professionals (technical teams) is provided regularly			
3.2.1	IPC professionals receive specialised training ²¹	<input type="checkbox"/>	Curricula, training materials, schedules, training records	
3.2.2	Periodical training for IPC professionals is done ²²	<input type="checkbox"/>	Curricula, training materials, schedules, training records, certificates	
3.2.3	Access to updates is available to all members of the IPC technical teams ²³	<input type="checkbox"/>	Interview	
3.2.4	Career development programme for IPC professionals is in place	<input type="checkbox"/>	Interview	

3.3	Staffing ratios maintained			
3.3.1	The proper staffing ratio of IPC professionals and teams according to the national or international standards is maintained ²⁴	<input type="checkbox"/>	HR records	Please indicate the ratio

¹⁷Certain antimicrobials may be subject to restriction because: 1) they may be last-line agents for resistant infections; widespread use will result in resistance and complete absence of therapeutic options; 2) these drugs may be more toxic than standard, equally effective therapy; 3) there may be less clinical information on efficacy than comparable agents; 4) these drugs typically have a higher cost than standard, equally effective therapy

¹⁸Induction training for all HCWs (i.e. physicians, nurses, dentists, medical assistants, etc.), laboratory and other health-care workers (i.e. housekeeping) that provide patient care at any level and must perform clinical procedures in such a way as to minimize the risk of infection to self, patients, community and the environment

¹⁹Periodic regular training for all HCW (i.e. physicians, nurses, dentists, medical assistants, etc.), laboratory and other health-care workers (i.e. housekeeping) that provide patient care at any level and must perform clinical procedures in such a way as to minimize the risk of infection

²⁰IPC team coordinates/participates in delivering the training and participates in development of the training materials. Modern adult training methods are used.

²¹Provided to physicians, nurses and other professionals that are members of the IPC team. The knowledge and skills of this group include the contents and general principles of infection prevention and control, surveillance of infections, outbreak management and monitoring of clinical practices

²²Both regular updates/refreshers and advanced training

²³Periodic training is supported by administration (e.g. paid leave for IPC training etc.)

²⁴The ratio to the number of beds, or admissions or any other indicator of workload. The well known ratio (still considered commonly a standard) established by the SENIC study is 1 IPC professional per 250 beds. Several countries introduced better ratios (e.g. 1 per 80 or 100 beds), but the optimum ratios still need to be studied. If no national

3.3.2	The IPC team includes both doctors and nurses	<input type="checkbox"/>	HR records	
3.3.3	The proper staffing ratio of staff in critical units according to the national or international standards is maintained ²⁵	<input type="checkbox"/>	HR records	

3.4	Prevention and monitoring of occupational biological risks			
3.4.1	Training of HCWs to prevent percutaneous exposures to blood or body fluids is provided ²⁶	<input type="checkbox"/>	Training materials, training records	
3.4.2	System in place to avoid sharp accidents and/or exposure to blood or body fluids ²⁷	<input type="checkbox"/>	Standards and/or observed (visit)	
3.4.3	Monitoring and management (e.g. prophylaxis, treatment) of sharp accidents among HCW is assured ²⁸	<input type="checkbox"/>	Standards, record forms	
3.4.4	System in place for rapid detection, isolation (e.g. separated well ventilated space) and management of TB cases	<input type="checkbox"/>	Standards, record forms	
3.4.5	Training of HCWs on IPC measures for TB and highlighted information and precautions for MDRTB cases	<input type="checkbox"/>	Training materials, training records	
3.4.6	Monitoring and management of possible TB cases among HCWs is organized	<input type="checkbox"/>	Standards, record forms	
3.4.7	Regular assessment of other/new biological risks is performed, and the risks are addressed ²⁹	<input type="checkbox"/>	Any records, reports	

3.5	HCWs immunization programme is implemented, including:			
3.5.1	Immunization policies for hepatitis B ³⁰	<input type="checkbox"/>	Programme, records and coverage	
3.5.2	Immunization policies for influenza	<input type="checkbox"/>	Programme, records and coverage	
3.5.3	Immunization policies for rubella	<input type="checkbox"/>	Programme, records and coverage	
3.5.4	Immunization policies for other infectious diseases	<input type="checkbox"/>	Programme, records and coverage	

4 Surveillance of HAI

4.1 Organization of surveillance

standards exist and the facility follows international standards, then write which international standard is followed in the comments section.

