



Joint Action
Antimicrobial Resistance and
Healthcare-Associated Infections

D6.2

A Universal Infection Control Framework with specific roles, priorities, resources & interventions for ICP implementation in healthcare settings

WP6 | Policies for prevention of Health-care Associated Infections and their implementation

Leader acronym | EODY

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Table of Contents

1.	INTRODUCTION OF THE UNIVERSAL INFECTION CONTROL FRAMEWORK.....	3
2.	METHODOLOGY	3
3.	OBJECTIVES	4
3.1	EVALUATION OF INITIAL UICF & TRAINING TOOLS	5
4.	CONDITIONS OF IMPLEMENTATION	6
5.	INFECTION CONTROL GAPS ASSESSMENT	9
6.	1 st KEY COMPONENT: INFECTION CONTROL POLICY - INSTITUTIONAL BODIES	13
7.	2 nd KEY COMPONENT: COMMUNICATION & COOPERATION	22
8.	3 rd KEY COMPONENT: SURVEILLANCE.....	31
9.	4 th KEY COMPONENT: GUIDELINES- EDUCATION-TRAINING	40
10.	5 th KEY COMPONENT: AUDIT OF IC PRACTICES & ACTIVITIES FEEDBACK.....	53
11.	6 th KEY COMPONENT: RESOURCES	60
12.	REFERENCES	64

ACRONYMS

AMR	Antimicrobial Resistance
ASP	Antimicrobial Stewardship Program
CDH	Clinical Department Heads
ECDC	European Centre for Disease Prevention &
HA	Hospital Administrators
HAI	Healthcare Associated Infections
HH	Hand Hygiene
HCW	Healthcare Worker
IC	Infection Control
ICC	Infection Control Committee
ICP	Infection Control Programs
IPC	Infection Prevention & Control
MDROs	Multi-Drug-Resistant Organisms
PH	Public Health
PHA	Public Health Authorities
UICF	Universal Infection Control Framework
WHO	World Health Organization

1. INTRODUCTION OF THE UNIVERSAL INFECTION CONTROL FRAMEWORK

The main target of WP6.1 is to design the Universal Infection Control Framework (UICF) to be implemented in all healthcare settings regardless of the available resources or the specificities of each country's healthcare system.

2. METHODOLOGY

UICF is based on the key components of Infection Control Program of WHO's most recent guidelines, the most accurate evidence-based practices and strengthened with activities focused on organizational culture improvement. By promoting these activities, the proper working environment is built and ICP's components are more effective. Therefore, these activities are named "**Essential Activities**", as they are organization's motivation towards the realization, understanding and action to implement ICP effectively using its own processes.

The Essential Activities are not only based on WHO's ICP's key components, but also on the outcomes and the areas of improvement found on Survey A & B of the Phase 1 of EUJAMRAI's WP6.1 implementation.

The evaluation of the results of 2 previous Surveys as well as the data of international bibliography, resulted in designing the activities and tools described in this Framework, which could be implemented by all healthcare settings. These activities do not require any extra costs or resources, as their goal is to strengthen and improve the already IC implemented activities.

3. OBJECTIVES

UICF is a set of practices and tools aiming at changing organization's culture regarding Infection Control and the activities included are focused on improving the following key components:

1. Roles & Authorities of all interested parties in ICP implementation
2. Communication & Collaboration
3. Surveillance
4. Training & Awareness
5. Audit
6. Availability of Resources

UICF can be implemented either as a whole or by using selected key components, depending on each healthcare setting's needs. Specific essential activities are matched to each key component that every healthcare setting may choose in accordance to its needs, priorities and resources. These activities can be adapted and customized according to the objective of each health care facility.

For each key component, evaluation indicators can be found to measure the effectiveness of each activity. Furthermore, the indicators already measured by hospitals could also be used for the evaluation of the outcomes.

Apart from UICF, other complementary tools for its effective implementation are:

1. **Infection Control Gap Assessment**
2. **Training tools** addressed to hospital's IC hierarchy, as described in chapter 9 of this document

3.1 EVALUATION OF INITIAL UICF & TRAINING TOOLS

At a first phase, an initial draft version of UICF was created with the intention of being pilot implemented in selected healthcare settings (22) from 4 different countries (Austria, Greece, Portugal, Spain). Also, the 6 training tools that accompany UICF would follow the same plan.

Their goal was to (i) raise the awareness on Patient Safety & AMR/ HAls, (ii) implement IPC effectively, (iii) train healthcare settings on basic IC principles. The purpose of the pilot implementation was to assess the effectiveness and usefulness of UICF's activities, tools, indicators and training tools.

The pandemic of COVID19 limited ICCs and healthcare professionals to implement UICF in the extent it was initially planned. Nevertheless, a review of their experience not only regarding their overall participation so far in the project and the activities developed, but also regarding the introduction of the UCIF in their clinical practice was achieved. Thus, an evaluation of UICF's impact would have in their organization's culture was accomplished.

Overall, more than half of the responders (69%) reported that the crisis of COVID19 prevented them from using the UICF but they also show it as an opportunity to implement some of the UICF's essential activities. Also, **almost all of the participants (92%) believe that UICF could have an impact in changing the behavioral culture of the healthcare setting.** UICF's usefulness and completeness are rated with an average score of 4.1/5.0.

As far as the Infection Control Gap Assessment is concerned, **almost all of the participants (92%) believe it could be a useful tool to ICCs to improve the implementation of IC interventions and change the behavioral culture of the healthcare setting,** while its usefulness had an average score of 4.2/5.0.

Regarding the training tools, **all participants (100%) believe that using the training tools could improve the compliance of healthcare professionals**

to the essential infection control practices. Their comprehension and usefulness were rated with an average score of 4.0/5.0 and 3.9/5.0 respectively.

The domains that the majority of healthcare settings preferred to focus on and implement some of the essential activities were *“Infection Control Policy/ Institutional Bodies”* and *“Communication & Collaboration”*, while the domain that COVID19 was an opportunity to strengthen was the *“Guidelines-Education-Training”*. After the initial introduction of UICF, healthcare professionals reported that the domain with the most difference in behavioral culture, even during the pandemic of COVID19 was the *“Infection Control Policy/ Institutional Bodies”* and *“Guidelines- Education-Training”*, while *“Audit”* scored the lowest.

Furthermore, the results of all activities of WP6.1 show that a significant percentage of healthcare professionals do not consider themselves trained adequately so as to implement the basic precautions measures, thus considering this domain to strengthen due to COVID19. Therefore, we also suggest the collaboration with scientific organizations and societies at a European level, with the purpose of improving the already developed training tools, as well as advocating for their establishment to the Healthcare workers’ curriculum will result in the sustainability of the actions.

4. CONDITIONS OF IMPLEMENTATION

The basic condition for choosing the appropriate essential activities for each healthcare setting is the initial assessment of the existing gaps in its Infection Control policy implementation.

Another essential condition is **the adaption of UICF by the hospital’s administrator and its promotion as part of the hospital policy.**

IMPORTANT NOTE

The first 2 key components are crucial as they promote the improvement of organizational behaviour, having an impact on successful UICF implementation.



Picture 1. ICP Key Components



Picture 2. Essential Activities for an effective ICP implementation

5. INFECTION CONTROL GAPS ASSESSMENT

The first step for an effective implementation of UICF is the assessment of IC gaps of the healthcare setting. All interested in IC parties need to recognize the gaps and barriers that prevent the effective implementation of precaution and audit measures. Gap assessment constitutes the starting point to the proper distribution of roles but also for the commitment of those involved in the UICF's implementation. The following tool, “**Infection Control Gap Assessment (ICGA)**”, offers the ability to assess the current situation in the healthcare setting as well as it will be the basis for setting the goals. The results from the initial evaluation of ICGA show that it can have a high potential in being a useful and effective tool for healthcare settings to improve organization's behavioral culture, as **almost all of the participants (92%) believe it could have an impact in changing the behavioral culture of the healthcare setting.**

PROPOSED WAY TO USE INFECTION CONTROL GAP ASSESSMENT

Infection Control Gap Assessment should be completed by a broader team than ICC, as it involves several aspects of Infection Control. Also, the commitment of hospital's administration is considered fundamental.

For every key component there is a specific set of questions. The first 3 questions (highlighted in colour) are the basic questions that determine whether the essential activities and tools of UICF should be implemented in each healthcare setting, while the next ones determine the area to focus on. The first 3 questions should be answered by all, while the next ones will be answered only if the answer was “YES” in the first basic question.

Grading System

1. General Application, 2. Defined application with HA's commitment, 3. All the above AND functional in some areas, 4. All the above AND functional in all areas, 5. All the above AND Effective.

