Quality indicators for infection prevention and control in Belgian hospitals and public disclosure

ISP/WIV
February 14, 2017

Marie-Laurence Lambert, MD, PhD
Outline

• Background:
  • Hospital associated infections
  • The project: quality indicators for infection prevention and control in Belgian hospitals

• Methods

• Results

• Discussion
  • Key results
  • Strengths, weaknesses of the project
  • The future…
BACKGROUND
Hospital-acquired infections (HAI)

... infections occurring during a stay in hospital that were neither present nor incubating at the time of hospital admission

So: ECDC
Welcome to the hospital!
HAI: a major public health problem (1)

- FREQUENT

Acute care hospitals, Belgium

- Prevalence: 7.1%  
  *so: ECDC, point prevalence survey, 2010-2011*
- 8000 HA- blood stream infections
- 4000 HA- *Clostridium difficile* infections
- ....  
  *So: RCM/MKG data, 2013*
HAI: a major public health problem (2)

- FREQUENT

- SEVERE
  • Attributable mortality, morbidity
  • 37,000 directly attributable deaths each year in Europe

So: ECDC
HAI and antimicrobial resistance

Hospital-associated infections

Community-acquired infections

Antimicrobial resistance
HAI: A major public health problem (3)

- FREQUENT
- SEVERE
- PREVENTABLE

... (to a certain extent)

Primum non nocere
HAI: HOW?

Contaminated hospital environnement

Patient flora - Invasive devices

Medical personnel
Hospital associated infections prevention and control (IPC)

- Preventing in-hospital transmission
  - … hand hygiene of medical personnel!
  - …
**Standard precautions: hand hygiene**

**Your 5 moments for HAND HYGIENE**

<table>
<thead>
<tr>
<th>Moment</th>
<th>When</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Before patient contact</td>
<td>To protect the patient against harmful germs carried on your hands</td>
</tr>
<tr>
<td>2</td>
<td>Before aseptic task</td>
<td>To protect the patient against harmful germs, including the patient’s own germs, entering his or her body</td>
</tr>
<tr>
<td>3</td>
<td>After body fluid exposure risk</td>
<td>To protect yourself and the health-care environment from harmful patient germs</td>
</tr>
<tr>
<td>4</td>
<td>After patient contact</td>
<td>To protect yourself and the health-care environment from harmful patient germs</td>
</tr>
<tr>
<td>5</td>
<td>After contact with patient surroundings</td>
<td>To protect yourself and the health-care environment from harmful patient germs</td>
</tr>
</tbody>
</table>
Hospital associated infections prevention and control (IPC)

- Preventing in-hospital transmission
  - ... hand hygiene of medical personnel!
  - ...

- Quality of care
  - Decrease the use of invasive devices
  - Surgical check lists
  - Prudent use of antimicrobials
  - ...

HAI prevention in Belgium (1)

- Political commitment

- BAPCOC: Belgian Antibiotic Policy Coordination Committee (BAPCOC)

  - Each hospital: dedicated budget for infection prevention and control
    - Belgian « hygienists » doctor/ nurse
    - Antimicrobial management teams
HAI prevention in Belgium (2)

- Unit « healthcare-associated infections and antimicrobial resistance » WIV-ISP collects and analyse data, feedback to hospitals:
  - Health-care associated infections
  - Antimicrobial use, antimicrobial resistance
  - Compliance with hand hygiene recommandations
  - Quality indicators for IPC
Quality indicators for IPC legal framework (1)

Arrêté Royal / Koninglijke Besluit 2007

…La surveillance porte également sur des indicateurs de qualité relatifs à la politique d’hygiène hospitalière dans l’établissement…

…Het toezicht heeft eveneens betrekking op kwaliteitsindicatoren met betrekking tot het ziekenhuishygiënebeleid in de instelling …
Quality indicators for IPC legal framework (2)

Arrêté Royal / Koninglijke Besluit 2007

…les indicateurs sont définis par la BAPCOC sur avis de la Plate-Forme Fédérale pour l’Hygiène Hospitalière … »