²⁵ If national standards are unavailable, then compare to international standards and indicate which standard was used in comments section.

²⁶ Should be also provided to patients and visitors

²⁷ e.g. safety boxes, gloves and other PPE items

²⁸ Existence of a mechanism for sharp injury reporting and post exposure prophylaxis (PEP) and availability of records thereof

²⁹ Special emphasis to pathogens involved in epidemics, incl. e.g. acute respiratory diseases

³⁰ to target 100 % of HCWs

4.1.1	Surveillance is conducted as an essential and well defined component of IPC programme	<input type="checkbox"/>	<i>Written programme</i>	
4.1.2	Professional responsible for surveillance activities is trained in basic epidemiology, surveillance and IPC	<input type="checkbox"/>	<i>Certificates, training records</i>	
4.1.3	IPC team has sufficient time to perform surveillance activities ³¹	<input type="checkbox"/>	<i>Interview</i>	

4.2	Objectives of surveillance are defined, aligned with national objectives, and include:			
4.2.1	Describing the status of HAI (i.e. incidence and/or prevalence, type, aetiology, severity, burden of disease)	<input type="checkbox"/>	<i>Local document</i>	
4.2.2	Identification of high-risk populations, procedures and exposures	<input type="checkbox"/>	<i>Local document</i>	
4.2.3	Early detection of outbreaks	<input type="checkbox"/>	<i>Local document</i>	
4.2.4	Assessment of the impact of interventions	<input type="checkbox"/>	<i>Local document</i>	

4.3	Priorities for surveillance are defined according to the scope of care and include:			
4.3.1	Epidemic-prone infections	<input type="checkbox"/>	<i>Local document</i>	
4.3.2	Infections in vulnerable populations (e.g. neonates, burn patients, ICU patients, immunocompromised hosts)	<input type="checkbox"/>	<i>Local document</i>	
4.3.3	Infections that may cause severe outcomes	<input type="checkbox"/>	<i>Local document</i>	
4.3.4	Infections caused by MDR ³² , XDR ³³ , and PDR ³⁴ pathogens	<input type="checkbox"/>	<i>Local document</i>	
4.3.5	Infections associated with invasive devices or specific procedures (e.g. intravascular devices, surgery etc.)	<input type="checkbox"/>	<i>Local document</i>	
4.3.6	Infections that may affect health-care workers in clinical, laboratory and other settings	<input type="checkbox"/>	<i>Local document</i>	
4.3.7	Infections that appear in the community but are associated with health care ³⁵	<input type="checkbox"/>	<i>Local document</i>	

4.4	Methods of surveillance are defined and include the following:			
4.4.1	Active data collection methods ³⁶	<input type="checkbox"/>	<i>Surveillance records, interview</i>	
4.4.2	Standardized definitions of infections are used	<input type="checkbox"/>	<i>Local document</i>	
4.4.3	Standardized definitions and data collection techniques for denominators are used	<input type="checkbox"/>	<i>Local document, interview</i>	

³¹ but should not be more than 30%

³² MDR: acquired non-susceptibility to at least one agent in three or more antimicrobial categories

³³ XDR: non-susceptibility to at least one agent in all but two or fewer antimicrobial categories

³⁴ PDR: non-susceptibility to all agents in all antimicrobial categories

³⁵ Post-discharge surveillance needs to be implemented

³⁶ At least weekly case-finding in risk groups by reviewing medical records and laboratory data

