

Joint Action Antimicrobial Resistance and Healthcare-Associated Infections

D6.4

Updated report on experience from country teams of introducing and working with the implementation model

WP6 | Policies for prevention of Healthcare Associated Infections and their implementation Leader acronym | FOHM Authors | Lotta Edman (FOHM), Anette Hulth (FOHM) Reviewers | WP6.2 lead team, WP6.2 participants, coordination team Dissemination level | Public Delivery date | 24-7-2020



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Table of Contents

| WP6.2.1 Participants |
|--|
| Acronyms |
| Summary 5 |
| Introduction |
| Description of WP6.2 |
| Objective7 |
| Catheter Associated Urinary Tract Infections7 |
| The Breakthrough Series Model for Improvement7 |
| The work process |
| Results and experiences 11 |
| Findings and results 11 |
| Other achievements and lessons learned12 |
| Experiences - barriers and facilitators13 |
| Future national work14 |
| References |

WP6.2.1 Participants

Country

EU-JAMRAI Participant Acronym

| Belgium |
|----------------|
| Czech Republic |
| Estonia |
| Latvia |
| Lithuania |
| Netherlands |
| Slovenia |
| Sweden |

FPS HFCSE NIPH TA PSKUS LSMUKK, VULSK, HI, NVSC VWS, RIVM NIJZ FOHM, UAS, SOS

Acronyms

| AMR | Antimicrobial resistance | | | |
|-----------|--|--|--|--|
| AP | Action period | | | |
| BTS | Breakthrough Series Model for Improvement | | | |
| CAUTI | Catheter Associated Urinary Tract Infection | | | |
| CTL | Country Team Leader | | | |
| EU-JAMRAI | European Joint Action on Antimicrobial Resistance and Healthcare Associated Infections | | | |
| HCAI | Healthcare Associated Infection | | | |
| HCW | Healthcare Worker | | | |
| ІНІ | Institute for Healthcare Improvements | | | |
| IPC | Infection Prevention and Control | | | |
| LS | Learning session | | | |
| PDSA | Plan Do Study Act | | | |
| WP | Work Package | | | |

Summary

This deliverable report summarizes the accumulated results and experiences of WP6.2 in EU-JAMRAI. The overall objective of WP6.2 was structured implementation of guidelines for prevention of Catheter Associated Urinary Tract Infection (CAUTI) using an evidence based implementation model, the Breakthrough Series Model for Improvement (BTS).

The design of the implementation process was guality improvement work. The BTS model provides a bottom-up approach and a structure including key elements for a successful implementation process, and promotes collaboration between different levels.

The WHO Core components of infection prevention and control programmes was used as a basis for our work to strengthen the capacity on prevention of HCAI in the participating countries.

A first pilot in hospital wards was carried out in the participating countries. The originally planned expanded pilot was not possible to start or, for those who started not possible to finish, due to the covid-19 pandemic.

A survey used initially in the pilot wards to identify areas for improvement indicated that 'Avoid unnecessary urinary catheters', 'Maintenance - aseptic technique and avoid unnecessary manipulation' and 'Review urinary catheter necessity daily' are common areas for improvements with regard to preventing CAUTI.

Several wards presented decreased number of catheter days and of new catheters as a result of the improvement work. However, for different reasons an increase in catheter days and new catheters were seen in a few other wards. Other examples of achievements were increased compliance to standard precautions, procurement of closed collection systems and training equipment, and development of national guidelines on CAUTI prevention.

Experiences of using the BTS model for structured improvement work were mainly positive, reported as useful, effective and contributing to an increased interest in quality improvement work. However also barriers were reported; lack of resources and cultural aspects and some participants reported the model as time consuming. Examples of facilitating factors for using the BTS were; management support, local improvement process support and motivated staff with an active role in deciding and prioritizing changes.

Introduction

It takes time to incorporate evidence-based guidelines into healthcare practice. Implementation needs resources, priority and knowledge, and the need for a systematic implementation process is sometimes underestimated. With an increased awareness of the importance of structured implementation, higher compliance to Infection Prevention and Control (IPC) measures in clinical settings can be reached.

Antimicrobial resistance (AMR) is an increasing public health threat and calls for global, coordinated action. Infection prevention and control is a tool to limit the spread and the development of resistant bacteria, leading to reduced need for antibiotics and consequently contributing to control AMR.



Figure 1. The relationship between HCAI and AMR

Within the framework of the EU-JAMRAI, different aspects of IPC are covered in order to identify and bridge the barriers of implementation and of compliance to IPC programs and research. In line with the EU-JAMRAI objectives, WP6.2 aimed to implement guidelines for CAUTI prevention using an evidence based implementation model, The Breakthrough Series model for improvement.

Objective

The objective of WP6.2 was to promote a bottom-up approach from clinical practice to policy level by implementing evidence-based guidelines and existing policies using an established implementation model and working in country teams.

The design of the implementation process was quality improvement work (i.e., the goal was to achieve concrete changes in practice, not to conduct a research study). The two focus areas were CAUTI prevention and structured implementation, using the BTS model in small-scale pilots in hospital wards.

