Introduction to the Infection Control Assessment Tool (ICAT)

Review of the Cesarean-section Antibiotic Prophylaxis Program in Jordan and Workshop on Rational Medicine Use and Infection Control

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Outline

• Standardized approach using the ICAT
• Assessment steps
• Overview of modules
• Infection control/ICAT CD-ROM
• Results of implementation
• Summary
Standardized Approach Goals

• Under the USAID-supported RPM Plus, Management Sciences for Health collaborated with Harvard University to develop a self-assessment and quality improvement (QI) approach

• Suitable for improving hospital IC practices in resource-limited settings
Standardized Approach

• Assess existing hospital infection control systems using ICAT
• Apply Rapid Cycle Quality Improvement (RCQI) methods
• Use performance indicators and adherence checklists to monitor effectiveness
Standardized Approach—Materials

- Developed and field-tested in the Philippines and Uganda
- Finalized and made available on a CD-ROM—
  - ICAT assessment components (modules, manual, observation checklists)
  - Implementation materials
  - IC and QI resources
Rapid Cycle Quality Improvement (RCQI)

• A QI approach—rapid team problem solving
• Involves teamwork and use of quality improvement tools to—
  • **Identify** and prioritize gaps to be improved
  • **Analyze** and understand existing systems
  • **Develop** and prioritize changes to improve the gaps
  • **Test** and implement effective changes
Infection Control Assessment Tool

• Helps assess existing infection control practices
• Provides recommendations for improving the practices
• Provides checklists for monitoring adherence
ICAT Modules (1)

• Evaluate hospital infection control activities (21 modules)
• Use a ranking methodology to categorize performance
  • A—recommended practices are followed consistently and thoroughly
  • B—recommended practices usually followed
  • C—training and follow-up needed on recommended practices
ICAT Modules (2)

• Include annotations and recommended practices
  • Explain the background and rationale for scoring
  • Based on evidence-based practices and recommendations from authoritative organizations (WHO, CDC, NGOs)
• Can be adapted to conform with local standards
Assessment Steps (1)

- Identify the needs
- Choose a facilitator
  - Familiar with facility
  - Has working relationships with key stakeholders
  - Recommend using someone from infection control program
- Engage the hospital leadership and administration
  - Review goals of assessment and get support
  - Obtain authority to collect data and to implement changes
Assessment Steps (2)

• Identify assessment team
  • Physician, nurse, other personnel as needed, e.g., microbiologist, epidemiologist, pharmacist
  • Agree on assessment objectives
  • Establish a meeting schedule

• Plan assessment
  • Assign assessment modules to team members
  • Identify other staff needed to complete specific modules
  • Determine a schedule for completing modules
Assessment Steps (3)

• Adapt the ICAT to local guidelines
  • Add questions for issues not included in the ICAT
  • If local practices differ from the ICAT recommendations, discuss and decide—
    • Adapt the ICAT to local standards
    • Adapt local standards to international standards

• Prepare observation checklists
  • Adapt key ICAT questions to a short checklist to observe practices in a clinical area over time
  • Identify personnel to observe practices and complete the checklists
Assessment Steps (4)

• Administer the assessment
  • Team member should complete module by working with other staff
  • Follow instructions carefully (i.e., mark one answer, mark all that apply, mark one or all that apply per column or row, skip question)
Assessment Steps (5)

• Calculate scoring
  • Calculate section scores and complete the module scoring sheet—instructions in annex 2 of the ICAT User Manual
  • Determine performance categories (A, B, C)
    • More than 75% of possible points: A—recommended practices are followed consistently and thoroughly
    • 50–75% of possible points: B—recommended practices usually followed
    • Less than 50% of possible points: C—training and follow-up needed on recommended practices
Assessment Steps (6)

• Report and act on results
  • Discuss results with assessment team and hospital leadership
  • Determine possible areas for improvement
    • Units or service areas
    • Sections within units or service areas

• Review survey results and develop an improvement plan
  • Hospital leadership and administration
  • Leader of each unit or service area
Example—Labor and Delivery Module

(1)

General Issues, Hygiene, and Glove Use

This module is designed to provide contextual information on labor and delivery practices in your hospital. The first set of questions looks at staff education.

1. In the past year, did you lead or participate in education programs for labor and delivery personnel related to preventing nosocomial infections?
   - [ ] No
   - [X] Yes

2. If yes, which of the following topics were discussed? (Mark all that apply)
   - [ ] Hand hygiene
   - [ ] Standard precautions
   - [ ] Prevention of chorioamnionitis
   - [ ] Prevention of surgical site infections after cesarean section (C-section) (puerperal sepsis)
   - [ ] Prevention of infection after vaginal delivery
   - [ ] Prevention of postpartum endometritis
   - [ ] Prevention of peripartum infections in the baby
   - [ ] Prevention of intravenous catheter-associated infections
   - [ ] Prevention of urinary catheter-associated urinary tract infections
   - [ ] Care of breast milk pumps, and/or stored breast milk
   - [ ] Skin and cord care of the baby (neonate)
   - [ ] Preparation of commercial formula
   - [ ] Eye care for the baby (neonate)

   - [ ] At least six items checked
   - [ ] Seven to eleven items checked

3. Are there designated rooms or wards for women in labor? (Mark all that apply)
   - [ ] General hospital ward
   - [X] Dedicated labor and delivery rooms

Assessment section total: ____________  Possible section total: 4
Example—Labor and Delivery Module

Prophylactic Antibiotic Use in Labor and Delivery

These questions cover indications and use of prophylactic antibiotic use during labor and delivery, including C-sections.