4.4.4	System to evaluate effectiveness of HAI surveillance is in place	<input type="checkbox"/>	<i>Evaluation report</i>	
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4.5	Information is analysed and disseminated to all interested parties			
4.5.1	Rates of HAI under surveillance are calculated regularly ³⁷	<input type="checkbox"/>	<i>Reports</i>	
4.5.2	Analysis of HAI trends that identifies problems and proposes solutions is performed regularly ³⁸	<input type="checkbox"/>	<i>Reports</i>	
4.5.3	Analysis of antimicrobial drug resistance is performed regularly ³⁹	<input type="checkbox"/>	<i>Reports</i>	
4.5.4	Reports provided contain both analysis and recommendations	<input type="checkbox"/>	<i>Reports</i>	
4.5.5	Up-to-date information is available and known in all departments involved in surveillance	<input type="checkbox"/>	<i>Distribution lists, bulletins, interview</i>	

5 Microbiology laboratory support

5.1	Good quality and safe microbiological laboratory services are available			
5.1.1	The HCF has access to microbiological laboratory services ⁴⁰	<input type="checkbox"/>	<i>Interview/visit to lab</i>	
5.1.2	Lab specialist(s) trained in clinical microbiology	<input type="checkbox"/>	<i>Certificates, training records</i>	
5.1.3	Microbiology activities evaluated periodically by internal quality control	<input type="checkbox"/>	<i>Quality control records on identification and susceptibility testing</i>	
5.1.4	The lab participates in external quality control at least once a year	<input type="checkbox"/>	<i>Reference lab report</i>	
5.1.5	Laboratory biosafety standards implemented	<input type="checkbox"/>	<i>Standards, interview</i>	

5.2	Interaction between IPC activities and the microbiology laboratory			
5.2.1	IPC programme liaises IPC activities with those of the microbiology laboratory	<input type="checkbox"/>	<i>Interview</i>	
5.2.2	Microbiological data on HAI agents are available for surveillance and IPC activities	<input type="checkbox"/>	<i>Reports</i>	
5.2.3	Data on antimicrobial susceptibility patterns of relevant etiologic agents available for IPC activities	<input type="checkbox"/>	<i>Reports</i>	

5.3	The HCF has capability⁴¹ to identify pathogens most relevant for IPC, including:			
5.3.1	Aerobic bacteria to species level in blood cultures and sterile sites	<input type="checkbox"/>	<i>Interview, reports</i>	

³⁷ At least for the minimum set of surveillance indicators

³⁸ At least annually

³⁹ At least for the minimum set of surveillance indicators

⁴⁰ There is a clinical microbiology lab or a contact with external provider of microbiological support

⁴¹ By its own laboratory or external provider

5.3.2	Viral agents ⁴²	<input type="checkbox"/>	Interview, reports	
5.3.3	<i>M. tuberculosis</i>	<input type="checkbox"/>	Interview, reports	
5.3.4	<i>Candida</i> spp.	<input type="checkbox"/>	Interview, reports	

5.4	The HCF is able to identify antimicrobial susceptibility of isolated pathogens, including:			
5.4.1	Susceptibility patterns of most frequent HAI agents	<input type="checkbox"/>	Interview, reports	
5.4.2	Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA)	<input type="checkbox"/>	Interview, reports	
5.4.3	Vancomycin-resistant <i>Enterococcus</i> (VRE)	<input type="checkbox"/>	Interview, reports	
5.4.4	ESBL-producing microorganisms	<input type="checkbox"/>	Interview, reports	
5.4.5	Carbapenem-resistant microorganisms	<input type="checkbox"/>	Interview, reports	
5.4.6	Colistin-resistant microorganisms	<input type="checkbox"/>	Interview, reports	

5.5	Standardized techniques and procedures used for samples collection and transportation			
5.5.1	Indications and techniques for sample collection are standardized and known to health care providers	<input type="checkbox"/>	Interview	
5.5.2	Specimen collection and shipment manual updated at least every 5 years and circulated	<input type="checkbox"/>	Guidelines	

6 Environment

6.1	Water for consumption			
6.1.1	Safe drinking-water is available ⁴³	<input type="checkbox"/>	Interview, lab records	
6.1.2	Permanent availability of drinking water	<input type="checkbox"/>	Interview	

