"INNOVATION AND IMPLEMENTATION STRATEGIC APPROACHES TO REDUCE CATHETER-RELATED BACTERAEMIA: THE RESULTS OF A EUROPEAN MULTICENTRE STUDY (PROHBIT)"

Dr. Walter Zingg
University of Geneva Hospitals

Hosted by Dr. Benedetta Allegranzi
WHO Patient Safety Agency

Sponsored by
WHO Patient Safety Challenge Clean Care is Safer Care

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Outline

BACKGROUND
THE GENEVA “REDCO-CVC project“
PROHIBIT
PROHIBIT – The catheter project
PROHIBIT – In Depth
SUMMARY
Outline

BACKGROUND

THE GENEVA “REDCO-CVC project“

PROHIBIT

PROHIBIT – The catheter project

PROHIBIT – In Depth

SUMMARY
Relative change of nosocomial infections over 5 years (1970-1975)

**Without infection control**
- LRTI: -27%
- SSI: -35%
- UTI: -31%
- BSI: 26%
- Total: 18%

**With infection control**
- LRTI: 9%
- SSI: 14%
- UTI: 19%
- BSI: 26%
- Total: 18%

Background – SENIC

Haley Am J Epidemiol 1985
## Background – ECDC

### ECDC – ICU-data

**Table 1. Device-adjusted bloodstream infection rates by country, 2007**

<table>
<thead>
<tr>
<th>Country</th>
<th>pt days</th>
<th>N of CVC days, all</th>
<th>CUR</th>
<th>N of CA-BSI episodes</th>
<th>N of CR-BSI episodes</th>
<th>CA-BSIs/1000 cvc-days</th>
<th>CR-BSIs/1000 cvc-days</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>75997</td>
<td>66359</td>
<td>87.3</td>
<td>128</td>
<td>103</td>
<td>1.9</td>
<td>1.6</td>
</tr>
<tr>
<td>BE</td>
<td>21999</td>
<td>15263</td>
<td>69.4</td>
<td>44</td>
<td>27</td>
<td>2.9</td>
<td>1.8</td>
</tr>
<tr>
<td>ES</td>
<td>142072</td>
<td>103030</td>
<td>72.5</td>
<td>497</td>
<td>355</td>
<td>4.8</td>
<td>3.4</td>
</tr>
<tr>
<td>FR</td>
<td>257638</td>
<td>160059</td>
<td>62.1</td>
<td>575</td>
<td>181</td>
<td>3.6</td>
<td>1.1</td>
</tr>
<tr>
<td>IT</td>
<td>22304</td>
<td>16467</td>
<td>73.8</td>
<td>75</td>
<td>33</td>
<td>4.6</td>
<td>2.0</td>
</tr>
<tr>
<td>LT</td>
<td>13715</td>
<td>10466</td>
<td>76.3</td>
<td>24</td>
<td>13</td>
<td>2.3</td>
<td>0.3</td>
</tr>
<tr>
<td>LU</td>
<td>27683</td>
<td>15559</td>
<td>56.2</td>
<td>43</td>
<td>41</td>
<td>2.8</td>
<td>2.6</td>
</tr>
<tr>
<td>PT</td>
<td>7800</td>
<td>6487</td>
<td>83.2</td>
<td>20</td>
<td>17</td>
<td>3.1</td>
<td>2.6</td>
</tr>
<tr>
<td>SK</td>
<td>1760</td>
<td>1407</td>
<td>79.9</td>
<td>7</td>
<td>3</td>
<td>5.0</td>
<td>2.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>570968</strong></td>
<td><strong>395097</strong></td>
<td><strong>69.2</strong></td>
<td><strong>1259</strong></td>
<td><strong>751</strong></td>
<td><strong>3.2</strong></td>
<td><strong>1.9</strong></td>
</tr>
</tbody>
</table>

CUR=Central line utilisation rate (N of CVC days * 100/ N of patient days)
### Background – INICC

