



# WHO


## Core Components of Infection Prevention and Control Programmes

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UNIVERSITÉ  
DE GENÈVE  
FACULTÉ DE MÉDECINE

 World Health Organization

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

B. Allegranzi  
IPC Global Unit, SDS/HIS, WHO HQ

14 November 2016

 World Health Organization

**Advanced Infection  
Prevention and  
Control Training**

**Leadership and programme management in  
infection prevention and control**

2018

WHO Global Unit 2017



**Guidelines on Core Components  
of Infection Prevention and Control  
Programmes at the National and Acute  
Health Care Facility Level**

 World Health Organization



**Health care without  
avoidable infections**  
The critical role of  
infection prevention  
and control

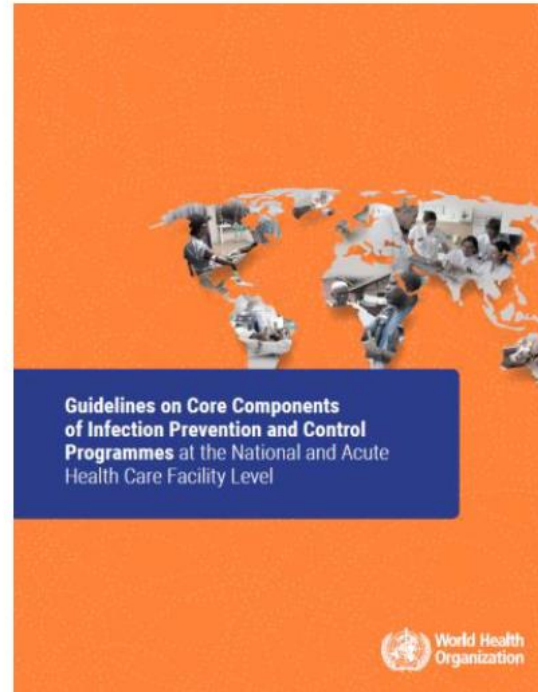
 World Health Organization

<http://www.who.int/gpsc/en/>  World Health Organization

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



Focus on  
preventing  
HAIs and  
combating  
AMR

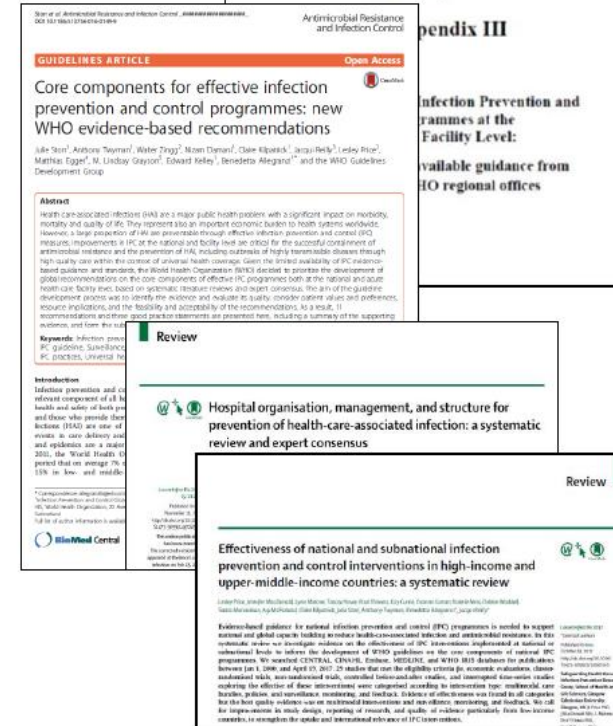


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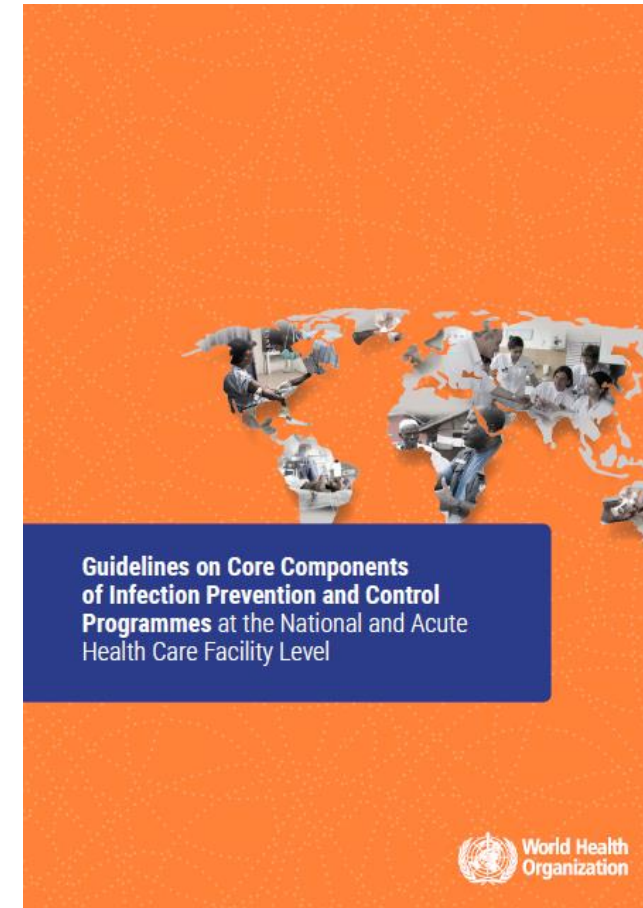
- <http://www.who.int/infection-prevention/publications/ipc-components-guidelines/en/>
- Zingg W et al. TLID 2015
- Storr J et al. ARIC 2017
- Presley L et al. TLID 2017



## Guidelines on Core Components of Infection Prevention and Control Programmes at the National and Health Care Facility Level