6.2	Hand hygiene facilities			
6.2.1	Access to hand-hygiene facilities with running water at the point of patient care is available	<input type="checkbox"/>	Direct observation	
6.2.2	Access to alcohol hand rub at the point of patient care is available	<input type="checkbox"/>	Direct observation	
6.2.3	Access to soap at the point of patient care is available	<input type="checkbox"/>	Direct observation	
6.2.4	Access to disposable tissues at the point of patient care is available	<input type="checkbox"/>	Direct observation	

⁴² Hepatitis, HIV, adenovirus, influenza, respiratory syncytial virus, rotavirus etc

⁴³ It may not be suitable for all uses or for some patients, and further processing or treatment or other safeguards may be required. It is recommended that the IPC programme should include a water safety plan developed for the HCF. See more about water safety in the WHO Guidelines for drinking water quality at http://www.who.int/water_sanitation_health/publications/2011/dwq_guidelines/en/index.html

6.2.5	Access to hand dryers at the point of patient care is available	<input type="checkbox"/>	Direct observation	
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6.3	Environmental ventilation			
6.3.1	Permanent environmental ventilation in patient care areas is available	<input type="checkbox"/>	Interview, direct observation	
6.3.2	Ventilation systems in HCFs are maintained regularly	<input type="checkbox"/>	Maintenance records	

6.4	Patient placement in health care settings			
6.4.1	Policies for placement of patient under isolation precautions in health care settings are defined	<input type="checkbox"/>	Policies	
6.4.2	Policies for placement and flow of patients in health care settings are defined	<input type="checkbox"/>	Policies	

6.5	Medical waste management			
6.5.1	Policies on segregation of medical waste are defined	<input type="checkbox"/>	Policies	
6.5.2	Policies on transportation of medical waste are defined	<input type="checkbox"/>	Policies	
6.5.3	Policies on final destination of medical waste are defined	<input type="checkbox"/>	Policies	
6.5.4	Training of professionals involved in management of medical waste organized regularly	<input type="checkbox"/>	Training records	

6.6	Other hygienic requirements			
6.6.1	Policies for storage conditions for supplies are defined ⁴⁴	<input type="checkbox"/>	Policies	
6.6.2	Participation of IPC team if remodelling/construction are performed in areas with activities of clinical importance	<input type="checkbox"/>	Interview	
6.6.3	Precautions during building and renovation work to avoid infectious complications in individuals in HCF ⁴⁵	<input type="checkbox"/>	Interview	

7 Monitoring & Evaluation

7.1	M&E framework is established			
7.1.1	Well-defined M&E plan with clear goals, targets and operational plans	<input type="checkbox"/>	Plans	

⁴⁴ e.g. dry and free of dust

⁴⁵ Building and renovation in progress in health-care facilities should incorporate proper containment of dust and particles, especially if they affect ICU patients, burn units, operating rooms, immunocompromised patients

7.1.2	Tools to collect information needed for M&E in a systematic way developed	<input type="checkbox"/>	Tool(s)	
7.1.3	M&E activities within HCF are aligned with national M&E activities	<input type="checkbox"/>	Interview	
7.1.4	Information collected is regularly analysed and used to inform the day to day management	<input type="checkbox"/>	Interview	

7.2	M&E indicators are defined and used			
7.2.1	The indicators are comparable over time	<input type="checkbox"/>	Reports	
7.2.2	The indicators are linked to the targets established by the IPC programme work plan	<input type="checkbox"/>	Work plan	
7.2.3	There is a number of key indicators comparable with other HCFs in the country	<input type="checkbox"/>	Interview	
7.2.4	Core indicators include both process and outcome indicators	<input type="checkbox"/>	List of indicators	

7.3	Reporting of M&E data			
7.3.1	HCF regularly reports on the state of the IPC goals and strategies and the impact of the IPC activities	<input type="checkbox"/>	Reports	
7.3.2	Evaluation of the performance of local IPC programmes is performed in a blame free institutional culture ⁴⁶	<input type="checkbox"/>	Interview	