The WHO *Core components of infection prevention and control programmes* was used as a basis for our work to strengthen the capacity on prevention of HCAI in the participating countries.

To reach the objective the following tasks were included:

Task 6.2.1 Introduce an evidence-based implementation model.

Task 6.2.2 Promote that similar working routines are implemented in non-EU countries in Europe (report D6.5).

Catheter Associated Urinary Tract Infections

CAUTI prevention was a common choice, for several reasons; indwelling urinary catheters are common, estimated to be placed in up to 16% of patients admitted to hospitals, and patients with urinary catheters are found in various kinds of health care. CAUTI is one of the most frequently reported HCAI globally. Also the principles of preventing CAUTI are similar to how to prevent other device associated infections.

The Breakthrough Series Model for Improvement

The Breakthrough Series Model for Improvement (BTS) was developed 2003 at the Institute for Healthcare Improvements (IHI) in Boston, USA, for the healthcare context. The model provides a structure and includes key elements for a successful implementation process.

The structure of the BTS is designed for learning and action, promoting improvement and collaboration between professionals at different levels in health care systems.

The model has a generic character and is suitable for different kinds of improvement work within healthcare. The work process is combining workshops and action periods using the PDSA-process (Plan-Do-Study-Act) to test before implementation.



Figure 2. Breakthrough Series Model for Improvement, developed at the Institute for Healthcare Improvement, IHI, Boston, USA.

The BTS is providing a bottom-up approach by including the perspectives and expertise of the healthcare workers (HCW). The ward teams are actively involved in identifying and prioritizing the changes to include based on the results of a self-assessment. The changes are tested in small-scale and then scaled up and implemented, or revised and tested again. The purpose of small-scale testing is to work through practical obstacles and minimize resistance at implementation.

The model was chosen as implementation model during the time of writing the application for the Joint Action.

National guidelines

National IPC plan

According to a survey conducted within the project, five (out of eight) participants had a national IPC plan/strategy. One of these reported the plan being a separate IPC-plan, the other four reported that IPC measures are included in an AMR plan, national health strategy or similar.

| | National response | | | |
|--|-------------------|------------|------------------|--|
| | Yes | No | Work in progress | |
| Does your country have a national IPC plan/strategy? | 5 (8) | 2 (8) | 1 (8) | |
| | Separate | In AMR NAP | Other | |
| If so, is it a separate IPC plan or is it included in the AMR plan/strategy? | 1 (5) | 2 (5) | 2 (5) | |

Table 1. National IPC plan/strategy

National CAUTI guidelines

The majority of the participants had national guidelines for CAUTI prevention, reported as being essentially in line with the WP6.2 guidelines. Two of the participants without national guidelines reported ongoing development of national guidelines.

| | National response | | |
|---|-------------------|-------|--|
| | Yes | No | |
| National CAUTI guidelines | 5 (8) | 3 (8) | |
| National CAUTI guidelines in line with the WP6.2 guidelines | 5 (8) | | |

Table 2. National CAUTI guidelines in countries participating in WP6.2

The work process

The design of the implementation process was quality improvement work. The original plan was three phases; prework, a first pilot and an expanded pilot.



The prework was divided in central and national preparation, including developing a framework, learning about implementation theory and practice, particularly the BTS model, organizing a national team and sharing experiences and ideas.

Common documents on CAUTI prevention were developed for the project, including a guidance on measures for CAUTI prevention, and a ward survey.

The preventive measures were based on evidence-based guidelines and suitable for a bundle approach. The measures were adapted to the national situation, resources and needs. The bundle for CAUTI prevention included:

- Avoid unnecessary urinary catheters ٠
- Closed collection system
- Catheters as small size as possible
- Insertion aseptic technique
- Maintenance - aseptic technique and avoid unnecessary manipulation
- Review urinary catheter necessity daily and remove promptly if not indicated ٠

To identify areas for improvement in the pilot wards the results from an initial ward survey were used.

| WP6.2 UNIT/WARD SURVEY 2018 | Purpose o | f the survey: R | eview the r | outines at 1 | the unit and compare v |
|--|-----------|-----------------|-------------|--------------|------------------------|
| Avoid unnessecary urinary catheters | | | | | Comment |
| | Yes | No | | | |
| Guidelines on indications in accordance with the "Guidance for preventing CAUTI" document | | | | | |
| | Never | Sometimes | Often | Always | |
| Documentation on indication and time for catheterization | | | | | |
| Alternatives to indwelling catheters (e.g. intermittent or condom catheters, diapers) are used | | | | | |
| Bladder scan is used for evaluating urinary retention | | | | | |
| Closed collection system | | | | | Comment |
| Catheter bag with a port to allow emptying and a sampling port is used | | | | | |
| Connection between catheter and bag is disconnected | | | - | | |
| Catheter size and material | | | | | |
| Catheter as small size as possible is used | | | | | |
| Antimicrobial material is avoided | | | | | |
| Insertion using aseptic technique | | | | | Comment |
| | Yes | No | | | |
| Detailed instruction for catheter insertion | | | | | |
| | | | | | |

Excerpt from the ward survey, based on areas in the bundle. The survey was developed in English collaboratively within the project, and subsequently translated to the local language.