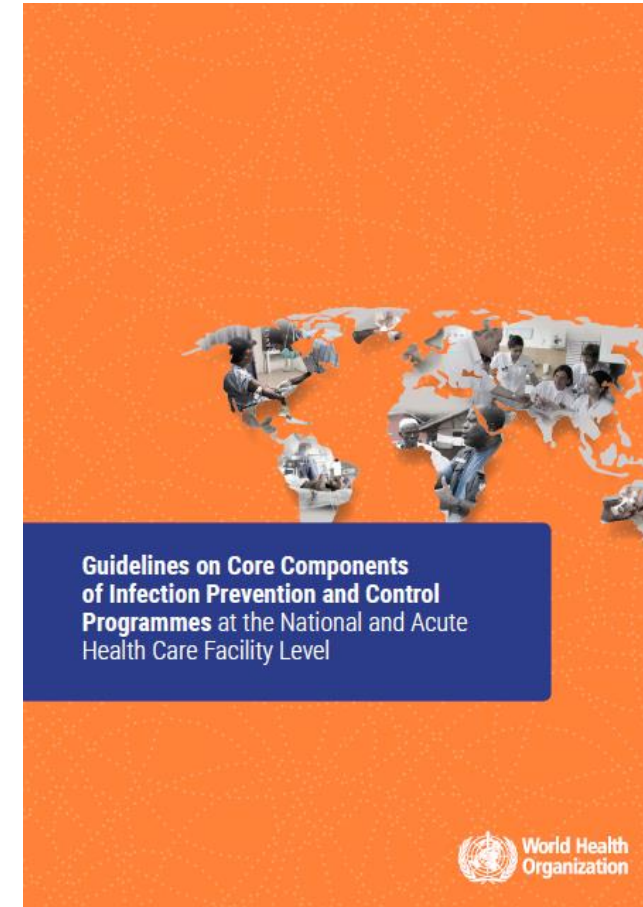


- WHO Global Unit calls on countries and health care facilities to strengthen IPC programs to achieve resilient health systems
- Implement - Guidelines on core components of IPC programs at national and acute health care facility level

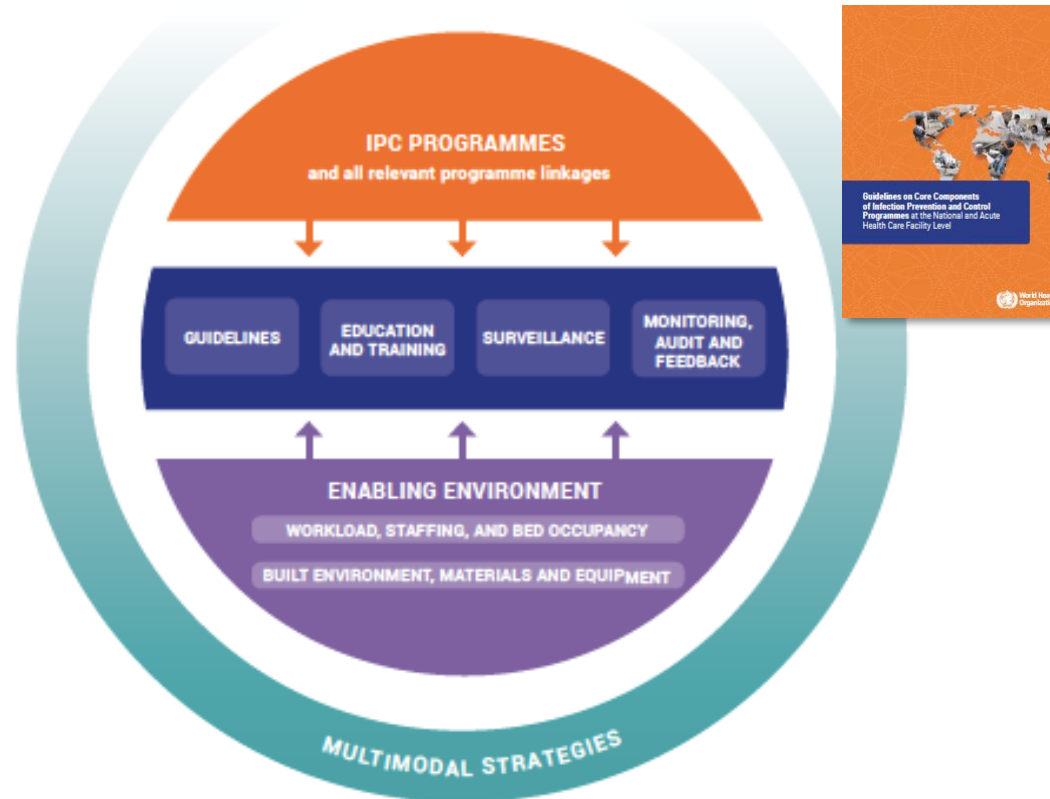




- This will contribute to achieve Sustainable Development Goals
  - Universal access to **W**ater, **S**anitation and **H**ygiene (WASH)
  - Quality health service delivery in the context of universal health coverage
  - Reduction of neonatal and maternal mortality
- The WHO core components are a road map for how IPC can prevent harm due to health care-associated infection (HAI) and antimicrobial resistance (AMR)



# IPC core components



# New WHO core components for IPC programmes

<b>1</b>	<b>IPC programmes</b>	<b>R1a</b> Strong <b>1b</b> GPS	An IPC programme with a dedicated, trained team should be in place in each acute health care facility for the purpose of preventing HAI and combating AMR through IPC good practices.  Stand-alone, active national IPC programmes with clearly defined objectives, functions and activities for the purpose of preventing HAI and combating AMR through IPC good practices should be established. National IPC programmes should be linked to other relevant national programmes and professional organizations.
<b>2</b>	<b>Evidence-based guidelines</b>	<b>R2</b> Strong	Evidence-based guidelines should be developed and implemented for the purpose of reducing HAI and AMR. Education and training of the relevant health care workers on guideline recommendations and monitoring of adherence with guideline recommendations should be undertaken to achieve successful implementation.
<b>3</b>	<b>Education &amp; training</b>	<b>R3a</b> Strong <b>3b</b> GPS	At the facility level, IPC education should be in place for all health care workers by utilizing team- and task-based strategies that are participatory and include bedside and simulation training to reduce the risk of HAI and AMR.  The national IPC programme should support education and training of the health workforce as one of its core functions.
<b>4</b>	<b>Surveillance</b>	<b>R4a</b> Strong <b>R4b</b> Strong	Facility-based HAI surveillance should be performed to guide IPC interventions and detect outbreaks, including AMR surveillance with timely feedback of results to health care workers and stakeholders and through national networks.  National HAI surveillance programmes and networks that include mechanisms for timely data feedback and with the potential to be used for benchmarking purposes should be established to reduce HAI and AMR.
<b>5</b>	<b>Multimodal Strategies</b>	<b>R5a</b> Strong <b>R5b</b> Strong	At the facility level, IPC activities should be implemented using multimodal strategies to improve practices and reduce HAI and AMR.  National IPC programmes should coordinate and facilitate the implementation of IPC activities through multimodal strategies at the national or sub-national level.
<b>6</b>	<b>Monitoring, audit &amp; feedback</b>	<b>R6a</b> Strong <b>R6b</b> Strong	Regular monitoring/audit and timely feedback of health care practices should be undertaken according to IPC standards to prevent and control HAIs and AMR at the health care facility level. Feedback should be provided to all audited persons and relevant staff.  A national IPC monitoring and evaluation programme should be established to assess the extent to which standards are being met and activities are being performed according to the programme's goals and objectives. Hand hygiene monitoring with feedback should be considered as a key performance indicator at the national level.
<b>7</b>	<b>Workload, staffing &amp; bed occupancy</b>	<b>R7</b> Strong	In order to reduce the risk of HAI and the spread of AMR, the following should be addressed: (1) bed occupancy should not exceed the standard capacity of the facility; (2) health care worker staffing levels should be adequately assigned according to patient workload.
<b>8</b>	<b>Built environment, materials &amp; equipment</b>	<b>8a</b> GPS <b>R8b</b> Strong	At the facility level, patient care activities should be undertaken in a clean and/or hygienic environment that facilitates practices related to the prevention and control of HAI, as well as AMR, including all elements around the WASH infrastructure and services and the availability of appropriate IPC materials and equipment.  At the facility level, materials and equipment to perform appropriate hand hygiene should be readily available at the point of care.