A. Commitment of all parties to ICP implementation		
1	Is there a written policy with well determined responsibilities?	YES NO
2	If YES, Do you believe that this area needs improvement?	YES NO
3	If YES, Determine the level of current situation:	1-2-3-4-5
4	Are all parties are awarded for their role to ICP implementation?	YES NO
5	Are all parties participate to ICP implementation?	YES NO
6	Are all parties awareofhospital's ICP progress?	YES NO
7	Do they promote the proper IC practices?	YES NO
8	Do they support IC activities?	YES NO
B. Collaboration and Communication		
1	Is a systematic communication- collaboration process between different parties for IC in the hospital?	YES NO
2	<i>If YES</i> , do you believe that this area needs improvement?	YES NO
3	<i>If YES</i> , determine the level of current situation:	1-2-3-4-5
4	Is there a formal process for communication and collaboration between different parties?	YES NO
5	Are the team work and the leadership characteristics of organization culture?	YES NO
6	Do the contributed parties participate to IC meetings?	YES NO
C. Education and Training		
1	Is a training program for IC being implemented in the hospital?	YES NO

2	<i>If YES</i> , do you believe that this area needs improvement?	YES NO
3	<i>If YES</i> , determine the level of current situation:	1-2-3-4-5
4	Are all professionals (supervisors, clinicians, microbiologists, nurses, epidemiologists& administrators) trained on IC practices?	YES NO
5	Is there a dedicated training team for Infection Control practices?	YES NO
6	Is there an annual training program on IC practices based on a specific schedule?	YES NO
7	Are there written recommendations for IC practices' implementation?	YES NO
D. Surveillance		
1	Is there an AMR or HAI surveillance system in the hospital?	YES NO
2	Are there any surveillance reports regarding the progress of ICP implementation?	YES NO
3	<i>If YES</i> , do you believe that this area needs improvement?	YES NO
4	<i>If YES</i> , determine the level of current situation:	1-2-3-4-5
5	Is a systematic evaluation of indicators implemented using national and international standards?	YES NO
6	Are reports regarding the ICP goals achievement disseminated (in written & electronically) on a systematic basis to all parties?	YES NO
7	Do all parties have access to these reports?	YES NO
E. Audit		
1	Is there an internal audit regarding infection control practices in the hospital?	YES NO
2	<i>If YES</i> , do you believe that this area needs improvement?	YES NO
3	<i>If YES</i> , determine the level of current situation:	1-2-3-4-5

4	Is there a dedicated team to audit implementation?	YES NO
5	Is there an annual audit plan for key IC practices?	YES NO
6	Are the audit results evaluated from ICC and hospital administrator?	YES NO
7	Are the audit results disseminated to all contributed parties?	YES NO
F. Resources		
1	Is there an annual action plan funded by the hospital budget?	YES NO
2	<i>If YES</i> , do you believe that this area needs improvement?	YES NO
3	<i>If YES</i> , determine the level of current situation:	1-2-3-4-5
4	Is there a Business Case Study for Infection Control?	YES NO
5	Is there an investment of a long- term infection prevention and control program?	YES NO
6	Is there a dedicated health professional with fulltime job on IC in the hospital?	YES NO
7	Is the training program of the hospital personnel funded by the hospital budget?	YES NO
8	Are there the appropriate materials/ consumables for the implementations of precautions?	YES NO
9	Are there the appropriate resources for laboratory detection of infections?	YES NO
10	Is there access to electronic tools for surveillance monitoring?	YES NO

6. 1st KEY COMPONENT: INFECTION CONTROL POLICY - INSTITUTIONAL BODIES

PART A: BACKGROUND

INTRODUCTION

Having a specialized professional or group working on IC in hospitals is a crucial factor for an effective ICP implementation. This organizational body should have specific authorities aiming at promoting all the appropriate interventions needed for HAI prevention and control.

WHO RECOMMENDATIONS

It is critical for a functioning Infection Prevention & Control program to have dedicated, trained professionals in every acute care facility. A minimum ratio of one full-time or equivalent infection preventionist (nurse or doctor) per 250 beds should be available. However, there was a strong opinion that a higher ratio should be considered, for example, one infection preventionist per 100 beds, due to increasing patient acuity and complexity, as well as the multiple roles and responsibilities of the modern preventionist.

SURVEY A: CONCLUSIONS - KEY POINTS

Despite the fact that a large proportion of healthcare settings reported that there are organizational bodies in each hospital for the implementation of IC (ICCs) with well-defined and legislated duties and comprised of members from different specialities, a small proportion of ICCs have IC professionals working on a dedicated full-time basis. Additionally, the majority of hospitals' administration does not participate in the ICCs. As a consequence, the following issues related to an effective ICP implementation should be noted:

There seems to be a need for more human resources and personnel with specific skills and training who will work exclusively on IC. HAIs prevention is a complex issue involving all sectors that deal with the personnel and the environment of the healthcare settings. Especially, in settings with high HAIs

or/and AMR rates, the need for specialized personnel is even more imperative.

The participation of HA in ICCs is another way to raise awareness, to activate and support the work of ICC, and to invest on ICP. The administrations should have an active role in ICCs and share the responsibilities for an effective ICP implementation for the benefit of the patient's safety and healthcare services' quality.

SURVEY B: CONCLUSIONS - KEY POINTS

Duties & Responsibilities: Investigating ICCs' behaviour has highlighted the lack of certainty that their role and responsibilities are well defined and recognized. Despite the fact that the ICC's duties are heavily dependent on each country's legislative framework, it should be well determined and supported by HA so as to be accepted by the rest of health professionals. Moreover, this Survey has additionally highlighted the problem of non-exclusive employment of ICC members on IC, as already discussed in Survey A.

Hierarchy's role: Hierarchy's role is a key factor on ICP implementation as it is directly connected to HCWs' daily practice as both ICCs & HCWs agree. Besides this, having an interactive relationship between the ones in authority and HCWs is also essential, thus HCWs argue that they do correct their supervisors when they do not apply the IC measures properly. Nevertheless, due to cultural differences, contrasts among countries were noted. These differences are an inhibiting factor for the upcoming changes. The adherence of junior practitioners to IC measures improved under the supervision of adherent role models and supervisors must be targeted by all the awareness and training interventions.

Administration's role: HAs have a primary role in formulating organization's culture, as described in all guidelines. Regarding HAs' support, both ICCs and HCWs believe that the HAs could be more supportive of ICC activities and committed to HAIs and AMR prevention. Regardless of the fact that HAs responded positively in all activities supporting their leading role in ICP implementation, when answering who is responsible for the ICP

implementation, they or ICCs, their answers were inconclusive. Questions regarding ICP implementation's responsibility is deliberately repeated several times in both Surveys and addressed to all 3 target groups. Leadership is not just a role, but an active contribution that can inspire and promote motivation especially when it is addressed by the organization's hierarchy. The results by the HCWs and ICCs answers show that HAs' leadership regarding ICP implementation is not sufficient.

PART B: AREAS FOR IMPROVEMENT & ESSENTIAL ACTIVITIES

STRENGTHENING THE ROLE OF ALL PARTIES RELATED TO INFECTION CONTROL

(Hospital Administrators - Hierarchy of Clinical Departments - Institutional Bodies)

All healthcare personnel should actively participate when implementing an Infection Control Program. The active role of heads of Clinical Departments, Hospital Administrators & Institutional Bodies is the key determinant factor in designing and effectively implementing IC policies. Their contribution results in establishing a proper working environment where healthcare professionals can implement safe evidence-based practices regarding IC prevention and achieving organizational culture change. Infection Control and Prevention is not just an individual's responsibility but an organizational force to patient safety in daily basis.

A. The role of an Institutional Body specialized in IC prevention

Its responsibilities should be well defined:

1. Its members (supervisors, clinicians, microbiologists, nurses, epidemiologists & administrators) should be adequately awarded & trained.
2. At least one member should be dedicated to IC prevention on a full-time basis.
3. Its basic responsibility should be to design hospital's IC policy and to monitor its implementation.

4. Their duties include the communication and collaboration with all interested parties, public health organizations, hospital administration, wards seniors and hospital personnel.

B. The role of Hospital Administrator in ICP implementation

1. Being responsible for the ICP implementation in hospital.
2. Promoting IC as a priority of the hospital's policy by strengthening institutional body work and participating in IC prevention activities.
3. Funding IC prevention activities with the required resources (human & material).
4. Coordinating the collaboration between different parties, wards seniors, ICC and hospital personnel.

C. The role of Hierarchy of Clinical Departments

1. Being responsible for the ICP implementation in their wards.
2. Ensuring healthcare personnel are trained in IC measures' implementation.
3. Providing a safe working environment to report & discuss errors.
4. Promoting team work and collaboration with ICC.

KEY ACTIONS AT HOSPITAL LEVEL

1. Establishment of a written Infection Control Policy
2. Interested parties with well-defined roles & responsibilities
3. Systematic collaboration providing feedback to all involved in IC

HOW PARTIES' COMMITMENT COULD BE ACHEIVED

The proposed activities aim to strengthen the contribution of all involved to ICP implementation. The achievement of this commitment follows some specific rules:

1. **Determination of the role and the responsibilities regarding the ICP implementation.**

The motivation of all parties depends on the active role they accept to have since starting ICP's implementation. Therefore, all parties should have a

clear role and responsibilities regarding the ICP implementation. A crucial important point is the notification of their responsibilities by the hospital's administration.

2. Contribution to the planning and monitoring of ICP implementation.

Active contribution is crucial during all the stages of ICP implementation; thus, all parties should contribute at the start, during the planning and monitoring phase of the program. Especially, the participation of the clinical department heads and the personnel who are in the front line and they are the ones who are going to implement the program in clinical practice is a highly important issue when planning an ICP.

3. Awareness regarding the impact of AMR and Infection Control Prevention to patient's safety.

The ICP implementation is one of the most important goals for patient's safety. Therefore, global indicators related to IC are evaluation criteria of healthcare services. Substantial and persistent efforts are required for health professional's awareness regarding patient safety issues.