… inicatoren die gedefinieerd worden door de BAPCOC, op advies van het Federaal Platform voor Ziekenhuishygiëne … »
OBJECTIVES, TARGETS, INDICATORS
QI for IC in hospitals: Objectives, targets, indicators

<table>
<thead>
<tr>
<th>OBJECTIVES</th>
<th></th>
<th></th>
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</tr>
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<tbody>
<tr>
<td>Evaluating policy in IC</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Accountability</td>
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<tr>
<td>Quality improvement</td>
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QI for IC in hospitals: Objectives, targets, indicators

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<tr>
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</tr>
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## QI for IC in hospitals: Objectives, targets, indicators

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METHODS
Data collection

- Once a year
  - Indicators and scores decided by BAPCOC
  - First data collection 2015, data 2013
  - Same set of indicators for second (data 2015) and third (data 2016) data collection

WIV/ISP: data collection, analyses, reports
Which quality indicators (1)?

Impact

From existing surveillance systems:

- Incidence of hospital-associated methicillin resistant *S. aureus* (MRSA)

- Incidence of central-line associated blood stream infections (CLABSI)
Which quality indicators (2)?

**Process**

**Scope**: « hospital hygienists » mission
- Excludes eg [antimicrobial use](#), HCW immunisation, blood exposure accident….

**Limited**: number of process indicators
- not meant to be a comprehensive assessment of quality of hospital hygiene
- rather a tool to stimulate improvement in priority targets
Process indicators for hospital hygiene: « organisation »

6 indicators, 6 points

- Strategic plan for hospital hygiene
- Annual report for hospital hygiene, detailed action plan
- …
Process indicators for hospital hygiene: « means »

7 indicators, 7 points

- Working time, HH doctor and nurse
- network of « link » HH nurses in the hospital
- HH training efforts
- ...

Process indicators for hospital hygiene: category «actions»

20 indicators, 20 points

- HAI Surveillance
  - (7/20, legal obligations)
- Process audits
  - Compliance with hand hygiene recommendations
  - Compliance with recommendations for prevention of device-associated HAI
- …

If you cannot measure it, you cannot improve it
RESULTS  SECOND DATA COLLECTION (2016, YEAR 2015)
Impact indicators: MRSA

MRSA in Belgian acute care hospitals
proportion of S. aureus clinical isolates and incidence of nosocomial acquisition 1994 - 2014

Source: National surveillance, B. Jans
Quality indicators for hospital hygiene, Belgium, 2015: hospitals

N= 103 (codes agrément/ erkenning nummers)

- Brussels: 12
- Flanders: 54
- Wallonia: 37
Quality indicators for hospital hygiene, Belgium, 2015: category « organisation »

- Belgium (N= 103)
- Brussels (N= 12)
- Flanders (N=54)
- Wallonie (N= 37)

% hospitals

- Score: low (<=3)
- Score: average (4)
- Score: high (5-6)
Quality indicators for hospital hygiene, Belgium, 2015: category « organisation »

<table>
<thead>
<tr>
<th>BELGIUM</th>
</tr>
</thead>
<tbody>
<tr>
<td>N= 103</td>
</tr>
<tr>
<td>n %</td>
</tr>
<tr>
<td>Strategic plan in hospital hygiene is part of the hospital strategic plan</td>
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Quality indicators for hospital hygiene, Belgium, 2015: category « organisation »

<table>
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<tr>
<th></th>
<th>N=</th>
<th>103</th>
<th>2013</th>
</tr>
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<tr>
<td>Strategic plan in hospital hygiene is part of the hospital strategic plan</td>
<td>n</td>
<td>72</td>
<td>70%</td>
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Quality indicators for hospital hygiene, Belgium, 2015: means

- Score: low (<4)
- Score: average (4-5)
- Score: high (6-7)
Quality indicators for hospital hygiene, Belgium, 2015: means

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<td>At least one “link” nurse per ward</td>
<td>84 82%</td>
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Quality indicators for hospital hygiene, Belgium, 2015: means