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

R= recommendation; GPS: good practice statement

## Guideline Recommendations (R) & Good Practice Statements (GPS)

### 1 IPC programmes

**R1a**  
*Strong*

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

**1b**  
*GPS*

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

### 2 Evidence-based guidelines

**R2**  
*Strong*

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

### 3 Education & training

**R3a**  
*Strong*

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

**3b**  
*GPS*

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



## Guideline Recommendations (R) & Good Practice Statements (GPS)

4

### Surveillance

R4a  
*Strong*

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

R4b  
*Strong*

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

5

### Multimodal Strategies

R5a  
*Strong*

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

R5b  
*Strong*

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

6

### Monitoring, audit & feedback

R6a  
*Strong*

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

R6b  
*Strong*

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

## Guideline Recommendations (R) & Good Practice Statements (GPS)

**7** **Workload, staffing & bed occupancy**

**R7**  
*Strong*

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

**8** **Built environment, materials & equipment**

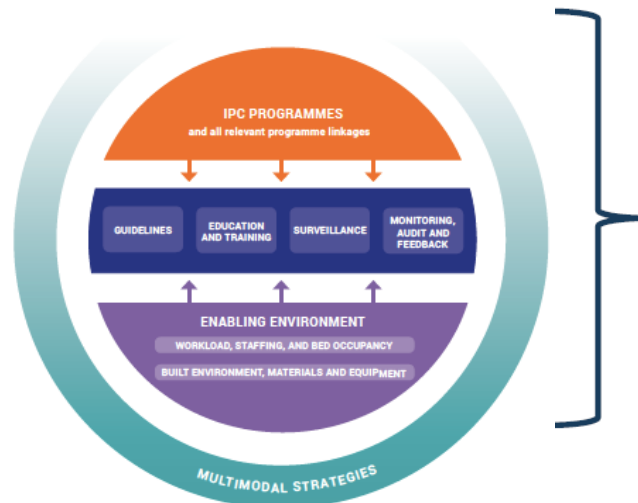
**8a**  
*GPS*

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

**R8b**  
*Strong*






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

## The core components at-a-glance



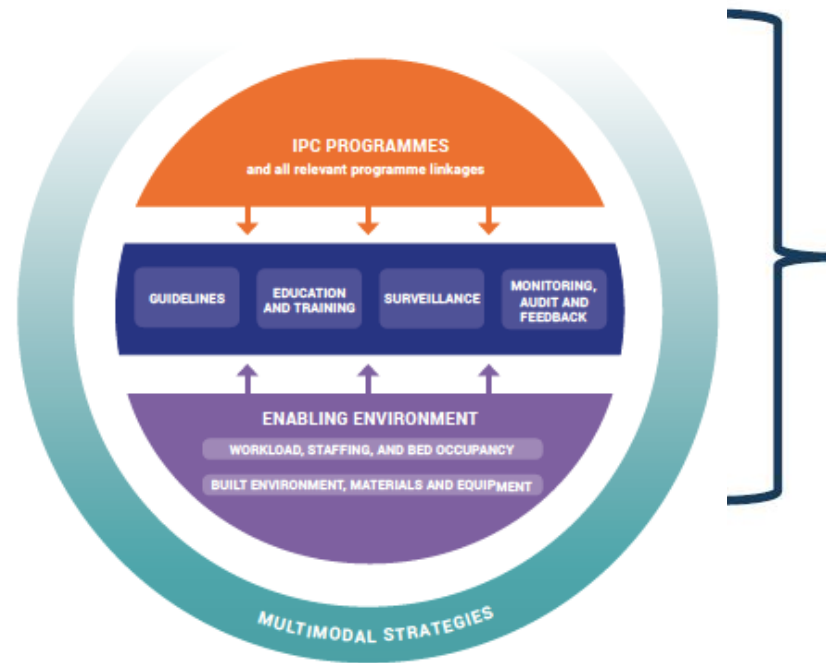
Resources are available to support implementation

## Implementation resources

				
Practical manual to support implementing the core components	Assessment tools to support baseline and follow-up assessment	Academic publications to convince senior managers and leaders	Videos explaining the core components and leadership in IPC	Advocacy video on IPC, HAI and AMR

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

## Project management – an important skill



Understand the role of project management in IPC programmes

### Assessments and situation analysis as a key step of project management (steps 2 and 4)



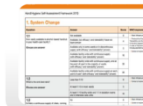
#### Infection prevention and control assessment tool (IPCAT2)

- National-level assessment tool.
- Provides baseline and ongoing data for improvement.



#### Infection prevention and control assessment framework (IPCAF)

- Facility-level assessment tool.
- Provides baseline and ongoing data for improvement.