4. Support of all the parties to commit to their role.

ICP implementation requires all efforts coordinated in a common line. The promotion of team work in a safe working environment is an essential incentive for organizational behavior change. This change will be achieved from a top to bottom approach. It demands the participation of leaders, the influence of role models and the available human & material resources.

Table 1. Essential Activities for strengthening the role of all interested parties and their active participation in organisation’s culture change

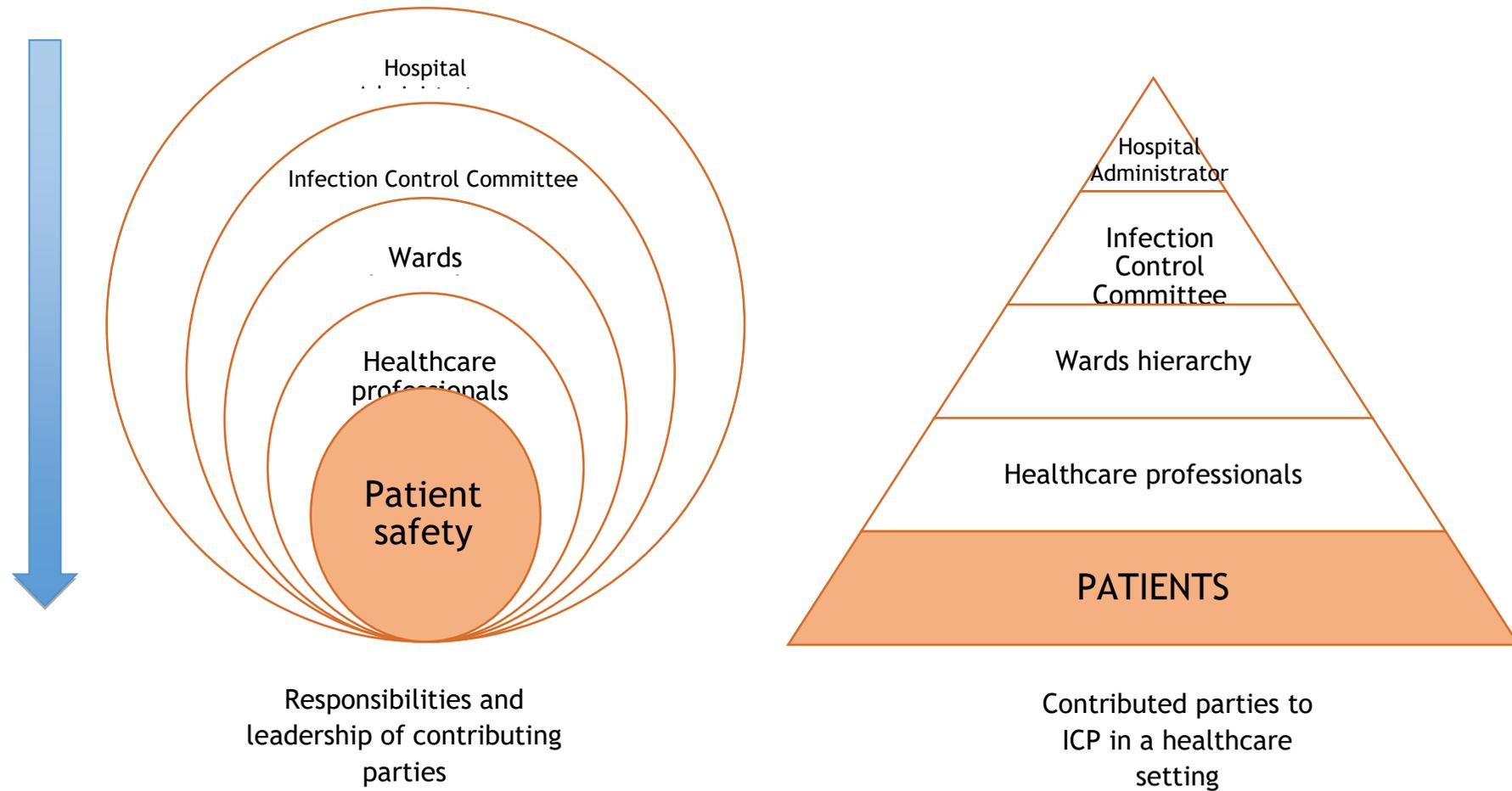
GOALS		ESSENTIAL ACTIVITIES	IMPLEMENTATION LEVEL
1.1	Awareness of all parties for their role to ICP implementation	1.1.1 Provide a <u>written or updated IC policy</u> with clear authorities/responsibilities of all the interested parties regarding their contribution in ICP implementation	HA
		1.1.2 <u>Inform all interested parties</u> regarding their role in hospital’s ICP implementation	HA
1.2	Motivation of all parties to ICP implementation	1.2.1 Awareness of the relation between IC principles and patient safety	
		1.2.2 Promote the participation of hierarchy to the ICP <u>planning and monitoring.</u>	HA
		1.2.3 Disseminate <u>feedback of ICP progress</u> at hospital and national level, as it is a strong cue for action because it reveals the ICP implementation as a common target for all parties	HA
1.3	Development of a safer working environment	1.3.1 Promote enabling environment for <u>errors’ expression</u> related to clinical practice	HA/CDS/ICC
		1.3.2 <u>Assessment</u> of Infection Control gaps and risks in clinical wards	CDS/ICC
		1.3.3 <u>Access of hospital personnel to practical guidelines</u> and also to experts’ advice	HA/ICC

PROPOSED TOOLS

1. Aware the hierarchy of wards through specific training schedules
2. Promote a role model regarding the IC and prevention focused on patient safety
3. Create a volunteering net- work for health professional regarding the IC practises in the hospital
4. Report of errors related to healthcare services through systematic meetings or using anonymously electronic report system
5. Use audit tools for the assessment of IC gaps
6. Provide dedicate consultation for IC practises to clinical wards personnel
7. Available guidelines in the wards (digital or written)
8. Performance of periodical meetings for information of all interested parties and the solution of current issues
9. Training program regarding the impact of HAI prevention and control of AMR for patient safety

INDICATORS for 1st Key Component's implementation

1. The development or updated ICP (if there is no ICP written)
2. The determination or update of authorities and responsibilities (if there are not determined responsibilities) and the notification to all interested parties
3. Number of activities for the interested parties' awareness for their contribution to ICP implementation
4. Number of proposed tools used



Picture 3. Development of an Organizational Culture based on a top-down approach regarding responsibilities and leadership of contributes parties

CHECK LIST 1

- ✓ Establish an ICP policy with goals

- ✓ Determine roles and responsibilities

- ✓ Involve the hierarchy to the ICP implementation

- ✓ Engage all professionals to Patient's Safety

- ✓ Develop a safer work environment for the HCWs

7. 2nd KEY COMPONENT: COMMUNICATION & COOPERATION

PART A: BACKGROUND

INTRODUCTION

The communication and cooperation among the parties of the IC Pyramid (PH authorities, HA, ICCs & clinicians) are an important condition for an effective ICP implementation. It reflects the organizational culture regarding the promotion of IC implementation in clinical practise and the dynamic environment into all these activities aiming at the sustainability of an ICP. An effective ICP implementation requires a multifaceted approach, with a continuous and harmonic cooperation among all interested parties in order to promote the effective implementation of the national and local policy.

WHO RECOMMENDATIONS

Healthcare facility level: Successful multimodal interventions should be associated with an overall organizational culture change as effective Infection Prevention & Control Program can be a reflector of quality care, a positive organizational culture and an enhanced patient safety climate.

National level: The national approach to coordinating and supporting local (health facility level) multimodal interventions should be within the mandate of the national ICP and be considered within the context of other quality improvement programmes or health facility accreditation bodies.

SURVEY A: CONCLUSIONS - KEY POINTS

Communication and cooperation between the different parties in the IC pyramid is an essential condition for an effective IC implementation and is shaped to a large extent by the body's culture from top to bottom. The results of Survey A depict that this chapter is a challenging one for Public Health Authorities, Hospital Administrators and ICCs. Most of the respondents (ICCs & HA) report that cooperation between them or the

clinicians is not effective. The same applies for the cooperation between HA and PH Authorities.

The above are also confirmed by the ICCs' answers regarding the IC activities performed in their hospitals. Resources and organizational culture still remain in low proportions and should be targeted for future improvement. The level of satisfaction (as expressed by the proportions of the positive answers) regarding the organizational culture, which determines at a great extent all IC activities' implementation is relatively low.

SURVEY B: CONCLUSIONS - KEY POINTS

Cooperation with different parties: Cooperation among all interested parties

develops a safer climate to express and improve practices. Communication should not only be quantitative with frequent meetings, but interested parties should focus on having qualitative meetings too.