38. For which procedures are prophylactic antibiotics routinely used? (Mark all that apply)

- [] None at all
- [] In labor with spontaneous rupture of membranes four hours or more, no fever or other signs of infection
- [] In labor with rupture of membrane four hours or more, fever or other signs of infection
- [] Elective C-section
- [] Nonscheduled (emergency) C-section
- [] Prolonged labor with rupture of membranes more than 18 hours with no fever or other signs of infection

39. At which point are prophylactic antibiotics usually given in a C-section? (Mark one answer)

- [] No C-section performed
- [] Post-C-section
- [] Two hours or less prior to C-section
- [] As soon as cord is clamped

Assessment section total: ____________  Possible section total: 5 ____________
Determine the Performance Category

Module Scoring Sheet (Example)

<table>
<thead>
<tr>
<th>Module Section</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Sum of 1 = 36</td>
<td></td>
<td></td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>Sum of 2 = 54</td>
<td></td>
<td></td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>Total for module</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General issues, hygiene, glove use</td>
<td>3</td>
<td>4</td>
<td>3/4 × 100 = 75%</td>
<td>B</td>
</tr>
<tr>
<td>Cleaning and general hygiene</td>
<td>3</td>
<td>4</td>
<td>3/4 × 100 = 75%</td>
<td>B</td>
</tr>
<tr>
<td>Glove use for vaginal deliveries</td>
<td>3</td>
<td>4</td>
<td>3/4 × 100 = 75%</td>
<td>B</td>
</tr>
<tr>
<td>Glove use for cesarean sections</td>
<td>2</td>
<td>2</td>
<td>2/2 × 100 = 100%</td>
<td>A</td>
</tr>
<tr>
<td>Scrub for vaginal delivery</td>
<td>5</td>
<td>6</td>
<td>5/6 × 100 = 83.3%</td>
<td>A</td>
</tr>
<tr>
<td>Barriers worn for vaginal delivery</td>
<td>2</td>
<td>8</td>
<td>2/8 × 100 = 25%</td>
<td>C</td>
</tr>
<tr>
<td>Invasive devices</td>
<td>4</td>
<td>5</td>
<td>4/5 × 100 = 80%</td>
<td>A</td>
</tr>
<tr>
<td>Labor and delivery procedures</td>
<td>8</td>
<td>11</td>
<td>8/11 × 100 = 72.7%</td>
<td>B</td>
</tr>
<tr>
<td>Prophylactic antibiotic use</td>
<td>4</td>
<td>5</td>
<td>4/5 × 100 = 80%</td>
<td>A</td>
</tr>
<tr>
<td>Postpartum care</td>
<td>2</td>
<td>5</td>
<td>2/5 × 100 = 40%</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall score</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** The calculations for the percent score are based on the possible total for each section. The rating is assigned based on the percent score.
Overview of Modules (1)

• Modules administered once for the hospital as a whole
  • Hospital information
  • Infection control program
  • Isolation and standard precautions
  • Employee health
  • Pharmacy
  • Waste management
Overview of Modules (2)

• Modules administered once for specific services (if present in hospital)
  • Labor and delivery
  • Surgical antibiotic use and equipment reprocessing*
  • Surgical area practices*
  • Intensive care units*
  • Microbiology laboratory

* If more than one unit exists in hospital, may assess each
Overview of Modules (3)

- Modules administered once where sterilization or disinfection occurs
  - Equipment and IV fluids
  - Needles and syringes
  - Sterile gloves
Overview of Modules (4)

• Modules administered once for each clinical area (if relevant)
  • General ward
  • Hand hygiene
  • Injections
  • Airway suctioning
  • Intravenous catheters
  • Intravenous fluids and medications
  • Urinary catheters
Accessing Information in the ICAT

• ICAT User Guide (see Binder)
• ICAT Modules (see Binder)
• ICAT CD ROM (Provided to each participant)
Purpose of the Infection Control CD-ROM

- Contains tools and materials for use in assessing and improving the quality of infection control practices at hospitals in low-resource countries
  - Meant to benefit primarily lower-level hospitals
Overview of the Infection Control CD-ROM (1)

- Four main sections or folders—
  - Introduction folder
    - The *Introduction to the Infection Control CD-ROM* guides the reader on how to apply the ICAT and selected CD-ROM materials, including guidelines and templates, in implementing the approach
  - Assessment tools folder
    - ICAT manual
    - ICAT modules and checklists
Overview of the Infection Control CD-ROM (2)