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2013
Training: number of participants, per financed FTE in hospital hygiene (doctor+nurse)
Quality indicators for hospital hygiene, Belgium, 2015: category « actions»

<table>
<thead>
<tr>
<th>Region</th>
<th>N</th>
<th>Score: low (&lt;=12)</th>
<th>Score: average (13-15)</th>
<th>Score: high (&gt;15)</th>
</tr>
</thead>
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<td>Belgium</td>
<td>103</td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>12</td>
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% hospitals
Quality indicators for hospital hygiene, Belgium, 2015: Actions: surveillances

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<tr>
<td>HAI in intensive care units</td>
<td>70</td>
<td>68%</td>
<td></td>
</tr>
<tr>
<td>Surgical site infections</td>
<td>41</td>
<td>40%</td>
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If you cannot measure it, you cannot improve it.
Quality indicators for hospital hygiene, Belgium, 2015: Actions: surveillances

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If you cannot measure it, you cannot improve it
## Actions (2)

Compliance monitoring (audits)

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<tbody>
<tr>
<td>n</td>
<td>%</td>
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<td>76</td>
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If you cannot measure it, you cannot improve it
### Actions (2) Compliance monitoring (audits)

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<td>74%</td>
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**Belgium**

*If you cannot measure it, you cannot improve it*
Compliance monitoring (audits): recommendations for prevention of device-associated infections

<table>
<thead>
<tr>
<th>Device</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central venous catheter</td>
<td>61</td>
<td>59%</td>
</tr>
<tr>
<td>Endotracheal tube</td>
<td>67</td>
<td>65%</td>
</tr>
<tr>
<td>Urinary catheter</td>
<td>55</td>
<td>53%</td>
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If you cannot measure it, you cannot improve it
Compliance monitoring (audits): recommandations for prevention of device-associated infections

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<tr>
<td>Uninary catheter</td>
<td>55</td>
<td>53%</td>
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If you cannot measure it, you cannot improve it
Om een rapport op te halen dient u de taal van het rapport en een ziekenhuis te selecteren alvorens op de knop 'View Report' te klikken. Via de pijltjes kan u naar de details kijken en via de diskette als pdf-document openen.

Pour visualiser un rapport, sélectionnez la langue, un hôpital et cliquez ensuite sur le bouton «View Report». En utilisant les flèches, vous pouvez visualiser les détails et via la disquette vous pouvez ouvrir le document en PDF.

**ISP WIV**

**Kwaliteitsindicatoren Ziekenhuishygiëne 2015**

1 Organisatie

- **O_1_a** Algemeen strategisch plan op lange termijn (3-5 jaar) voor de ziekenhuishygiëne - goedgekeurd door het comité voor ziekenhuishygiëne
- **O_1_b** Zo ja: Algemeen strategisch plan geïntegreerd in het strategisch plan van het ziekenhuis
- **O_2** Aantal vergaderingen van het comité voor ziekenhuishygiëne > =4
- **O_3** Gedetailleerd jaarlijks actieplan voor ziekenhuishygiëne
- **O_4** Jaarverslag voor ziekenhuishygiëne
- **O_5** Tenminste één verpleegkundige-ziekenhuishygiënisten(e) lid van het verpleegkundig middenkader