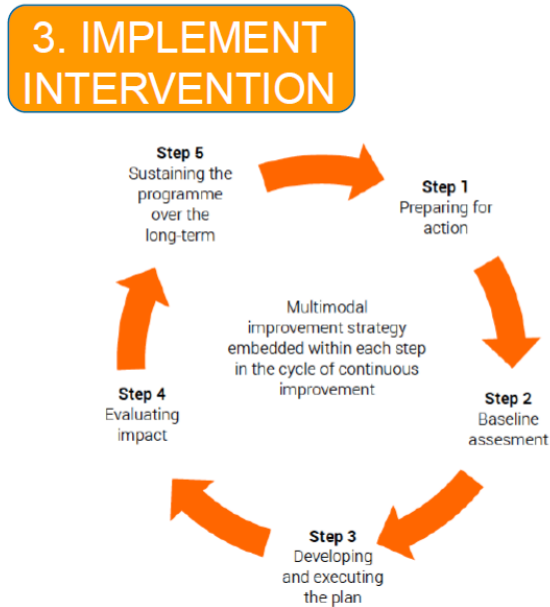


#### Hand hygiene self-assessment framework (HSAF)

- Diagnostic tool for health care facilities.
- Provides baseline and ongoing data for improvement.

# Implement intervention

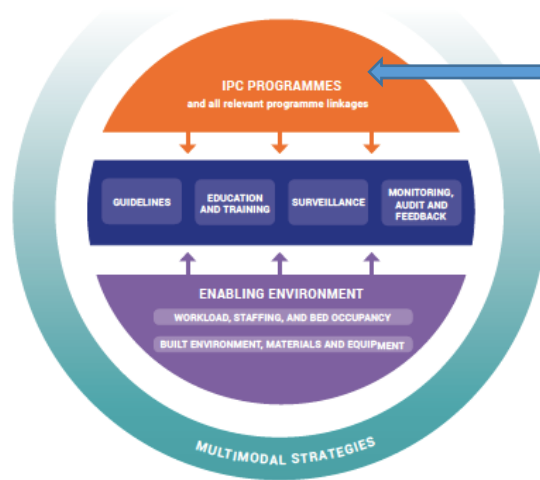
The WHO five-step cycle



Based on the validated approach to implementation developed in relation to the WHO guidelines on hand hygiene in health care (2009)



## IPC relevant programme interlinkages

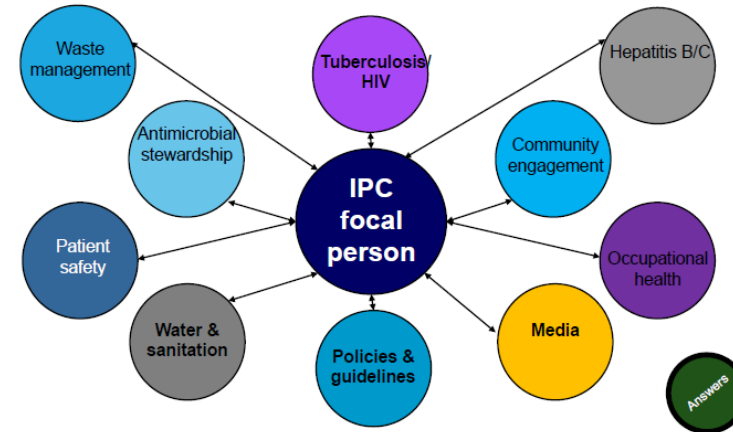


Who should  
IPC link  
with?