- **Wards' Supervisors:** More than half of HCWs reported that consider their supervisor as the best role model among the staff regarding IC implementation. ICCs & HCWs believe that due to the significance of their role, they should also be educated to ICP implementation.
 - **Administration:** Having HAI prevention as a priority of the hospital's IC policy is also crucial for an effective ICP implementation. Hospital Administrators seem to recognize the importance of Institutional bodies' work and cooperate with clinical department hierarchy considered responsible for the ICP implementation. HAs participating in training & awareness meetings aims to actively promote ICP and to communicate with HCWs.
 - **Public Health Authorities:** Close cooperation between PHA and ICCs & HCWs, in particularly when facing a crisis, as well as their participation in national's policy goals, result in creating a safe environment.
-

PART B: AREAS FOR IMPROVEMENT & ESSENTIAL ACTIVITIES

STRENGTHENING COLLABORATION AMONG PARTIES AND IMPLEMENTATION OF MULTIMODAL STRATEGIES

Understanding cultural, behavioural, organizational and clinical factors influencing behaviour change is essential for the successful implementation of IC measures in clinical practice. Behaviours are the internally driven actions and interactions of the team members. A motivated and successful team has members that trust and are accountable to one another, accept their interdependency and differences, and feel safe to behave in open and transparent ways. Furthermore, collaboration should be Person Centred, with communications & knowledge sharing, with active & committed participants who support and promote ICP implementation to achieve a truly multidiscipline approach.

The benefits of a collaborative scheme in ICP implementation are numerous:

- ✓ **Staff and Organization Benefits:** Healthcare personnel's satisfaction is higher in organizations where members engage in a collaborative culture of quality and safety, as collaborative teams generally have more open and inclusive communication, and greater levels of role understanding, respect, and appreciation between members.
- ✓ **Quality of Care Benefits:** Qualitatively, collaborative teams are reported to demonstrate improved sharing of evidence-based practices between professions, improved decision-making, and increased innovation, resulting in reduced length of hospital stay, improved compliance with standards of antimicrobial prescription, & improved quality audit results.
- ✓ **Patient Engagement Benefits:** A range of IC safety procedures, quality control measures, and quality assurance activities need to be coordinated across a range of professional groups.
- ✓ **Patient Engagement Benefits:** Collaboration among health care teams may improve patient education and patient engagement in their care, including behavioural changes.

HOW PARTIES' COLLABORATION COULD BE ACHIVED

Communication among all interested parties is imperative and it should be through established procedures, e.g. communication between microbiological laboratory and clinical departments, communication between ICC and Hospital Administrator & Public Health Authorities.

Cooperation among contributed parties is the next level, which requires having the same goals, team work & coordination, resulting in implementing multidisciplinary & multimodal activities, essential for an effective ICP implementation.

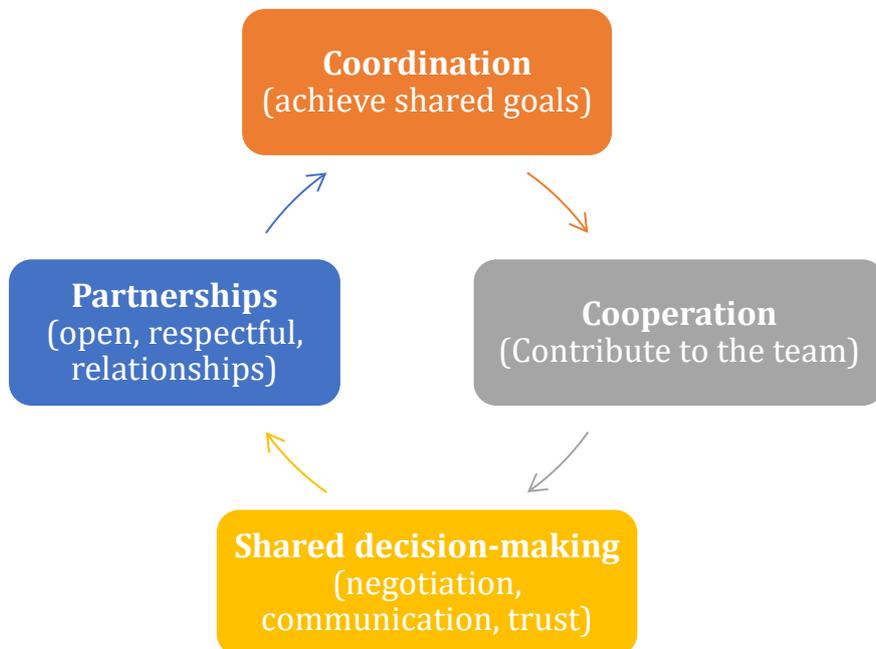
1. Cooperation requires specific communication procedures. Having an IC policy with well determined and clear roles & authorities will contribute in an improved communication among all parties. Communication should be included as responsibility for all interested parties.
2. Team work requires the involved parties to realize that are members of a team with the same goals and vision which stems by hospital's IC policy and promoted as hospital's priority. Therefore, ICP's goals and objectives should be known to all hospital's personnel. Furthermore, every clinical department should be aware not only about hospital's goals but also for the department's goals. Each department's personnel should be involved in identifying and solving possible limitations as well as in success when achieving these goals.
3. Leadership in Infection Control is essential for effective decision-making, efficient use of resources and the provision of high-quality, safe, effective practices. Strong leadership supports activities to prevent and control infection within the organization, in particular by catalysing participation and motivation among the hierarchy: from the hospital administrators to ICC, to clinical and non-clinical staff.

The characteristics of a leader are:

- ✓ Excellent Communication
- ✓ Role Modelling
- ✓ Situational Awareness
- ✓ Fostering positive culture
- ✓ Organisational support
- ✓ Constructive conflict solution
- ✓ Visibility & Presence
- ✓ Being responsive

4. Partnership requires initiatives and a broaden approach among different departments and parties. Partnerships are developed in an appropriate environment where IC is promoted as a top priority of organization by using multidisciplinary communication channels and strategies.

Picture 4. The following proposed model depicts the necessary elements, as described, to achieve a collaborative practice in health care.



TOOL: HOW TO RESOLVE CONFLICTS CONSTRUCTIVELY

- ✓ Choose the right moment: Avoid distractions, be prepared and able to spend time discussing.
- ✓ Attention should be focused on 'active listening': Take turns to speak, summarize and paraphrase each intervention.
- ✓ Set a goal of finding a solution: All interested parties should work together and think of 'win-win' outcomes.
- ✓ Identify what is needed for all the parties involved: Aim to resolve each issue affecting each party, empathise.
- ✓ Disentangle cognitive and emotional aspects of the conflict: Disagree about ideas or approaches, but do not personalise.

Table 2. Essential Activities for promoting Communication & Collaboration

GOALS		ESSENTIAL ACTIVITIES	IMPLEMENTATION LEVEL
2.1	Development of communication and collaboration channels	2.1.1 Establishment of formal procedures of communication and reporting among all parties and all clinical departments	HA
		2.1.2 Promote the quality improvement of communication between interested parties for increasing individual, team and organizational ICP performance, as well as Stewardship team and the Infectious Disease team	HA
2.2	Promote leadership and role models	2.2.1 Develop an organizational vision	HA/CDS/ICC
		2.2.2 Reveal professionals with leadership skills and attitudes and inspire, encourage, and motivate them to lead	HA/CDS/ICC
		2.2.3 Keep leaders close and in regular contact with clinical teams in wards and units	HA/CDS/ICC
2.3	Foster Team work	2.3.1 Promote clear and known roles and tasks for team members in a respectful atmosphere and shared responsibility for team success	HA/CDS/ICC
		2.3.2 Foster Team work. Regular and routine <u>communication and information sharing</u>	CDS/ICC
		2.3.3 Provide an <u>enabling environment</u> , including access to resources needed	ICC

Proposed tools

1. Frequent meetings with all interested parties
2. Electronic platform for giving feedback on Surveillance results with Transparency
3. Electronic platform for giving feedback on ICP progress with Transparency
4. Monthly Newsletter
5. Use the support and the contribution of Infection Control liaisons to wards
6. Risk Assessment- Questionnaire evaluating Collaboration & Communication status
7. Promote a role model regarding the IC and prevention focused on patient safety
8. Create a volunteering net- work for health professional regarding the IC practises in the hospital
9. Use the “How to resolve conflicts constructively” tool

Indicators for 2nd Key Component’s implementation

1. Number of activities selected
2. Number of proposed tools used
3. Number of meetings
4. Number of newsletters/ dissemination level
5. Evaluation of activities performed

CHECK LIST 2

- ✓ Formal procedure of collaboration
communication - communication channels

- ✓ Awareness of the importance of adequate and
timely communication

- ✓ Promotion of leadership

- ✓ Development of proper environment for team
work promotion

- ✓ Evaluation of multidiscipline collaboration
schemes

8. 3rd KEY COMPONENT: SURVEILLANCE

PART A: BACKGROUND

INTRODUCTION

Surveillance is the main tool for the ICP implementation. Infection surveillance data is used to measure success of infection prevention and control programs, to identify areas for improvement, and to identify events of major importance for public health. The success of surveillance depends not only on establishing a reliable system responding to national and local needs, but also on promoting the awareness and activation of all the stakeholders and contributed parties through the proper dissemination of the surveillance data.

WHO RECOMMENDATIONS

At Healthcare facility level, a facility-based HAI surveillance, including AMR surveillance, should be performed to guide IC interventions and detect outbreaks, with timely feedback of the results to healthcare workers and stakeholders and to national networks.

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

SURVEY A. CONCLUSIONS- KEY POINTS

An important conclusion that can be drawn by the results is that surveillance related to HAI and AMR is enhanced at national/ regional level in all the participating countries. Nevertheless, the results of the surveillance are not distributed in all the interested parties, as it should (apart from the ICCs). Healthcare professionals should be the main recipients of information regarding the surveillance results. Data should be accessible to them in a comprehensive manner, responding to clinical reality. Finally, it should also be mentioned that in several countries' public has access to surveillance data.