Totaal punten (één punt per ja) 6

2 Middelen

1 Voltijds equivalenten (VTE)

- **M_1** Effectief aantal geneesheren-ziekenhuishygiëne (VTE) 0.51
- **ETP_M** Theoretisch aantal geneesheren-ziekenhuishygiëne (VTE) 0.51
- **EVA_M** Effectieve verpleegkundige-ziekenhuishygiëne (VTE) 1.01
<table>
<thead>
<tr>
<th>Code</th>
<th>City</th>
<th>Hospital Name</th>
<th>Score 1</th>
<th>Score 2</th>
<th>Score 3</th>
<th>Total</th>
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<tbody>
<tr>
<td>73 7100</td>
<td>Haine-Saint-Paul</td>
<td>Centres Hospitaliers Jolimont</td>
<td>5</td>
<td>6</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>74 7100</td>
<td>La Louviere</td>
<td>Centre Hospitalier Universitaire Tivoli</td>
<td>4</td>
<td>7</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>75 7301</td>
<td>Hornu</td>
<td>Centre Hospitalier Epicura</td>
<td>5</td>
<td>7</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>76 7500</td>
<td>Tournai</td>
<td>Centre Hospitalier de Wallonie Picarde - Chwapi</td>
<td>5</td>
<td>6</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>77 7700</td>
<td>Mousson</td>
<td>Centre Hospitalier de Mousson</td>
<td>6</td>
<td>7</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>78 7800</td>
<td>Athen</td>
<td>Centre Hospitalier Epicura</td>
<td>5</td>
<td>7</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>79 8000</td>
<td>Brugge</td>
<td>Algemeen Ziekenhuis ST.-Jan Brugge-Oostende</td>
<td>4</td>
<td>6</td>
<td>16</td>
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<tr>
<td>80 8300</td>
<td>Knokke-Heist</td>
<td>Algemeen Ziekenhuis Zeno</td>
<td>5</td>
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<td>19</td>
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<tr>
<td>81 8310</td>
<td>Brugge</td>
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<td>5</td>
<td>7</td>
<td>15</td>
<td></td>
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<tr>
<td>82 8400</td>
<td>Oostende</td>
<td>Algemeen Ziekenhuis Damiaan</td>
<td>6</td>
<td>7</td>
<td>18</td>
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<td>Algemeen Ziekenhuis Groeninge</td>
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<td>7</td>
<td>19</td>
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<tr>
<td>84 8630</td>
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<td>O.L.V. Van Lourdes Ziekenhuis Waregem</td>
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<td>7</td>
<td>17</td>
<td></td>
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<tr>
<td>90 8900</td>
<td>Ieper</td>
<td>Jan Yperman Ziekenhuis Vzw</td>
<td>6</td>
<td>6</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>91 9000</td>
<td>Gent</td>
<td>Algemeen Ziekenhuis Maria Middelares</td>
<td>5</td>
<td>6</td>
<td>18</td>
<td></td>
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So: Quality indicators for hospital hygiene, report 2015. WIV-ISP
Key results (1)
The good news…

- MRSA
- Compliance with hand hygiene recommendations
- Almost all process indicators have improved since 2013
- … but still room for improvement
Key results (2)
The bad news

- Impact on outcome indicators remains to be demonstrated

So: SEP surveillance data, NSIH

So: SEP surveillance data, NSiH
Limitations (1)
Validity of data?

- No external quality control
- High pressure due to public disclosure
Limitations (2)
Validity of methods?

- Limited number of indicators
- Scores?

- NOT a comprehensive assessment of infection prevention and control in hospitals
  - Many elements of IPC quality are NOT included
  - Legal obligations
    - 7/20 for actions
    - +/- 100% compliance
Discussion (3) -

Mean scores, QI

• Organisation: 93%
• Means: 81%
• Actions: 82%

Are we really that good?
DISCUSSION: THE QUALITY INDICATOR FOR HOSPITAL HYGIENE PROJECT
STRENGTHS

- Ownership
  - Field hospital hygienists, « bottom-up » project

- Public disclosure very effective incentive to improve on the indicators

- First initiative for public disclosure of hospital quality indicators at federal level

- Identifies priorities for improvement
WEAKNESSES

- Other stakeholders not involved in the project:
  - hospitals directors, consumers associations, « Mutualities »,
  - MoH ?

- No coordination with other projects aimed at quality improvement in hospitals
  - VIP2 (Flanders), PACS, …

- Scope is limited
THE FUTURE
THE FUTURE (1)

Set of indicators being revised (data collection 2018, year 2017)

- *Pending BAPCOC approval*
- Wider scope, larger number of indicators
- Emphasis on audits
- Closer to comprehensive assessment of quality in hospital hygiene
- Some indicators go beyond the missions of hospital hygiene team
THE FUTURE… (2)

- External quality control of data?
- Involvement of other stakeholders?
- Coordination with other quality initiatives?
- Quality indicators for antimicrobial use?
THANK YOU!