8 Links with public health and other services

8.1	Links between HCF and other external services are established			
8.1.1	Links between HCF and public health services are established ⁴⁷	<input type="checkbox"/>	Interview	
8.1.2	Links with other services providing health care are established ⁴⁸	<input type="checkbox"/>	Interview	
8.1.3	Links with other services related to health care and response to emergencies are established ⁴⁹	<input type="checkbox"/>	Interview	

8.2	Events of interest to link public health and HCF include:			
8.2.1	Outbreaks	<input type="checkbox"/>	Interview	
8.2.2	Emergence of a new pathogen	<input type="checkbox"/>	Interview	
8.2.3	An important pattern of resistance to	<input type="checkbox"/>	Interview	

⁴⁶A culture where no blame is ascribed to individual actors, and most errors are viewed largely as system-based. It does not exclude accountability when traceable to truly negligent actions

⁴⁷Coordinated surveillance and response to public-health emergencies due to communicable diseases. IPC should be an integral part of the plan for preparedness to emergencies in communicable diseases

⁴⁸e.g. Emergency Medical Services

⁴⁹Logistics, IT & Communications, Transport, Security etc

	antimicrobials		
8.2.4	Unusual cluster of disease among HCW	<input type="checkbox"/>	<i>Interview</i>

8.3	Links with other existing programmes/services at HCF level are established⁵⁰		
8.3.1	Prevention and containment of antimicrobial resistance/antimicrobial pharmacy	<input type="checkbox"/>	<i>Interview</i>
8.3.2	Tuberculosis programme	<input type="checkbox"/>	<i>Interview</i>
8.3.3	HIV programme	<input type="checkbox"/>	<i>Interview</i>
8.3.4	Other relevant public health programmes related to communicable diseases	<input type="checkbox"/>	<i>Interview</i>
8.3.5	Laboratory services	<input type="checkbox"/>	<i>Interview</i>
8.3.6	Occupational health	<input type="checkbox"/>	<i>Interview</i>
8.3.7	Quality of care and/or patient safety and/or patient rights	<input type="checkbox"/>	<i>Interview</i>
8.3.8	Waste management and other environmental services	<input type="checkbox"/>	<i>Interview</i>
8.3.9	Coordination with the HCF administration of the procurement of supplies and equipment related to IPC	<input type="checkbox"/>	<i>Interview</i>

⁵⁰Preferably through link staff

**CHECKLIST FOR PREVENTION OF CENTRAL LINE-
ASSOCIATED BLOOD STREAM INFECTIONS (CLABSIs)**

This module should be completed by the head doctor or nurse for each clinical area in the assessment where central venous catheters (i.e., central lines) are used.

For each item, mark the answer that best describes your current situation by putting a check mark inside the brackets. Note that some questions ask for only one answer while others ask you to mark all answers that apply. Mark one answer unless specified otherwise.

What is the name of this unit? _____

Name of person conducting the questionnaire? _____

Name(s) of person(s) completing the questionnaire? _____

General Information

1. What types of central lines are used? (Mark all that apply) []0 Stiff []1 Flexible
2. How are central lines obtained? []1 Purchased commercially []0 Prepared locally
3. Are CLABSI prevention "bundle" supplies (e.g., in a kit) readily available for use? []0 No []1 Yes
4. Do clinicians have access to checklists for practices related to CLABSI prevention? []0 No []1 Yes
5. Does the facility provide reoccurring education sessions on central line insertion, handling, and maintenance? []0 No []1 Yes

Assessment section total: _____

Possible section total: 5

Insertion Practices

6. Is hand hygiene performed before insertion of central lines?

- 0 No
- 1 Yes

7. What barriers are used for central line insertion? (Mark all that apply)

- 1 Mask
- 1 Hair cover (cap)
- 1 Sterile gloves
- 1 Gown (sterile or non-sterile)
- 1 Large sterile drape (such as used in surgery)