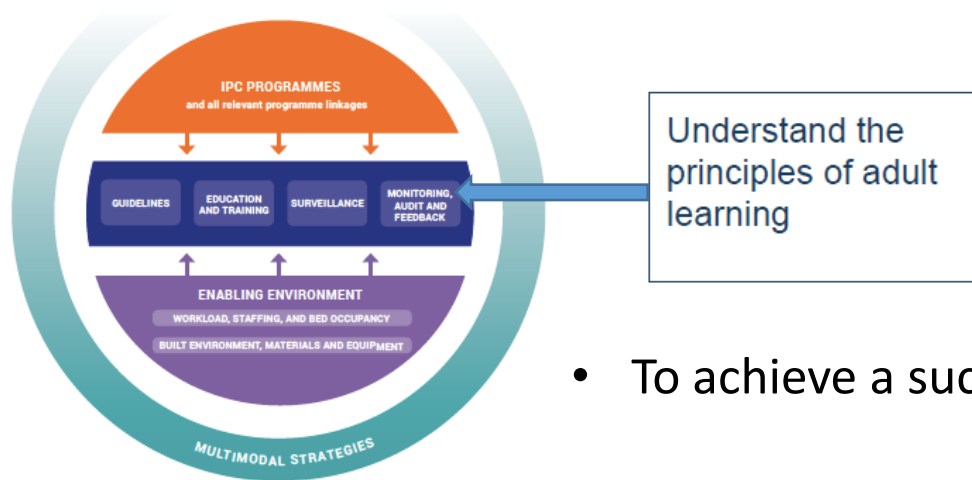


## Linkages with other programmes

IPC focal person advocates for IPC across programmes



## Core components and the principles of adult learning

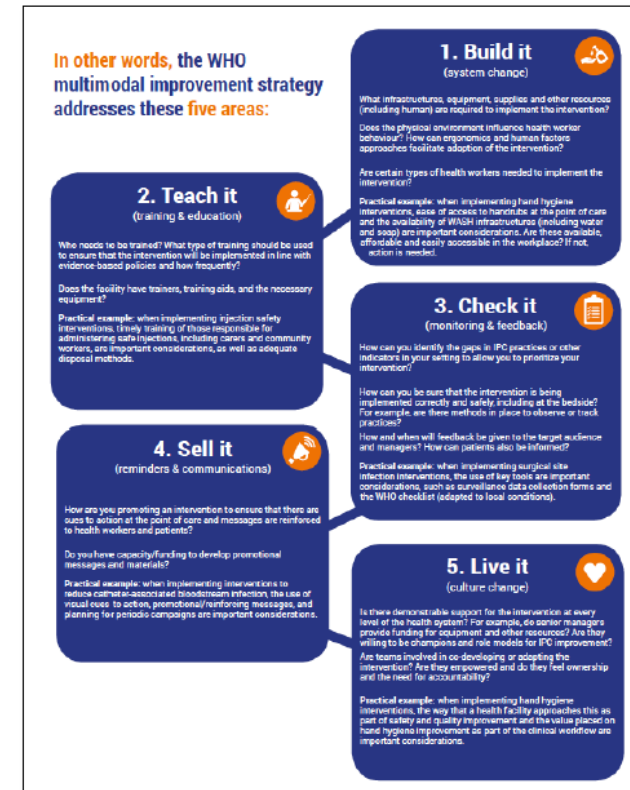
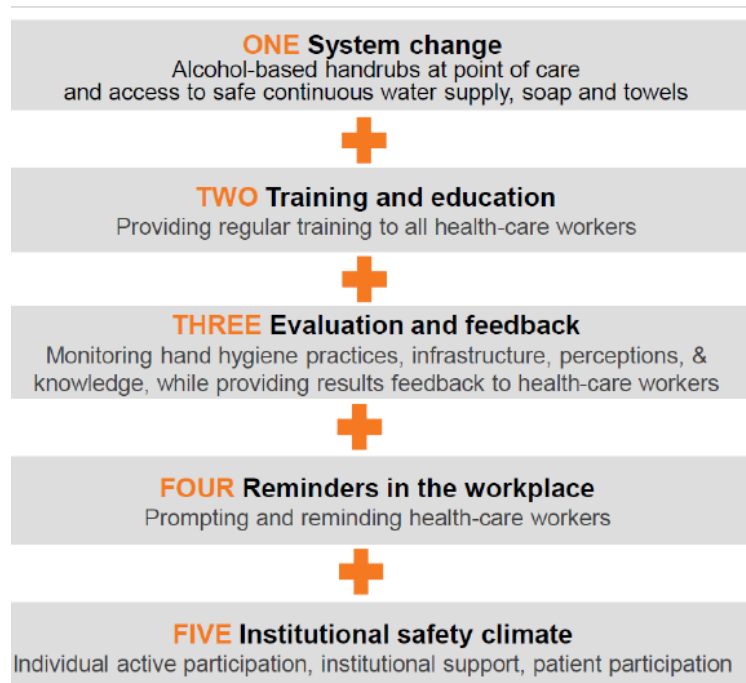


- To achieve a successful surveillance program:
  - HCWs should learn appropriate case definitions, reporting mechanisms, sources of bias and error
  - IPC focal persons not only need to support this learning, but also the learning of those who are teaching how to learn the core components

# Hand hygiene multimodal improvement strategy



## Supporting implementation



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

- Limited access to qualified and trained IPC professionals
- Limited human resources
- Inadequate budgets
- Implementation challenges
- Need for adaptation or tailoring to the cultural setting and local context, and according to available resources
- Availability of human resources and training, quality microbiological/laboratory support, information technology, and data management systems are requirements for surveillance and auditing; in their absence, surveillance based on clinical data could be considered.



### New IPC core components: implications for low and middle income countries (2)

#### However:

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



## Making improvement with limited resources



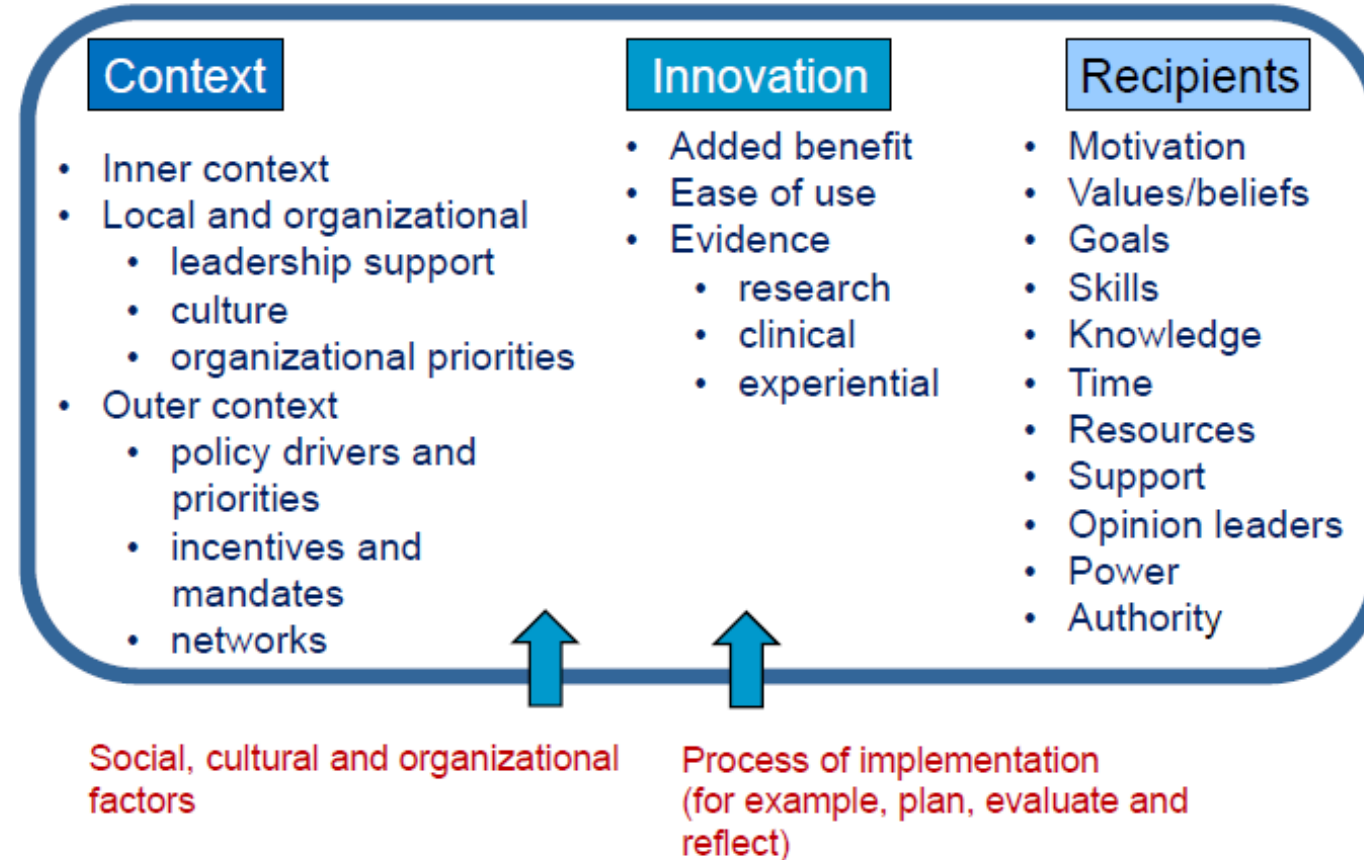
- Damani highlights three approaches to improve IPC in settings with limited resources:
  - focus on improving **no-cost** practices
  - focus on improving **low-cost** practices
  - **stop wasteful and unnecessary** practices.
- These three approaches have the potential to save money, time and improve the quality and safety of health care.