The overall aim was to reduce CAUTI, but measuring CAUTI was not feasible for most participants, and the agreed measurements were instead process related:

- new catheterized patients (new catheters/1000 patient days)
- number of catheter days (catheter days/1000 patient days)

Results and experiences

The results and experiences were collected through WP6.2 specific questionnaires (interim and final), information collected to the milestone (MS35) report, as well as at a workshop in February 2020 in Stockholm.

A first pilot was started in all participating countries, see Table 3. The pace of the pilots differed between the participants, as did type of wards, how the data collection was done and time between baseline and follow up.

| Country | Pilot 1 No of hospitals/ pilot wards | Expanded pilot No of hospitals/ pilot wards | Comments/changes because of covid-19 |
|----------------|--|---|--|
| Belgium | 6/8 | - | Pilots stopped. |
| Czech Republic | 1/2 | - | Pilots stopped. |
| Estonia | 1/4 | 1/6 | Follow up not done. |
| Latvia | 1/3 | 1/1 | Pilots stopped. Plan to start interventions June 2020. |
| Lithuania | 4/5 | 1/1 | Expanded pilots stopped. |
| Netherlands | 2/4 | - | - |
| Slovenia | 1/3 | 1 /2 | Expanded pilots stopped. |
| Sweden | 1/2 | 1/4 | Expanded pilots stopped. |

Table 3. Number of pilot hospitals and wards per participating EU-MS

As noted in Table 3, the originally planned expanded pilot was not possible to start or, for those who started not possible to finish, due to the covid-19 pandemic.

Findings and results

All participants reported two or more areas for improvement (as defined in the ward survey). The areas reported of a majority of the participants were *Avoid unnecessary catheters and Maintenance - aseptic technique* and *Review catheter daily*.

A number of different changes were tested or implemented with regard to the measures in the bundle e.g fixation of bags, alternatives to indwelling catheter, reminders, new forms and checklists, "host" for standard precautions, and different types of easy access to guidance and reminders on indications.

During the first pilots several wards presented decreased number of catheter days and of new catheters. The time span between the data collections varied between the wards, how the data collection was done and time between baseline and follow up. Some of the pilot wards showed a decrease in catheter days and new catheters. Example from one of the pilot wards of graph of catheter days per bed days.



A few wards reported no long term decrease, or an increase (for different reasons such as increased number of surgical operations etc). Example from pilot wards of graph of catheter days per patient days.



Other achievements and lessons learned

One ward measured compliance to standard precautions (point prevalence observations) and reported an increased compliance from 40 to 80%. One participant reported that the project contributed to procurement of closed collections system and training equipment. Other examples of achievements are that national guidelines were published, development of national video material and national recommendations for CAUTI prevention issued.

Lessons learned and insights from the project (structured discussions at a workshop in Stockholm February 2020) highlighted the value of EU collaboration; despite differences in healthcare and culture most countries struggle with similar problems - and solutions.

Examples mentioned connected to the national work were the necessity of face-toface meetings, exchange of experiences and follow-ups. Other examples of comments on gained experiences given by the participants in the WP 6:2 at the workshop are:

- "Improvement is possible"
- "We need more implementation knowledge"
- "Changes should be implemented slowly on one-by-one basis and tested if they work"
- "Implementation in practice is really hard and requires work and time"
- "Benefits are needed to "sell" the idea"

Experiences - barriers and facilitators

Some details and nuances of the BTS model initially appeared as difficult to grasp, in particular the PDSA cycle. Some participants mentioned cultural aspects as barriers with regard to the BTS. Several partners described the model as time- and resource consuming. Other examples of barriers for the work with the BTS were geographic distance between the country team leader and the ward teams, lack of motivation among health care workers, lack of resources and lack of financial support.

Measures are fundaments in the model and problems with CAUTI registration and difficulties in collecting relevant data from existing systems were reported as affecting the improvement work. Other examples of complicating factors were lack of human resources at national level, and frequent change or lack of nurses in the wards.

However, the model was also reported as useful, effective and contributing to an increased interest in structured quality improvement work. Some examples reported as facilitating factors for using the BTS were management support, local improvement process support, motivated staff with an active role in decision making and prioritizing changes, discussions with the ward staff, and broad survey distribution leading to broader engagement.

Future national work

Several participating countries had plans for dissemination on hospital, regional and national levels. However, adjustments were needed due to the covid-19 pandemic. Below are examples given by the participants of how the work from EU-JAMRAI WP6.2 will influence future national work:

- Elaboration of a national IPC strategy
- Implementation of CAUTI guidelines in regional/local hospitals
- Preparation of a training program for CAUTI prevention and control, and training course organization
- Development of national guideline on CAUTI prevention
- Continuation of the use of Breakthrough Series Model and PDSA cycles in other departments of hospitals
- The participating hospital in the JAMRAI project will serve as an example of good practice for presenting the BTS model
- The implementation model will be proposed to health care facilities and institutions

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