SURVEY B. CONCLUSIONS- KEY POINTS

Healthcare Professionals: The majority of the respondents reported that some of the personnel cannot fully understand the clinical impact of the surveillance data resulting in inability to perform the appropriate measures. This outcome is crucial as it is well known that HCWs' understanding of surveillance data results in raising awareness & improving their practices.

Hospital Administrators: The majority of HAs are adequately informed about the epidemiological data regarding HAIs & AMR in a higher percentage for their hospital than for their country. More particularly, even though those who strongly believe that are adequately informed about data in their country, the percentage still remains low, depicting the need for reinforcing HAs' information on national epidemiological data and consequently on national's policy goals. Moreover, it should also be noted the transfer of responsibility from HAs to ICCs, as according to them, data monitoring is ICC's responsibility due to specialized knowledge required.

Being inadequately informed regarding epidemiological data is also apparent from classifying consumption of antibiotics as the most important indicator by HAs, perhaps due to being linked to a measured direct hospital's cost, which does not apply for other indicators associated with HAIs' prevention.

Nevertheless, the acceptance of HH compliance as the most easily measured indicator, also concludes in not understanding in depth the complexity of the most important IC measure, which could be avoided if being trained or participating more actively in ICP implementation.

PART B: AREAS FOR IMPROVEMENT & ESSENTIAL ACTIVITIES

STRENGTHENING THE EXTENT OF FEEDBACK & DISSEMINATION OF SURVEILLANCE DATA

Infection surveillance, once the primary task of infection preventionists (IPs), has transitioned over time to assume a more limited place in a massively expanded scope of IP responsibilities. Several studies have emphasised the importance of HAI surveys for increased awareness of the HAI problem and to generate information to develop appropriate preventive efforts. However, studies have not actually investigated how HAI surveillance data could translate into action and achieve behaviour change of HCWs.

Therefore, both Surveys focused on whether feedback from data surveillance is disseminated to the appropriate recipients and whether it affects their practices. The results could be summarised in two points:

1. Information should be disseminated systematically to all interested parties in any available way.
2. Information should be presented in a comprehensible manner to each target group, to have a deep understanding of the message and to take any further actions by Public Health Authorities, Hospital Managers, Clinicians & Institutional Bodies.

OPPORTUNITIES TO ENHANCE THE EFFECTIVENESS OF SURVEILLANCE SYSTEMS

Each healthcare setting should establish a surveillance system for HAIs and Antimicrobial Resistance. This system should be based on the hospital's needs, but also to be in accordance with the national policy goals to address Antimicrobial Resistance.

BASIC PRINCIPLES FOR A FUNCTIONAL & EFFECTIVE SURVEILLANCE SYSTEM

1. Linking Surveillance indicators and ICP goals
2. Training and raising awareness of surveillance system's users
3. Using new, handy surveillance tools
4. Having comparable data according to national and international standards
5. Management of surveillance data

KEY ACTIONS AT HOSPITAL LEVEL

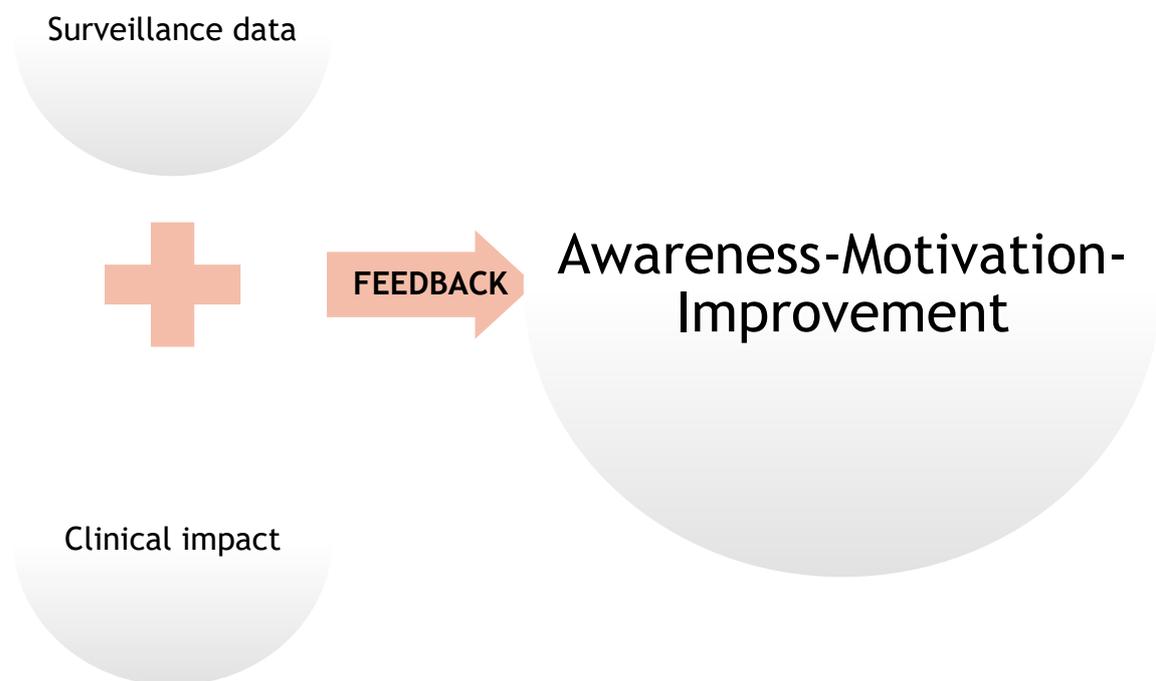
1. Establishing a functional surveillance system in each hospital fully accepted by the healthcare personnel.
2. Disseminating data surveillance to all interested parties.
3. Using the surveillance data for the awareness and training of all interested parties

USING SURVEILLANCE DATA

Surveillance data should be used at a hospital level for multiple purposes:

1. Information & awareness of:
 - ✓ Hospital Administration
 - ✓ Hierarchy of Clinical Departments
 - ✓ Healthcare personnel
 - ✓ Patients
2. Surveillance System evaluation:
 - ✓ Evaluation of indicators based on the original goals set
 - ✓ Evaluation of indicators compared to national and international average
 - ✓ Evaluation of new data regarding surveillance
 - ✓ Evaluation of interested parties' actions according to their responsibilities
 - ✓ Evaluation of limitations and possible issues that may be presented
3. Designing updated Actions

- ✓ Redefining Goals
- ✓ Update existing actions- design of new ones- change surveillance's methodology
- ✓ Define new surveillance indicators
- ✓ Evaluation of available resources (human & material)



Picture 5. The impact of the appropriate dissemination of surveillance data

Table 3. Essential Activities for establishing a functional surveillance system at hospital level

GOALS		ESSENTIAL ACTIVITIES	IMPLEMENTATION LEVEL
3.1	Data Production	3.1.1 Linking Surveillance indicators and ICP goals	ICC
		3.1.2 Production of comparable data according to national and international standards	ICC
		3.1.3 Using new, handy surveillance tools	HA/ICC
3.2	Functionality	3.2.1 Healthcare personnel’s participation in surveillance process	ICC/CDH
		3.2.2 Access and use of surveillance data	ICC
3.3	Data Management	3.3.1 Training & awareness of users	ICC
		3.3.2 Evaluation of Surveillance system	ICC

Table 4. Essential activities for an effective information dissemination

GOALS		ESSENTIAL ACTIVITIES	IMPLEMENTATION LEVEL
3.4	Feedback & Awareness	3.4.1 Dissemination of reports (written & electronic) regarding the ICP goals in accordance to surveillance data in systematic basis	ICC
		3.4.2 Development of an understating formulation of surveillance data to clinicians	
		3.4.3 All users should have access to surveillance data	
		3.4.4 Evaluatethe impact of information to the recipients	

	3.4.5 Annual audit of the comprehension of surveillance data	
3.5	ICP Evaluation	HA/ICC
	3.5.1 Linking Surveillance indicators and ICP goals	
	3.5.2 Systematic Evaluation of indicators using national and international standards	
	3.5.3 Evaluation of limitations and possible issues that may be presented	
	3.5.4 Evaluation of interested parties' actions according to their responsibilities	
3.6	Designing updated Actions	ICC
	3.6.1 Define areas for improvement	
	3.6.2 Update existing actions- design of new ones- change of surveillance's methodology	
	3.6.3 Define new surveillance indicators	
	3.6.4 Evaluation of available resources (human & material)	

Proposed tools

1. Summary Reports with key messages specialised for each target group and dissemination them written or/and digital form
2. Pilot testing for the final version, especially the one for the clinicians
3. Frequent meetings for feedback with HA, HCD & HCWs
4. Annual audit of the comprehension of surveillance data
5. Aware professionals to the importance of surveillance as a tool for guiding their adherence to evidence clinical practice

Indicators for 3rd Key Component's implementation

1. The development of a formal process of data dissemination
2. Evaluation of the knowledge of HCWs after the implementation of intervention regarding the progress of hospital's and national's policy
3. Number of implemented activities
4. Number of proposed tools used

CHECK LIST 3

- ✓ Establish a functional surveillance system

- ✓ Aware the clinicians for the significance of surveillance in clinical practice

- ✓ Disseminate the information to all interested parties

- ✓ Ensure the understanding of key messages

- ✓ Use surveillance data for evaluation of implemented interventions

9. 4th KEY COMPONENT: GUIDELINES-EDUCATION- TRAINING

PART A: BACKGROUND

INTRODUCTION

Implementing an effective ICP requires continuous education and training of healthcare professionals. Training of healthcare workers at any level on evidence-based IC practices should be based on national and regional guidelines and be established as a priority of national and hospital policy.