8. What type of skin antiseptic is used for inserting central lines? (Mark one answer)

- 0 None (skip question 9)
- 2 Chlorhexidine containing antiseptic
- 1 Iodophore containing antiseptic
- 1 Alcohol containing antiseptic
- 0 Other

9. How often is there a sufficient supply of skin antiseptic for use during central line insertion procedures? (Mark one answer)

- 0 Never
- 0 Rarely
- 0 About 50% of the time
- 1 Most of the time
- 2 Always

10. Are femoral insertion sites typically avoided?

- 0 No
- 1 Yes

11. How often are central lines inserted by cut-down? (Mark one answer)

- 2 Never
- 1 Rarely
- 0 About 50% of the time
- 0 Most of the time
- 0 Always

12. What type of dressing is most commonly used to cover the central line insertion site? (Mark one answer)

- 0 None
- 0 No dressing used; tape only
- 1 Sterile gauze or sterile, transparent, semipermeable dressing

Assessment section total: _____

Possible section total: 14

Maintenance Practices

13. Are daily audits conducted to assess whether each patient's central line is still needed?

- 0 No
 1 Yes

14. At which of the following central line maintenance steps is hand hygiene performed? (Mark all that apply)

- 0 Dressing change
 0 Accessing the line
 0 Port change
 1 All of the above

15. Are sterile or clean gloves used during central line dressing changes?

- 0 No
 1 Yes

16. What type of skin antiseptic is used for central line dressing changes? (Mark one answer)

- 0 None
 1 > 0.5% Chlorhexidine containing antiseptic
 0 Other

17. Are central line dressings replaced when they are wet, soiled, or dislodged?

- 0 No
 1 Yes

18. Are central lines routinely changed (e.g. every 72-96 hours) to reduce risk of infection?

- 1 No
 0 Yes

19. When the intravascular infusion system is disconnected at the site of a hub connection, is the inside of the connection cleaned with sterile water, sterile saline, or alcohol prior to reconnection?

- 0 No
 1 Yes

20. When an injection is made into a port in the intravascular infusion system, is the port covering (e.g., latex membrane) cleaned with alcohol or an iodinated disinfectant?

- 0 No
 1 Yes

21. Are central lines reprocessed for use in another patient?

- 1 No
 0 Yes

Assessment section total: _____

Possible section total: 9

ANNOTATIONS

Background

The use of intravascular devices, both venous and arterial, to deliver sterile fluids, medications, and nutritional products and for central monitoring of blood pressure and other hemodynamic functions, has increased dramatically during the past decade. The risk of infection associated with the use of intravascular devices can be reduced by following recommended infection prevention practices related to their insertion (e.g., the use of aseptic technique) and by better management of the device once it is in place. In many countries, poor infection prevention practices, such as infrequent hand washing or use of antiseptic hand rub, failure to use gloves, and failure to use maximal barrier precautions when inserting central intravenous catheters, often result in increased rates of local and systemic infections (Tietjen et al. 2003, 24-1).

Item Notes

1. Stiff catheters confer higher risk of venous thrombosis and infection. The risk of these complications is lower with flexible intravascular catheters.
2. Commercial catheters manufactured under strictly controlled antiseptic conditions are ideal for patient use. Locally produced/assembled catheters are more likely to be contaminated and may be more irritating to blood vessels, putting patients at risk of phlebitis and infection. Moreover, connections of locally produced and assembled administration systems may not fit well, allowing contamination of the system.
3. Use hospital-specific or collaborative-based performance improvement initiatives in which multifaceted strategies are “bundled” together to improve compliance with evidence-based recommended practices (CDC 2011).
4. A checklist available to clinicians to ensure adherence to proper practices to prevent CLABSI might help to reduce CLABSI incidence (CDC 2011).
5. Educate healthcare personnel regarding the indications for the intravascular catheter use, proper procedures for the insertion and maintenance of intravascular catheters, and appropriate infection control measures to prevent intravascular catheter-related infections. Designate only trained personnel who demonstrate competence for the insertion and maintenance of central intravascular catheters (CDC 2011).
6. Perform hand hygiene procedures, either by washing hands with conventional soap and water or with alcohol-based hand rubs (ABHR). Hand hygiene should be performed before and after palpating catheter insertion sites as well as before and after inserting, replacing, accessing, repairing, or dressing an intravascular catheter (CDC 2011).
7. Use aseptic technique including the use of a cap, mask, sterile gown, sterile gloves, and a large sterile sheet for the insertion of CVCs (including PICCS) or guidewire exchange (CDC 2002).
- 8, 9. Clean skin should be disinfected with an appropriate antiseptic before catheter insertion and during dressing changes. Although a two-percent chlorhexidine-based preparation is preferred for central venous catheter insertion, tincture of iodine, an iodophor, or 70 percent alcohol can all be used (CDC 2002). Alcohol is an inexpensive, cost effective, efficacious antiseptic for cleaning skin for peripheral catheter insertion.