Damani N. Simple measures save lives: an approach to infection control in countries with limited resources. J Hosp Infect. 2007;65(Suppl. 2):151-154



# What is required for successful implementation?





# INFECTION PREVENTION AND CONTROL ASSESSMENT FRAMEWORK AT THE FACILITY LEVEL



## 81 indicators for 8 WHO IPC core components (CC)

### Introduction and user instructions

The Infection Prevention and Control (IPC) Assessment Framework (IPCAF) is a tool to support the implementation of the World Health Organization (WHO) *Guidelines on core components of IPC programmes*<sup>1</sup> at the acute health care facility level. The user should be familiar with the contents of these guidelines, including the *Interim practical manual* supporting the implementation of the IPC core components at the facility level<sup>2</sup> before using this tool. The IPCAF is a systematic tool that can provide a baseline assessment of the IPC programme and activities within a health care facility, as well as ongoing evaluations through repeated administration to document progress over time and facilitate improvement.

### What is its purpose?

The IPCAF is a structured, closed-formatted questionnaire with an associated scoring system. It is primarily intended to be self-administered (that is, a *self-assessment* tool), but it can also be used for joint assessments, through careful discussions between external assessors (for example, from the Ministry of Health, WHO or other stakeholders) and facility staff. The framework is intended for acute health care facilities, but it can be used in other inpatient health care settings. Although

<https://www.who.int/publications/i/item/WHO-HIS-SDS-2018.9>



## Interpretation: A three-step process

### 1. Add up your points

	Score
Section (Core component)	Subtotals
1. IPC programme	45
2. IPC guidelines	60
3. IPC education and training	75
4. HAI surveillance	20
5. Multimodal strategies	45
6. Monitoring/audits of IPC practices and feedback	50
7. Workload, staffing and bed occupancy	65
8. Built environment, materials and equipment for IPC at the facility level	30
<b>Final total score</b>	<b>390 /800</b>

IPC level
Inadequate
Basic
Intermediate
Advanced

## 2. Determine the assigned “IPC level” in your facility using the total score from Step 1

Total score (range)	IPC level
0–200	Inadequate
201–400	Basic
401–600	Intermediate
601–800	Advanced

### 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.



## IPCAF step 3 – Review the results and develop an action plan



### *Detailed facility assessment*

IPCAF Section	Strengths	Gaps
1. IPC programme		
2. IPC guidelines		
3. IPC education & training		
4. HAI surveillance		
5. Multimodal strategies		
6. Monitoring/audits & feedback		
7. Workload, staffing and bed occupancy		
8. Built environment		

Source: *Facility Interim Practical Manual*

<https://www.who.int/publications/i/item/WHO-HIS-SDS-2018.10>

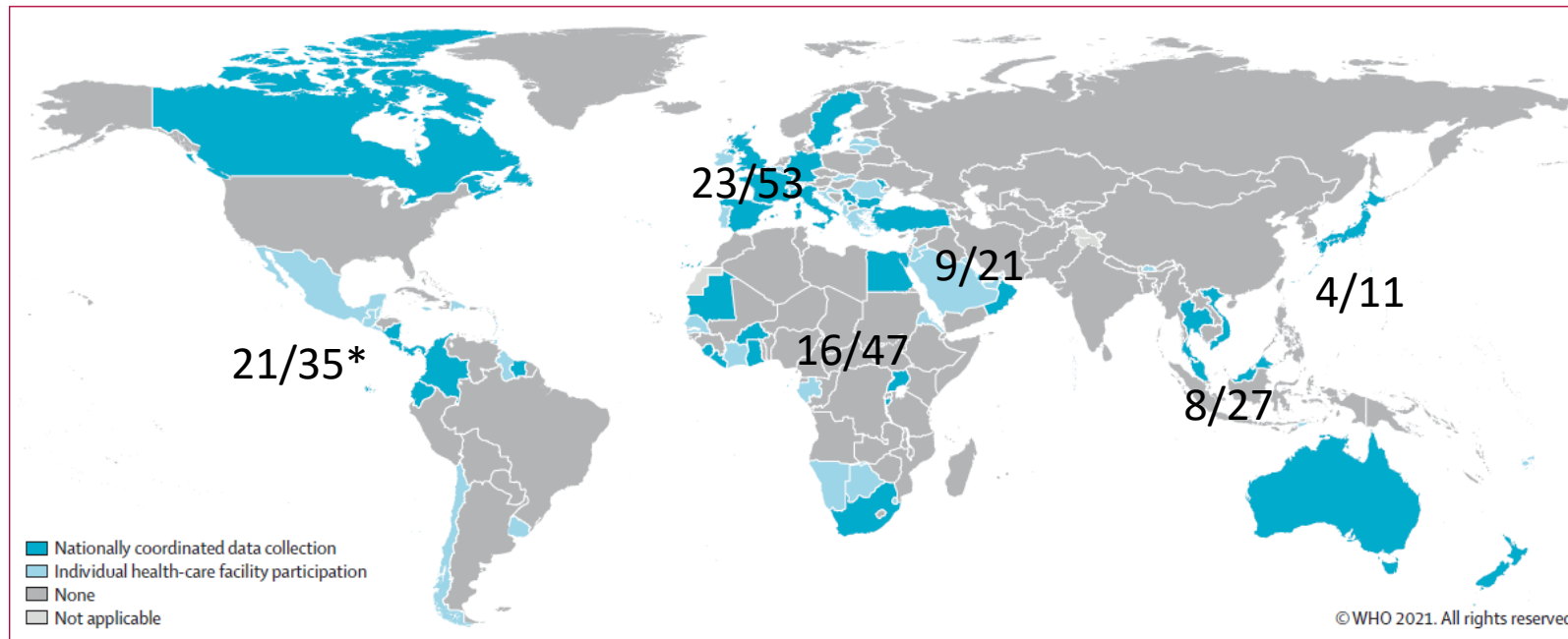
# The first WHO global survey on infection prevention and control in health-care facilities