WHO RECOMMENDATIONS

Evidence-based guidelines should be developed and implemented for the purpose of reducing HAIs and AMR. Education and training on IC practices of the healthcare workers in accordance with the guidelines and recommendations and monitoring of adherence to them should be undertaken to achieve a successful implementation.

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

At national level, ICP should include the education and training of healthcare workforce in its core functions.

SURVEY A. CONCLUSIONS - KEY POINTS

Despite the existence of training programs on HAI control and prevention targeting healthcare professionals in the majority of the healthcare settings participating in Survey A, a significant proportion of these programs are not mandatory for all the personnel. The results indicate that almost half of those at the highest levels of hierarchy are not trained on the impact of HAI Control and Prevention and a considerable proportion is not trained on the implementation of IC measures.

Furthermore, HA and heads of the clinical departments do not seem to be responsible for the implementation of the training programs targeting the health professionals in the hospitals. This is an outcome of crucial importance as those at the highest level of hierarchy cannot act as role models for their personnel without having the responsibility to guide the personnel to performing safe and evidence-based practises in routine clinical work. Moreover, they cannot support the work of ICCs without being properly informed.

Training of the healthcare personnel on HAI's control and prevention is not a simple issue due to its direct relation with the personnel compliance to the IC measures. Therefore, HCWs should be trained by an appropriate and qualified team who use written guidelines and who customize the training activities to the needs and the behaviour of each target group of personnel. The results from Survey A show that in the majority of the hospitals there are no such dedicated training teams.

The vast majority of Survey A respondents reported the existence of guidelines on IC at national/regional/hospital level. In addition, a very high proportion of them reported that HCWs have been trained according to these guidelines, indicating that training on IC in the participating countries is based on existing guidelines.

Face-to-face training in clinical departments or small mixed groups seems to prevail as the most effective training method.

SURVEY B. CONCLUSIONS - KEY POINTS

Only half of ICC members reported that they have certified training on IC, while around one fourth of HCWs do not consider themselves adequately trained so as to implement precaution measures, which are the most important evidence-based IC practises for the protection of patients and HCWs. Therefore, training of HCWs has to be focused on these main measures of IC, which is usually regarded as common knowledge.

Less than two thirds of the participating HAs reported that they have been educated on ICP implementation, indicating the need for training HAs on it.

Providing adequate information and training on the requirements of an effective ICP implementation to HAs will enable them to take informed decisions on the hospital's policy and resources' management regarding IC. This training need is also reinforced by the Survey B finding which showed that only half of the HAs include IC in their hospital's budget, not to mention that an even lower percentage (29%) has calculated the cost of IC in their hospital.

Education of HCWs on IC is perceived as a priority of the administration by HAs. An annual educational program on IC and AMR prevention seems to be established in the hospitals as reported by the HAs while less than half of them firmly reported the mandatory nature of the attendance of the programs by the hospital personnel.

HCWs seem to have access to the existing guidelines on IC in their hospital.

Survey B's results also indicated that priority on IC training should be given to new staff members as, according to ICCs' opinions, these are the ones who run the highest risk of making errors.

Also, the vast majority of ICC members reported that compliance of the HCWs to hand hygiene can be increased by training the clinical wards' supervisors. This result coupled with the finding that more than half of the HCWs reported that the best role model among the hospital staff regarding IC implementation is their supervisor indicates including the supervisors in the priority target audiences for IC training. v

Finally, an important Survey B finding is that HCWs Training Improvement followed Practical National Guidelines as a priority step in order to improve ICP implementation for both HCWs and ICCs.

PART B: AREAS FOR IMPROVEMENT & ESSENTIAL ACTIVITIES

STRENGTHENING THE TRAINING OF ALL CONTRIBUTED PARTIES BASED ON NATIONAL & LOCAL GUIDELINES

Infection Prevention and Control (IPC) education and training is strongly recommended by WHO guidelines on the core components of ICP programmes. ICP training should be in place for all health workers spanning from frontline workers to administrative management.

The results of Surveys A and B provide indications on the gaps regarding IPC training within healthcare settings in the participating countries. Specifically, as the two surveys targeted three groups, namely HAs, ICCs and HCWs, recommendations will be tailored to each of these three groups:

Hospital Administrators: Training of HAs on all aspects of ICP implementation should be included in the education strategy of hospital administrative personnel. It is recommended that training includes cost-benefit analysis of ICP implementation, including implementation of novel techniques and/or technology for ICP.

Infection Control Committees: Members of the ICCs should be provided with specialised & certified training by the national and/or healthcare facility IPC programme according to IPC core competencies for health care workers.

Health care workers: Initial and continuous training on ICP should be in place for all health care professionals involved in patient care. It is recommended that orientation of new employees includes mandatory training on ICP, focused on the basic IPC practises.

An important group of health care professionals involved in service delivery and health care is clinical department supervisors. Their training on ICP implementation should be prioritized as they act as role models for the other HCWs in all aspects of health care delivery including compliance to protective measures. Train-the-trainer activities within the healthcare facility education strategy targeting the clinical department supervisors will

empower them to assume their responsibility for ICP implementation within the departments.

At the national level

➤ Training within the national IPC programme

The national IPC programme should include IPC training targeting all levels of human resources involved in health service delivery. The national programme should provide guidance and recommendations for healthcare facility IPC training according to detailed IPC core competencies for health care workers and covering all professional categories.

Recommendations should be adapted to the national health system structure, its organizational culture, and the local available resources.

➤ ICC Certification

Successful completion of IPC training by Infection Control Committee members should be provided with a nationally recognized certification.

At the healthcare facility level

➤ Establishment of an IPC dedicated training team

The design, development and delivery of IPC training should be the responsibility of an appropriately qualified training team assigned by the hospital administration. The ICC members could assume this role provided that at least one ICC member works exclusively and full time on IPC. In addition, the training team should include representatives from the hospital training section who will ensure that the appropriate educational approaches and strategies are used. Training can also be delivered by the clinical department supervisors through train-the-trainer activities.

The training team members need to be fully aware of the national, regional, and hospital guidelines and they should be able to customize the training activities to the needs and the behaviour of each target group of personnel.

➤ Establishment of an IPC training strategy

IPC training within each healthcare facility should be based on the national IPC programme recommendations and guidelines and adapted to the

healthcare facility-specific organizational structure as well as its available human and financial resources.

Training strategy should target all levels of personnel involved in health service delivery, including hospital administrators, clinical department supervisors and health care workers directly involved in patient care. In addition, training opportunities on IPC should also be available to other personnel that support health service delivery (e.g. cleaners, auxiliary service staff).

Training on IPC should include:

A. An orientation stage

Training on IPC should be incorporated in the general orientation plan of the new employees or in the absence of such a plan, training of new employees on IPC is recommended to be mandatory before employment in the hospital. The content of such training should include training the newly employed HCWs on basic IC practices. This requirement of an initial IPC training should also apply to hospital administrators, who need to be exposed to all IPC aspects, including IPC implementation and cost-benefit analysis.

B. Ongoing training opportunities

Continuous educational opportunities on IPC should be provided to existing staff of all levels.

According to WHO, periodic evaluations of both the effectiveness of the training programmes and assessment of staff knowledge is recommended to be undertaken on a routine basis to ensure optimal education delivery, uptake and practice.

Proposed training tools

UICF is accompanied with 6 training tools. Their development was based on the results of the 2 Surveys that were conducted during the 1st stage of the project and international evidence-based practice.

These are:

1. **HAIs & AMR: The Cornerstone of Patient Safety**
2. **HAIs Control & Prevention: Basic IC measures**
3. **Audit as a tool for behavioural change**
4. **Infection Control Program Implementation- Infection Control Gap Assessment**
5. **The Cost Effectiveness of Infection Control Program**
6. **Communication & Collaboration Tool**

The ultimate goal is to help to change the behavioural culture of the organization regarding the prevention of HAIs, thus the tools are addressed to all the involved parties.

The followed methodology was based on:

- ✓ To **communicate** to all the involved parties in a simple and comprehensible manner the basic facts related to HAIs' prevention, which is the cornerstone of patient's safety. Every target group has a different view of these concepts due to different responsibilities and duties. Therefore, it is of highly importance to have a different approach for each team separately.
- ✓ To **highlight** Infection Control as a basic element of daily clinical practice, and that beyond the basic issue of patient safety, the question of its effective implementation on a consistent and timely basis still remains.
- ✓ To **raise the awareness** of all involved parties to act as ambassadors of these messages and active members of a team with common goals & culture. As communication and collaboration among the team members is not given, but is cultivated through various interventions, this area should be specially highlighted. The collaboration is built by

and characterizes teams; thus, the effective IC prevention is not up to the specialists but due to teamwork.