<table>
<thead>
<tr>
<th>Type of ICU</th>
<th>ICU’s, n</th>
<th>Patients, n</th>
<th>Pooled mean CLABSI rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical</td>
<td>42</td>
<td>30,823</td>
<td>14.7</td>
</tr>
<tr>
<td>Medical cardiac</td>
<td>27</td>
<td>26,704</td>
<td>6.2</td>
</tr>
<tr>
<td>Medical/surgical</td>
<td>138</td>
<td>109,237</td>
<td>6.8</td>
</tr>
<tr>
<td>Neurologic</td>
<td>4</td>
<td>3,869</td>
<td>12.9</td>
</tr>
<tr>
<td>Neurosurgical</td>
<td>25</td>
<td>8,109</td>
<td>4.6</td>
</tr>
<tr>
<td>Pediatric</td>
<td>45</td>
<td>20,905</td>
<td>10.7</td>
</tr>
<tr>
<td>Respiratory</td>
<td>18</td>
<td>2,710</td>
<td>4.9</td>
</tr>
<tr>
<td>Surgical</td>
<td>50</td>
<td>63,270</td>
<td>5.0</td>
</tr>
<tr>
<td>Surgical cardiothoracic</td>
<td>28</td>
<td>25,130</td>
<td>1.5</td>
</tr>
<tr>
<td>Trauma</td>
<td>9</td>
<td>4,507</td>
<td>2.5</td>
</tr>
<tr>
<td>Overall</td>
<td>386</td>
<td>295,264</td>
<td>6.8/1’000 catheter-days</td>
</tr>
</tbody>
</table>

422 ICUs from 36 countries in Latin America, Asia, Africa, and Europe

Impact of a prevention strategy targeted at vascular-access care on incidence of infections acquired in intensive care

Philippe Eggimann, Stephan Harbarth, Marie-Noëlle Constantin, Sylvie Touveneau, Jean-Claude Chevrolet, Didier Pittet

Multimodal intervention:

- Education/Training
- Standardized processes
- Maximal sterile barrier precautions
- Chlorhexidine
- Hand hygiene
- Catheter care
- etc.

Eggimann. Lancet 2000;355:1864
<table>
<thead>
<tr>
<th>Guidelines</th>
<th>Control period*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material preparation</td>
<td>Based on physicians’ individual preferences.</td>
</tr>
<tr>
<td>Positioning of patient</td>
<td>According to nursing habits acquired elsewhere—eg, nursing school, hospital wards.</td>
</tr>
<tr>
<td>Line insertion</td>
<td>General institutional recommendations.</td>
</tr>
<tr>
<td>Skin preparation</td>
<td>Hair-shaving.</td>
</tr>
<tr>
<td>Skin antisepsis</td>
<td>Povidone iodine 10% or alcohol-based (70%) solution of chlorhexidine gluconate (0.5%).</td>
</tr>
<tr>
<td>Barrier precautions</td>
<td>Sterile gloves, small fenestrated sheets, paper mask.</td>
</tr>
<tr>
<td>Insertion technique</td>
<td>Various techniques; no specific training of ICU physicians.</td>
</tr>
<tr>
<td>Dressing</td>
<td>Several types according to individual non-standardised criteria. Transparent occlusive dressings or preprepared devices for peripheral lines.</td>
</tr>
<tr>
<td>Replacement</td>
<td>Every 24 h for all dressings, administration sets, and devices.</td>
</tr>
<tr>
<td>General handling</td>
<td>Universal precautions.</td>
</tr>
<tr>
<td>Device removal</td>
<td>Peripheral line; after 3–5 days. Central line: no specific recommendations.</td>
</tr>
<tr>
<td>Hand hygiene during insertion and care</td>
<td>Handwashing with surgical soap in sink before and after each patient care, or hand disinfection.</td>
</tr>
<tr>
<td>Guidelines</td>
<td>Intervention period†</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>Material preparation</td>
<td>Material prepared according to detailed list to avoid interruption during insertion (cards available in preparation room).</td>
</tr>
<tr>
<td>Positioning of patient</td>
<td>Recommendations for placing of patients and devices to permit optimum access to insertion site. Presence of nurse to assist physician mandatory.</td>
</tr>
<tr>
<td>Line insertion</td>
<td>Detailed written guidelines.</td>
</tr>
<tr>
<td>Skin preparation</td>
<td>Hair-cutting instead of shaving. Skin cleansing with surgical swab.</td>
</tr>
<tr>
<td>Skin antisepsis</td>
<td>Alcohol-based (70%) solution of chlorhexidine gluconate (0·5%), with 2-min drying time before insertion.</td>
</tr>
<tr>
<td>Barrier precautions</td>
<td>Sterile gown and gloves, large sheets, cap, surgical mask (except for peripheral lines).</td>
</tr>
<tr>
<td>Insertion technique</td>
<td>Specific training of ICU physicians;‡ promotion of subclavian (CVC) and wrist vein (short lines) sites.</td>
</tr>
<tr>
<td>Dressing</td>
<td>Occlusive devices not allowed. Written guidelines for dressing. Replaced every 72 h except for the first dressing after catheter insertion. Dry gauze-based dressing occluded with porous adhesive band obligatory.</td>
</tr>
<tr>
<td>Replacement</td>
<td>Every 72 h for administration sets and devices; every 24 h for lipid emulsion lines. Lines for blood product infusions immediately removed after use.</td>
</tr>
<tr>
<td>Hand hygiene during insertion and care</td>
<td>Hand disinfection: strongly emphasised before and after any care. Handwashing: for soiled hands, followed by hand disinfection.</td>
</tr>
</tbody>
</table>
Initiative from the ICU