Chlorhexidine is also highly effective. Iodine and iodophors are effective as well, but they must be allowed to dry before IV access is attempted.

10. Use a subclavian site, rather than a jugular or a femoral site, in adult patients to minimize infection risk for nontunneled central venous catheter placement (CDC 2011).
11. Cutdown procedures for venous access put patients at extremely high risk of infection. Intraosseous catheter insertion is possible even in adult patients, and is a preferable route for emergency intravascular access. If a cutdown or intraosseous procedure is necessary, this line should be replaced by a conventional, aseptically inserted central venous line as soon as possible (CDC 2002).
12. Use either sterile gauze or sterile, transparent, semipermeable dressing to cover the catheter site (CDC 2011).
13. Promptly remove any intravascular catheter that is no longer essential (CDC 2011).
14. See note for question 6.
15. Wear either clean or sterile gloves when changing the dressing on intravascular catheters (CDC 2011).
16. Prepare clean skin with a >0.5% chlorhexidine preparation with alcohol before central venous catheter insertion and during dressing changes. If there is a contraindication to chlorhexidine, tincture of iodine, an iodophor, or 70% alcohol can be used as alternatives (CDC 2011).
17. Replace catheter site dressing if the dressing becomes damp, loosened, or visibly soiled (CDC 2011).
18. Do not routinely replace central venous or arterial catheters solely for the purposes of reducing the incidence of infection. (CDC 2002).
- 19,20. Clean injection ports with 70 percent alcohol or an iodophor before accessing the system (CDC 2002).
21. Reuse of IV catheters and tubing is dangerous because it puts patients at risk of acquiring blood-borne pathogens, such as HIV or hepatitis B, from a previous patient. Furthermore, defects can arise in catheters and tubing that can cause mechanical dysfunction or bacterial contamination. Thus, IV materials should be discarded after each use.

References

U. S. Centers for Disease Control and Prevention (CDC). 2002. Guidelines for the Prevention of Intravascular Catheter Related Infections. *MMWR* 2002;51(No. RR-10):1–29.

U.S Centers for Disease Control and Prevention (CDC). 2011. Guidelines for the Prevention of Intravascular Catheter Related Infections.

Tietjen, L., D. Bossemeyer, and N. McIntosh. 2003. *Infection Prevention: Guidelines for Healthcare Facilities with Limited Resources*. Baltimore, MD: Jhpiego.

SCORING SHEET

Name of facility: _____

Unit assessed: _____

Date completed: _____

Section	1	2	3	4
	Assessment Total	Possible Total	Percent Score	Rating Based on Percent Score
General Information		5		
Insertion Practices		14		
Maintenance Practices		9		
Total		28		

Column Notes

1. Assessment Total—Sum of points for all marked responses
2. Possible Total—Sum of all possible points for the question
3. Percent Score—(Column 1/Column 2) * 100
4. Rating—

More than 75% of possible points: A – recommended practices are followed consistently and thoroughly
50–75% of possible points: B – recommended practices usually followed
Less than 50% of possible points: C – training and follow-up needed on recommended practices