Sara Tomczyk\*, Anthony Twyman\*, Marlieke E A de Kraker, Ana Paula Coutinho Rehse, Ermira Tartari, João Paulo Toledo, Alessandro Cassini, Didier Pittet, Benedetta Allegranzi



## 4440 responses from 81 countries



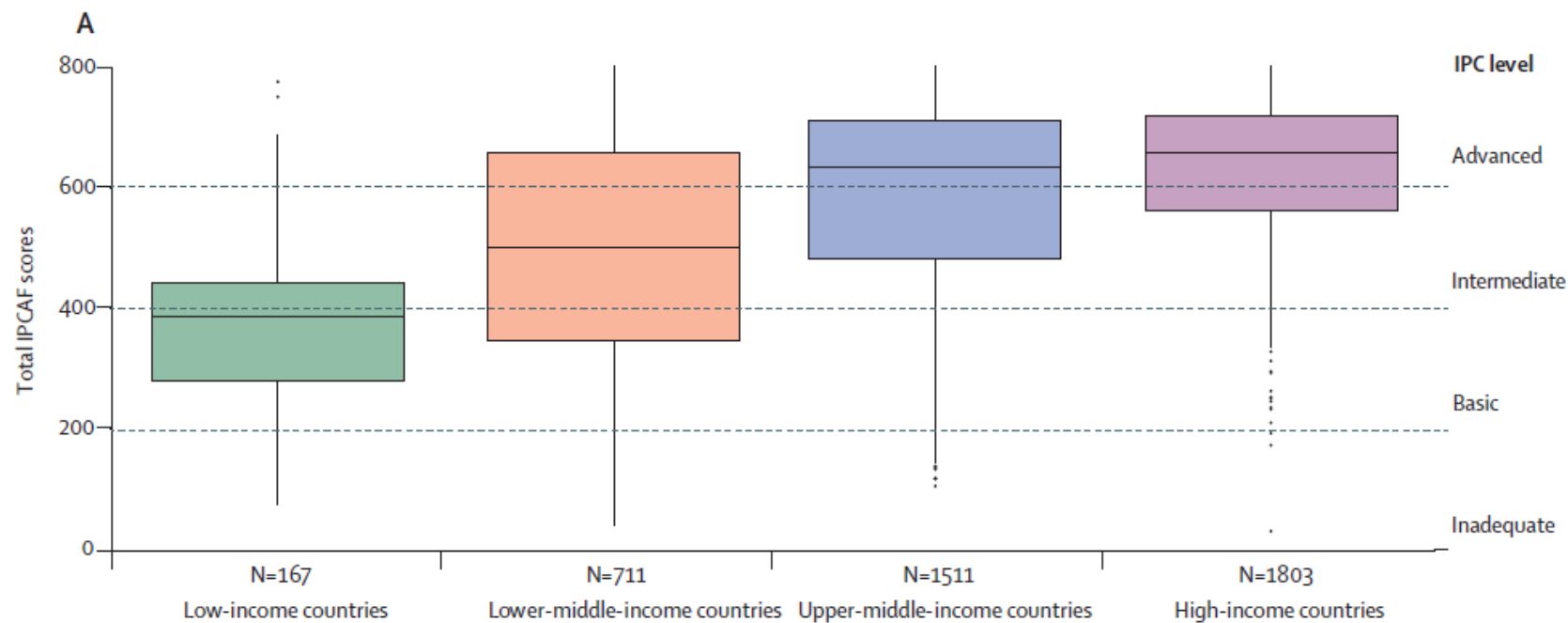
\*Proportion of countries responding from the region

All selected responses (n=4440)	
<b>WHO regions</b>	
African	698 (15.7%)
Eastern Mediterranean	523 (11.8%)
Europe	1393 (31.4%)
Americas	557 (12.5%)
South-East Asia	517 (11.6%)
Western Pacific	752 (16.9%)
<b>World Bank income level</b>	
Low-income	173 (3.9%)
Lower-middle-income	728 (16.4%)
Upper-middle-income	1638 (36.9%)
High-income	1901 (42.8%)

The majority of the responses came from high- and upper-middle-income countries

	Core component 1, IPC programme		Core component 2, IPC guidelines		Core component 3, IPC education		Core component 4, HAI surveillance		Core component 5, multimodal strategies		Core component 6, monitoring, audit, and feedback		Core component 7, workload, staffing, and bed occupancy		Core component 8, built environment		Total score	
	N	Weighted median (IQR)	N	Weighted median (IQR)	N	Weighted median (IQR)	N	Weighted median (IQR)	N	Weighted median (IQR)	N	Weighted median (IQR)	N	Weighted median (IQR)	N	Weighted median (IQR)	N	Weighted median (IQR)
Overall	4407	77.5 (57.5–90.0)	4368	87.5 (70.0–97.5)	4396	70.0 (50.0–85.0)	4331	77.5 (47.5–92.5)	4383	75.0 (45.0–85.0)	4387	72.5 (52.5–90.0)	4378	70.0 (50.0–90.0)	4347	90.0 (75.0–100.0)	4192	605.0 (450.4–705.0)
Region																		
Africa	685	55.0 (40.0–77.5)	663	67.5 (42.5–90.0)	673	57.9 (30.0–78.8)	653	32.3 (2.5–65.0)	675	60.5 (30.0–85.0)	682	50.0 (30.0–82.5)	678	60.0 (35.0–80.0)	665	75.0 (60.0–93.4)	595	415.3 (290.0–581.7)
Eastern Mediterranean	522	95.0 (82.5–100.0)	522	97.5 (90.0–100.0)	521	90.0 (70.0–95.0)	520	87.5 (75.0–100.0)	519	85.0 (80.0–95.0)	519	82.5 (70.0–90.0)	518	90.0 (70.0–100.0)	518	95.0 (90.0–100.0)	514	715.0 (632.5–740.0)
Europe	1388	82.5 (70.0–90.0)	1376	92.5 (77.5–100.0)	1388	75.0 (60.0–85.0)	1367	87.5 (71.4–95.0)	1378	75.0 (44.9–85.0)	1375	80.0 (67.5–90.0)	1374	80.0 (70.0–95.0)	1373	95.0 (90.0–100.0)	1339	650.0 (558.6–720.3)
Americas	553	75.0 (60.0–84.1)	548	85.0 (77.5–95.0)	552	65.0 (45.0–80.0)	544	80.0 (67.5–90.0)	549	65.0 (45.0–80.0)	550	70.0 (51.1–85.0)	548	70.0 (46.1–80.0)	542	82.5 (67.5–95.0)	531	567.5 (477.5–639.3)
South-East Asia	514	42.5 (27.5–77.5)	516	72.5 (42.5–85.0)	516	45.0 (15.0–70.0)	504	45.0 (22.5–81.3)	516	45.0 (20.0–75.0)	516	62.5 (35.0–87.5)	516	60.0 (35.0–70.0)	515	70.0 (67.5–87.5)	500	425 (280.0–657.5)
Western Pacific	745	75.0 (62.5–85.0)	743	90.0 (70.7–100.0)	746	75.0 (60.0–85.0)	743	67.9 (65.0–87.5)	746	70.0 (50.0–86.5)	745	75.0 (57.5–90.0)	744	72.9 (49.8–95.0)	734	95.0 (85.0–100.0)	713	636.0 (521.4–698.5)