Contact infection control

Detailed protocol based on literature

Teaching on the ward

Bedside teaching

CVC-insertion

Surveillance

**Intervention period**

Material prepared according to detailed list to avoid interruption during insertion (cards available in preparation room).

Recommendations for placing of patients and devices to permit optimum access to insertion site. Presence of nurse to assist physician necessary.

Detailed written guidelines.

Hair-cutting instead of shaving. Skin cleansing with surgical swab. Alcohol-based (70%) solution of chlorhexidine gluconate (0.5%), with 2-min drying time before insertion.

Sterile gown and gloves, large sheets, cap, surgical mask (except for peripheral lines).

Specific training of ICU physicians; promotion of subclavian (CVC) and internal jugular vein (short lines) sites.

Occlusive devices not allowed. Written guidelines for dressing.

Replaced every 72 h except for the first dressing after catheter insertion.

Dry gauze-based dressing occluded with porous adhesive.

Every 72 h for administration sets and devices; every 24 h for lipid emulsion lines. Lines for blood product infusions immediately removed after use.


Peripheral line: after 72 h systematically.

Central line: as clinically indicated, no routine replacement.

Any access: prompt removal if not absolutely necessary.

Clinical sepsis: guidewire exchange if unexplained.

Hand disinfection: strongly emphasised before and after any care.

Handwashing: for soiled hands, followed by hand disinfection.
## Background – Eggimann

<table>
<thead>
<tr>
<th>Nosocomial Infections</th>
<th>Control period</th>
<th>Intervention period</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bloodstream</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microbiologically documented</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical sepsis</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Exit-site catheter</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skin or mucous membranes</td>
<td>102</td>
<td>11.4</td>
</tr>
<tr>
<td>Miscellaneous*</td>
<td>15</td>
<td>1.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>468</td>
<td>52.4</td>
</tr>
<tr>
<td><strong>Incidence density</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bloodstream</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microbiologically documented</td>
<td>11.3</td>
<td>3.8</td>
</tr>
<tr>
<td>Clinical sepsis</td>
<td>3.1</td>
<td>1.2</td>
</tr>
<tr>
<td><strong>Exit-site catheter</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Including secondary bloodstream infections occurring during the control period (one *Candida albicans* urinary-tract infection) and the intervention period (one each of *Enterobacter cloacae* skin and urinary-tract infections; one *C albicans* urinary-tract infection).

<table>
<thead>
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</tr>
<tr>
<td>Line insertion</td>
<td>Detailed written guidelines.</td>
</tr>
<tr>
<td>Skin preparation</td>
<td>Hair should be left unshaven. Skin cleansing with surgical swab.</td>
</tr>
<tr>
<td>Skin antisepsis</td>
<td>Topical antiseptic solution (povidone-iodine 10%), 10 min drying time before insertion.</td>
</tr>
<tr>
<td>Barrier precautions</td>
<td>Sterile gown and gloves, large sheets, cap, surgical mask (except for peripheral lines).</td>
</tr>
<tr>
<td>Insertion technique</td>
<td>Specific training of ICU physicians;‡ promotion of subclavian (CVC) and wrist vein (short lines) sites.</td>
</tr>
<tr>
<td>Dressing</td>
<td>Occlusion of catheter is allowed only in exceptional circumstances.</td>
</tr>
<tr>
<td></td>
<td>Replaced every 72 h except for the first dressing after catheter insertion.</td>
</tr>
<tr>
<td></td>
<td>Dry gauze-based dressing occluded with porous adhesive band obligatory.</td>
</tr>
<tr>
<td>Replacement</td>
<td>Every 72 h for administration sets and devices; every 24 h for lipid emulsion lines. Lines for blood product infusions immediately removed after use.</td>
</tr>
<tr>
<td>General handling</td>
<td>Open line catheter to be祐Ty®-impregnated cloths for 10 min disinfection. General measure: new caps after any opening of hubs.</td>
</tr>
<tr>
<td>Device removal</td>
<td>Peripheral line: after 72 h systematically.</td>
</tr>
<tr>
<td></td>
<td>Central line: as clinically indicated, no routine replacement.</td>
</tr>
<tr>
<td></td>
<td>Any access: prompt removal if not absolutely necessary.</td>
</tr>
<tr>
<td></td>
<td>Clinical sepsis: guidewire exchange if unexplained.</td>
</tr>
<tr>
<td>Hand hygiene during</td>
<td>Hand disinfection: strongly emphasised before and after any care.</td>
</tr>
<tr>
<td>insertion and care</td>
<td>Handwashing: for soiled hands, followed by hand disinfection.</td>
</tr>
</tbody>
</table>
An Intervention to Decrease Catheter-Related Bloodstream Infections in the ICU