→ Goals of training tools

The developed training tools have the following goals:

- I. **To raise the awareness on:**
 - ✓ Patient Safety
 - ✓ AMR/ HAIs global public health crisis
- II. **To implement IPC effectively**
 - ✓ Roles & Active contribution
 - ✓ Essential Activities
- III. **To train on basic IC Principles**
 - ✓ Precautions
 - ✓ Audit

→ Using the training tools

The training tools that support the implementation of UICF should be used by all Infection Control hierarchy: Hospital Administration, Clinical Supervisors, HCWs & ICCs, as it also depicted in the next table and Figure.

Training Tool	Target Group
1. HAIs & AMR: The Cornerstone of Patient Safety	ALL
2. HAIs Control & Prevention: Basic IC measures	Junior HCWs
3. Audit as a tool for behavioral change	Clinical Supervisors & HCWs
4. Infection Control Program Implementation- Infection Control Gap Assessment	ICCs
5. The Cost Effectiveness of Infection Control Program	Hospital Administrations
6. Communication & Collaboration Tool	Hospital Administrations & Clinical Supervisors & ICCs

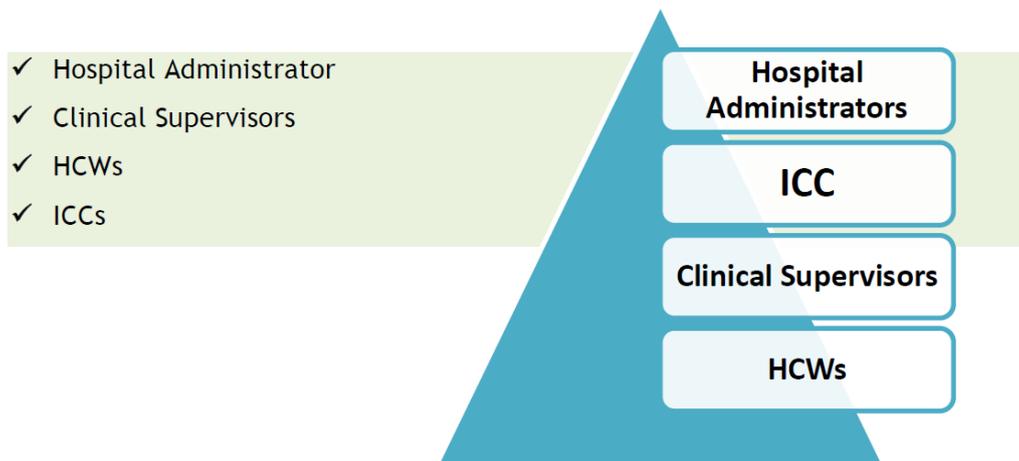


Figure 1: IC Hierarchy

There are 3 crucial points that should be stated concerning the use of the training tools.

1st This material should trigger both for ICCs and training teams of each hospital to either to use it to their training as a starting point or to enrich their already available material by adapting it to hospital’s needs and professionals’ culture.

2nd The training tools are suggested to be used during the 1st contact of personnel with each training subject. The trainings should be organized in small groups followed by the necessary discussion afterwards.

3rd Each tool has a specific training subject and key elements and by the end of each module should be totally comprehensible by the trainees. Based on these key elements, trainees should check their knowledge using quizzes in a creative and innovative manner.

→ Evaluation of training tools

The review for their evaluation showed that **all healthcare professionals believe that using the training tools could improve the Infection Control in their hospital.** When asked about the **most useful** training tool, the majority of the participants chose *“HAIs & AMR: The Cornerstone of Patient Safety”* and *“Infection Control Program Implementation- Infection Control Gap Assessment.”*

Table 5: Essential activities for an effective IC Training

GOALS	ESSENTIAL ACTIVITIES	IMPLEMENTATION LEVEL
At the national level		
4.1	Incorporation of training in the national IPC programme	4.1.1 Target audience of training: all levels of human resources involved in health service delivery, including hospital administrators
		4.1.2 Guidance and recommendations for healthcare facility ICP training according to IPC core competencies
		4.1.3 Recommendations adapted to: national health system structure, organizational structure and local available resources
4.2	ICC Certification	4.2.1 ICC members should be provided with specialized and certified training.
At the healthcare facility level		
4.3	Establishment of an ICP dedicated training team	4.3.1 The team is assigned by the hospital administration
		4.3.2 Members could include: ICC members, training section representatives, clinical department supervisors
		4.3.3 Members fully aware of national, regional and hospital guidelines

4.4	Establishment of an ICP training strategy	4.4.1 ICP training should be incorporated in the hospital orientation strategy for new employees	HA/ ICC/ Training team
		4.4.2 Mandatory ICP training before employment is recommended	
		4.4.3 ICP training of new employees should focus on basic IC practices	
		4.4.4 Provision of continuous educational opportunities on ICP to existing hospital staff of all levels through multimodal educational strategies.	
		4.4.5 An annual ICP refresher course that includes knowledge and competency tests is recommended.	

Proposed tools

Orientation phase

1. Educational modules, including lectures and e-learning modules on basic IPC practices.
2. Team and task-based strategies, including bedside and simulation training as well as mentorship.

Ongoing training opportunities

3. Educational modules, including lectures and e-learning modules on new advances in ICP.
4. Annual IPC refresher course that includes knowledge and competency tests. The test is recommended to be mandatory with a minimum score requirement for successful completion.
5. Team and task-based strategies, including bedside and simulation training.
6. Train-the-trainer activities, targeting clinical department supervisors

Indicators for 4th Key Component's implementation

1. The development of an IPC training strategy
2. The establishment of a dedicated training team
3. Percentage of new employees who have been trained on IPC by the health care facility before employment
4. Number of training activities by type of activity
5. Number of trainees by professional category
6. Evaluation indicators of the knowledge of trainees after the implementation of a training activity

CHECK LIST 4

- ✓ Dedicated training team

- ✓ Annual training program

- ✓ Guidelines

- ✓ Multimodal training methods

- ✓ Training of all hospital's personnel

- ✓ Evaluation of training effectiveness

10. 5th KEY COMPONENT: AUDIT OF IC PRACTICES & ACTIVITIES FEEDBACK

PART A: BACKGROUND

INTRODUCTION

The aim of auditing IC practices and feedback is to improve the quality of healthcare, to reduce the incidence of HAIs and the spread of MDROs in nosocomial environment. In order to achieve behavioural change and improvement of adherence to IC measures, feedback to all interested parties in IC pyramid should also be part of healthcare personnel training.

WHO RECOMMENDATIONS

At healthcare facility level, it is recommended that regular monitoring/audit and timely feedback of health care practices according to ICP standards is performed to prevent and control HAIs and AMR.

Feedback should be provided to all audited persons and relevant parties. National IC programmes should be linked with other relevant national programmes and professional organizations.

A national IC monitoring and evaluation program should be established to assess the extent to which standards are being met and activities are being performed according to the program's goals and objectives.

SURVEY A. CONCLUSIONS- KEY POINTS

Results depict a lack of external audit on ICP implementation in hospitals, while the proportion of no audit at all is high. Moreover, audit results are assessed by ICCs and less by PH Authorities or Hospital Administrators.

Ineffective audit control not only results in non-proper ICP evaluation, but also parties at high ranks in the IC pyramid are not included in the assessment of the audit results. An effective process for auditing the ICP implementation should be developed as a key component for patients' safety.

SURVEY B. CONCLUSIONS- KEY POINTS

The difficulty of implementing audit procedures was emerged also in this section, despite HAS' belief regarding their undeniable value in implementing ICP effectively. Using audit tools in daily to prevent HAIs and supporting HCWs by its feedback has been evaluated by several studies therefore half of the respondents agreed that audit is not impossible to be performed in daily practice. Nevertheless, difficulties in its implementation should be further investigated.

PART B: AREAS FOR IMPROVEMENT & ESSENTIAL ACTIVITIES

STEIGHNING THE ESTABLISHMENT OF A FEASIBLE AUDIT STRATEGY FOR IC PRACTICES AND ICP IMPLEMENTATION

1. The National Infection Control Program of each country should recommend the establishment of the external audit on Infection Control Program and Practices.
2. Hospital Administrators and Public Health Authorities should take into their consideration the results from audit on Infection Control Program and Practices.
3. Establishment of external audit on Infection Control Program and Practices in health care facilities.
4. Application of internal audit on Infection Control Program and Practices in all health care facilities.
5. Further investigation for barriers and drivers on audit of Infection Control Practices in EU countries.