- The overall median score indicated an ***advanced*** level of implementation (**605**, IQR 450.4–705)
- The highest scores: **Built environment** (CC 8; **90**, IQR 75.0–100.0), and **IPC guidelines** (CC 2; **87.5**, 70.0–97.5)
- The lowest scores: **Workload, staffing, and bed occupancy** (CC 7;**70**, 50–90) and **Education and training** (CC 3; **70**, 50.0–85.0)



**Figure 2: Weighted IPCAF overall and core component-specific scores by income level**

Significantly lower IPCAF scores were found in low-income (385, 279.7 - 442.9), and lower-middle-income countries (500.4, 345.0–657.5)



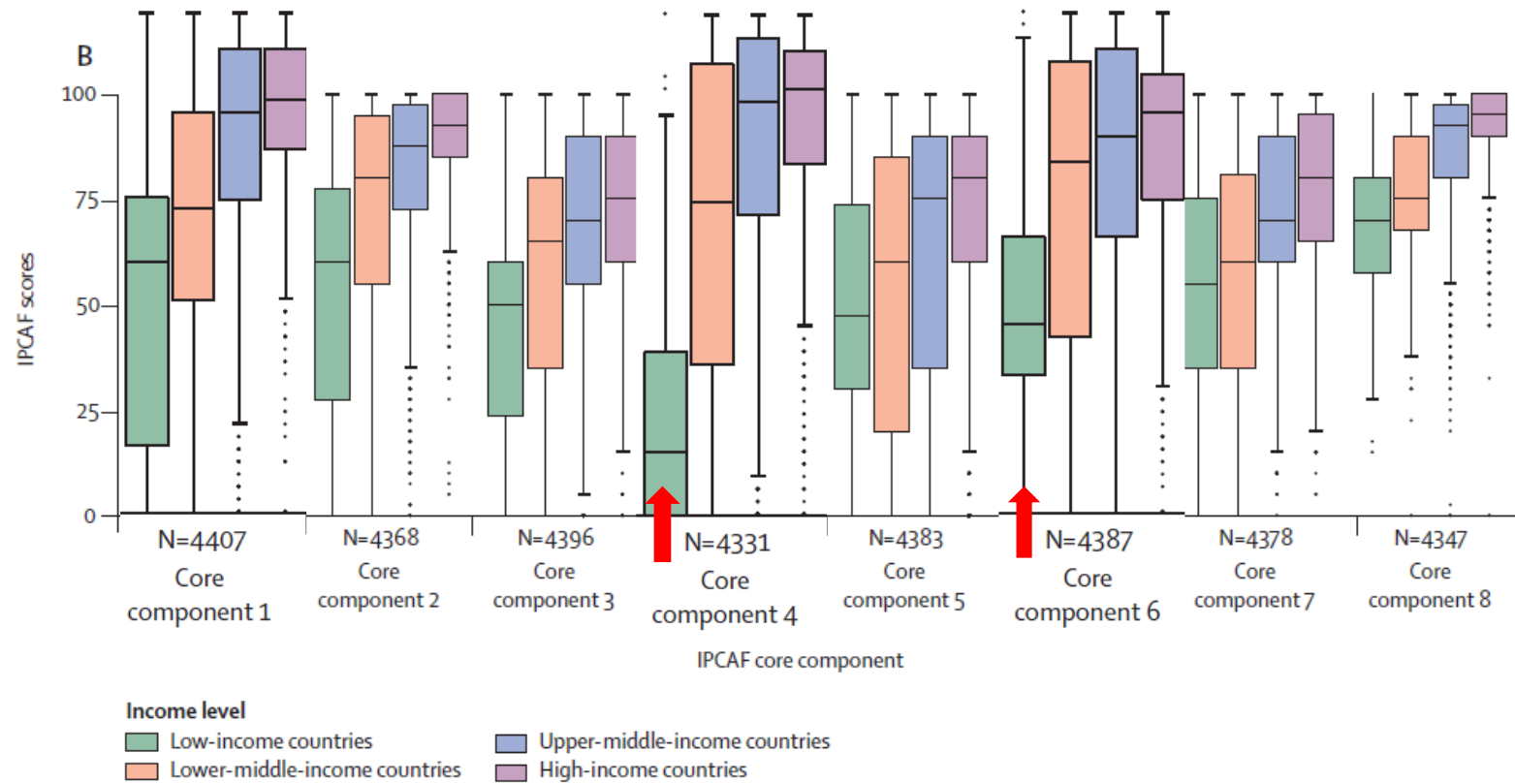


Figure 2: Weighted IPCAF overall and core component-specific scores by income level

- High-income and low-income countries differed most significantly in:
- **HAI surveillance** (CC 4; **12.5** [IQR 0–32.5] vs **85** [70.0–92.5])
  - **Monitoring, audit of IPC practices and feedback** (CC 6; **37.5** [27.5–55] vs **80** [62.5–87.5])
  - **IPC programme** (CC 1; **50** [13.3–62.9] vs **82.5** [72.5–92.5])



A strong correlation was found in selected components of the IPCAF and HHSF, and HH was identified as one of the most important predictors of the overall IPC level

# Thank you