• Folders, continued—
  • Implementation folder
    • Training, implementation, and review materials
  • Resources folder
    • IC Resources: IC guidelines, journal articles, and scientific publications that contain the recommendations upon which the ICAT annotations are based
    • QI Resources: QI materials
    • Additional Resources: General AMR-related materials
View of Main CD-ROM Window

Note: “Adobe reader50” is an application. If you do not have Adobe Reader on your computer, it is necessary to install this application to be able to open and view “PDF-file” documents. You can also go to http://www.adobe.com/products/reader/ to download the latest version of this free software. Follow the steps on the Adobe website.
Outline of CD-ROM Folders (1)

00_Introduction

01_Assessment Tools

02_Implementation

03_Resources

Adobe Reader

Table of Contents

Key

- Folder
- Application
- Word document
- PowerPoint
- PDF
Outline of CD-ROM Folders (2)

00_Introduction

Introduction to the Infection Control CD-ROM

01_Assessment Tools

ICAT Manual

ICAT Modules and Checklists

Key

- Folder
- Application
- Word document
- PowerPoint
- PDF
Outline of CD-ROM Folders (3)

02 Implementation
00 Sample schedule for 4 day workshop
00 Implementation workshop introduction
01 AMR overview and containment
01 Overview of standardized approach
02 Decision-making tools
02 Facilitator’s guide to exercise on applying QI principles and tools
02 Exercise on applying QI principles and tools
02 Sample answers to exercise on applying QI principles and tools
02 Notes on applying QI principles and tools_I
02 Notes on applying QI principles and tools_II
02 Preventing transmission of nosocomial pathogens
02 Principles and methods of QI
02 Homework on ICQI plan development
02 Template for applying QI principles and tools
02 Template for ICQI plan
03 Improving hospital IC practices: the ICAT
04 Conducting an ICAT survey
04 Template for reporting ICAT survey results
05 Guidelines for implementing the standardized approach
05 Workshop_final evaluation
05 Workshop_session evaluation
05 Introduction to the infection control CD-ROM
05 Template for ICQI report
Review workshop introduction
Template for collecting data on hospital characteristics

Key
Folder
Application
Word document
PowerPoint
PDF
Outline of CD-ROM Folders (4)

03_Resources

IC Resources

QI Resources

Additional Resources

Key

Folder
Application
Word document
PowerPoint
PDF
Results from Implementation

• The Strengthening Pharmaceutical Systems (SPS) Program and its predecessor—Rational Pharmaceutical Management (RPM) Plus collaborated with Ministries of Health (MOHs) to implement and evaluate the approach to improve IC practices in pilot hospitals in 2007–2010

Source: ICIUM 2011, Implementing a Self-Assessment and Continuous Quality Improvement Approach to Improve Hospital IC Practices in Africa and Latin America
Results from implementation (2)

- Hospitals in the following countries have implemented the process
  - Guatemala (5 hospitals)
  - Namibia (7 hospitals and 1 health center)
  - South Africa (3 hospitals),
  - Swaziland (4 hospitals).
- Pilot hospitals experienced measurable improvements in IC practices over initial 6–9 months of implementation

Source: ICIUM 2011, Implementing a Self-Assessment and Continuous Quality Improvement Approach to Improve Hospital IC Practices in Africa and Latin America
Results and Conclusions from Implementation Activities

• Stakeholders from the 4 countries have embraced the ICAT and CQI approach as useful, adapted it to the local context, and assumed ownership, thereby motivating staff and promoting an IC culture in their hospitals.

• Despite facing similar challenges, such as a shortage of human, financial, and material resources, the hospitals in the pilot countries managed to obtain improvements with simple, locally appropriate, low-cost interventions.

• Health facility IC teams feel empowered because of the tools that help them develop and test low-cost interventions; they use the data generated as a powerful advocacy tool to obtain buy-in and support of hospital management and staff.

Source: ICIUM 2011, Implementing a Self-Assessment and Continuous Quality Improvement Approach to Improve Hospital IC Practices in Africa and Latin America
Results and Conclusions from Implementations Activities (2)

- WHO Global Strategy and ICIUM 2004 recommended IC as a key intervention to support AMR containment. In this regard, the current results demonstrate that local stakeholders in resource-constrained countries are likely to implement simple, low cost, and sustainable IC quality improvement interventions that yield quantifiable results.

- This is especially true if the approach promotes teamwork and the locally-led interventions are supported with some initial technical capacity-building assistance. Therefore, all stakeholders including development partners and donors interested in AMR containment should support infection prevention and control activities.

Source: ICIUM 2011, Implementing a Self-Assessment and Continuous Quality Improvement Approach to Improve Hospital IC Practices in Africa and Latin America
Summary

- WHO Global Strategy and ICIUM 2004/2011 recommended IC as a key intervention to support AMR containment.
- The ICAT is a modular assessment tool that can quickly Identify problems with IC practices
- Use of quality improvement tools help to implement interventions to improve IC practices
- The ICAT has been demonstrated to be a easy to use, low cost, and sustainable IC quality improvement intervention that yield quantifiable results.