BASIC INFECTION CONTROL PRACTICES FOR AUDITING

They include, but are not limited to:

- ❖ Compliance to Hand Hygiene
- ❖ Compliance to standard precautions
- ❖ Performance of isolation precautions

- ❖ Proper Use of Personal Protective Equipment (PPE)
- ❖ Placement and management mandating of Central Venous Catheter
- ❖ Placement and management mandating of Urinary Bladder Catheters
- ❖ Cleaning, disinfection and sterilization of reusable equipment and devices, such as bronchoscopes, surgical instruments, stethoscopes etc.
- ❖ Health care environment cleaning
- ❖ Haemodialysis practices and management of equipment
- ❖ Operating room practices: asepsis and preoperative antisepsis, traffic control, patient skin preparation, hair removal, surgeon scrub, and prophylactic antibiotics
- ❖ Management of Occupational Safety, such as sharps injuries/needle sticks, vaccination rates

Table 6: Essential Activities for an effective IC Audit

GOALS		ESSENTIAL ACTIVITIES	IMPLEMENTATION LEVEL
5.1	Establishment of internal audit	5.1.1 Well-defined audit procedures which will be under the audit process	HA/ICC
		5.1.2 The audit plan will be developed undertaking a gap analysis of the current processes, practices and performance deficiencies.	
		5.1.3 Dedicated and trained audit team	
5.2	Establishment of external audit	5.2.1 Cooperation with external audit committees on ICP and infection practices in order to be established the external audit in the health care facility	HA/ICC
5.3	Empower frontline staff to actively involved	5.3.1 Support the development of the Infection Control quality improvement culture.	HA/ICC/ Leaders and or supervisor of clinical departments
		5.3.2 Training of frontline staff to be familiar with audit and to adapt it as a tool for individual improvement on infection control practices and assurance of patient safety	HA/ICC
5.4	Improve the effectiveness of audit feedback	5.4.1 Having a supervisor or senior colleague provide feedback	HA/ICC
		5.4.2 Providing feedback at least monthly	
		5.4.3 Providing feedback in both verbal and written forms,	
		5.4.4 Using feedback to reduce instead of increase a particular behaviour	
		5.4.5 Setting clear goals with specific instructions for how to improve	

Proposed tools

1. The use of self-assessment questionnaires regarding Infection Control Practices to the frontline staff for the assessment of its knowledge, performance and perception concerning compliance is a useful tool both for the gap analysis and for the staff knowledge and behaviour improvement through dedicated training
2. Education and training material for the audit team in order to ensure that the audit process will be implemented with the same way and criteria by the audit team
3. Audit forms for each procedure
4. Use of proposed Annual Audit Plan

Indicators for 5th Key Component's implementation

1. Establishment of external or internal audit
2. Establishment of an audit plan
3. Number of infection control practices which was under audit during per year
4. Number of staff who trained on concept of audit and patient safety culture
5. Number of annual audit reports

Table 7: Proposed Annual Audit Plan for a 12-month ICP

Practices for audit	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
Hand Hygiene Compliance												
Placement and management of Central Venous Catheter												
Performance of isolation precautions.												
Use of Personal Protective Equipment (PPE)												
Aseptic techniques in operating room												
Health care environment cleaning												
Placement and management of urinary bladder catheters												
Cleaning, disinfection and sterilization of reusable equipment												
Haemodialysis practices and management of equipment												
Surveillance Environment cleaning												

CHECK LIST 5

- ✓ Dedicated audit team

- ✓ Annual audit plan

- ✓ HCW's awareness to audit's importance

- ✓ Evaluation of audit's results and
intervention planning

- ✓ Dissemination of audit's results

11. 6th KEY COMPONENT: RESOURCES

PART A: BACKGROUND

INTRODUCTION

The cost- benefit of HAIs prevention activities is an area of concern for all healthcare systems, and especially HAs who are responsible for the allocation of financial resources of their facilities. Nevertheless, HAIs' costs is a quite complex issue which usually is not regarded by HAS resulting in misunderstanding the importance and leading to inadequate ICP funding.

SURVEY B. CONCLUSIONS - KEY POINTS

The results have highlighted an important lack of recognition of IC's importance over the sustainability and viability of the healthcare facility.

Additionally, despite the fact that a very large proportion of HAs argue that it is imperative that economic decisions are made regarding IC activities' funding, only a small proportion of them claim that a percentage of hospital's annual budget is allocated to ICP activities.

Furthermore, even a large majority of Has believe that ICP is a profitable investment with output in a short period of time, a high percentage of HA disagree that ICP should yield more profit than its funding cost. The vast majority of Has recognize that the benefit of ICP can arise from results, damage limitation and cost avoidance, nevertheless, only a small proportion reported that ICP benefit can also arise from saving financial resources from prevention and alternative uses. As a consequence, the following issues should be noted:

- There seems to be a need for more awareness and information of HA for the importance of funding arrangements for infection control in hospitals. It is necessary HAs to be convinced that hospital-acquired infections take up scarce health sector resources by prolonging patients' hospital stay. By adopting effective infection-control strategies these resources are saved and can be released for alternative uses which most of the times have a different and higher value.

- ICP are costly themselves but, preventing HAIs, they can be credited with generating cost savings. An ICP is a big investment that demands financial expenditures. These expenditures should be compared to the savings.
- Healthcare facilities need to have flexibility in the use of their resources but there are advantages for the planning and implementation of an effective infection control program if infection control teams have a separate budget for routine infection control work.

PART B: AREAS FOR IMPROVEMENT & ESSENTIAL ACTIVITIES

NECESSARY RESOURCES FOR AN EFFECTIVE ICP IMPLEMENTATION

While the budget may vary considerably between hospitals as the data and needs are different, a base -line of elements must be included in every budget, especially, in settings with high HAIs or/and AMR rates:

DEDICATED SPECIALIZED PERSONNEL

At least one member should be dedicated to IC prevention in a full time basis. The best ratio of the number of infection control nurses must be one to every 100 beds. A consultant infection control doctor should also be dedicated to IC prevention always after assessment of size of the hospital, casemix, throughput and the need to provide 24 hour cover.

TRAINING AND EDUCATION

Implementing an effective ICP requires continuous education and training.

- The cost of training of healthcare professionals must be part of the budget and must include all available educational aids, videos, posters etc.
- Training and education of infection control team members is crucial so, provision of books, subscriptions to international journals, participation in international conferences and seminars are expenditures that must be considered as profitable investment.

MICROBIOLOGY TESTS AND EQUIPMENT

Infection control activities and thus HAIs' prevention demand strongly participation of the laboratory in AMR monitoring, early detection of HAIs' outbreaks, screening for multi-resistant organisms etc. Tests, Molecular diagnostics techniques should be available resources in order to help clinicians to prudent use of antibiotics and treatment of infections.

SUFFICIENCY AND QUALITY OF THE CONSUMABLES

Lack of availability of appropriate and qualitative consumables makes it difficult for health professionals to follow good practices. Moreover, use of evidence based new products, or products -care models (e.g. catheter insertion cart) should not be considered waste of money.

CLERICAL SUPPORT

Most IC doctors and nurses claim that they spent a disproportionate amount of their own time on administrative and clerical activities, leaving less time for surveillance, prevention and control activities. Funding clerical support can only be profitable in the infection control.

ELECTRONIC SURVEILLANCE SYSTEMS

Lack of computer hardware and software is a major constraint for IC professionals to carrying out their infection control duties effectively. IC professionals need information systems so as to identify patients who have been readmitted to hospital, access to pharmacy prescribing and consumption data, access to laboratory data & information automatically. Using electronic surveillance systems result in spending their time more productively.

INVESTMENT IN BUILDINGS, CAPITAL EQUIPMENT, AND INFRASTRUCTURE

These financial expenditures represent fixed costs that can be high investments which could not have a financial return in a reasonable time frame. Nevertheless, an apparently high-risk investment in building as isolation rooms can contribute in reduction of transmission and save costs. The benefit of this investment can arise in long term from results, damage limitation and cost avoidance.

RISK ASSESSMENT

Risk assessment becomes increasingly critical in infection control with numerous results which can be summarised as follows:

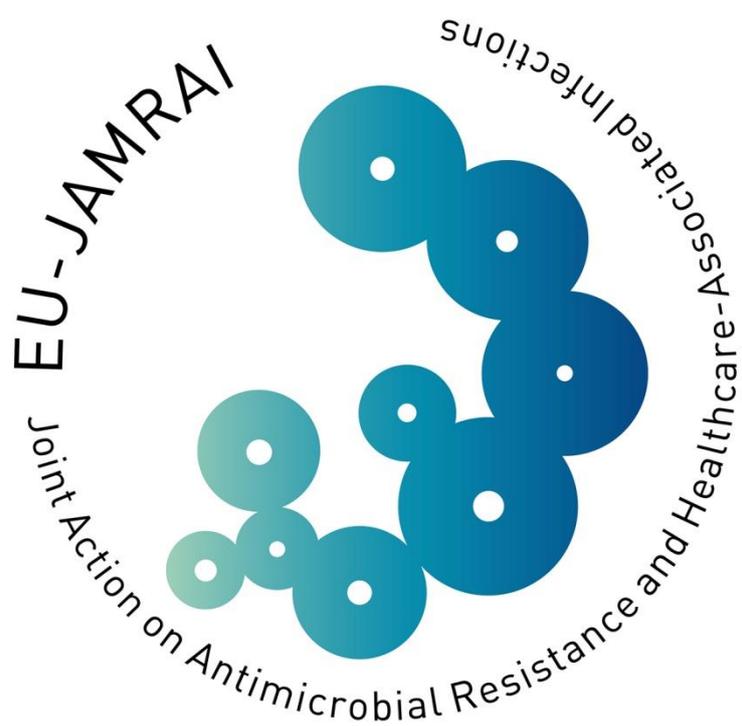
- Frames the problem
- Ranks risks by score to determine organizational priorities
- Identifies organizational areas of weakness
- Assists in determining where to focus available resources
- Provides basis for developing The Infection Control Plan
- Identifies gaps in infection prevention measures and processes
- Identifies environmental issues/concerns
- Identifies organization's gaps in health and safety standards
- Helps emergency preparedness (Internally and Externally)
- Guides Patient Safety Goals
- Represent a communication tool

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