Peter Pronovost, M.D., Ph.D., Dale Needham, M.D., Ph.D., Sean Berenholtz, M.D., David Sinopoli, M.P.H., M.B.A., Haitao Chu, M.D., Ph.D., Sara Cosgrove, M.D., Bryan Sexton, Ph.D., Robert Hyzy, M.D., Robert Welsh, M.D., Gary Roth, M.D., Joseph Bander, M.D., John Kepros, M.D., and Christine Goeschel, R.N., M.P.A.

**Bundle:**
- Hand hygiene
- Maximal sterile barrier precautions*
- Skin antisepsis with Chlorhexidine
- Avoiding femoral access
- Removing catheter when not needed anymore

*Mask, cap, sterile gown, large sterile drape, sterile gloves
- Targeting catheter-insertion

Background – Pronovost

### Table 3. Rates of Catheter-Related Bloodstream Infections per 1000 Catheter-Days: Baseline (before Implementation of the Study Intervention) to 18 Months of Follow-up.

<table>
<thead>
<tr>
<th>Study Period</th>
<th>No. of ICUs</th>
<th>Overall</th>
<th>Teaching Hospital</th>
<th>Nonteaching Hospital</th>
<th>&lt;200 Beds</th>
<th>≥200 Beds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>55</td>
<td>2.7 (0.6–4.8)</td>
<td>1.3 (0–3.1) †</td>
<td>0 (0–1.6) †</td>
<td>0 (0–2.7)</td>
<td>1.7 (0–4.3) †</td>
</tr>
<tr>
<td>During implementation</td>
<td>96</td>
<td>1.6 (0–4.4) †</td>
<td>0 (0–2.7) †</td>
<td>0 (0–3.6) †</td>
<td>0 (0–0) †</td>
<td>0 (0–2.7)</td>
</tr>
<tr>
<td>After implementation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0–3 mo</td>
<td>96</td>
<td>0 (0–3.0) ‡</td>
<td>1.3 (0–3.1) †</td>
<td>0 (0–1.6) †</td>
<td>0 (0–2.7)</td>
<td>1.1 (0–3.1) ‡</td>
</tr>
<tr>
<td>4–6 mo</td>
<td>96</td>
<td>0 (0–2.7) ‡</td>
<td>1.1 (0–3.6) †</td>
<td>0 (0–0) ‡</td>
<td>0 (0–0) †</td>
<td>0 (0–3.2) ‡</td>
</tr>
<tr>
<td>7–9 mo</td>
<td>95</td>
<td>0 (0–2.1) ‡</td>
<td>0.8 (0–2.4) ‡</td>
<td>0 (0–0) ‡</td>
<td>0 (0–0) †</td>
<td>0 (0–2.2) ‡</td>
</tr>
<tr>
<td>10–12 mo</td>
<td>90</td>
<td>0 (0–1.9) ‡</td>
<td>0 (0–2.3) ‡</td>
<td>0 (0–1.5) ‡</td>
<td>0 (0–0) †</td>
<td>0.2 (0–2.3) ‡</td>
</tr>
<tr>
<td>13–15 mo</td>
<td>85</td>
<td>0 (0–1.6) ‡</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16–18 mo</td>
<td>70</td>
<td>0 (0–2.4) ‡</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mean/1’000 catheter-days: 7.7

Mean/1’000 catheter-days: 1.3

Explaining Michigan: Developing an Ex Post Theory of a Quality Improvement Program

1. Generating isomorphic pressures for ICUs to join the programme and conform to its requirements
2. Creating a densely networked community with strong horizontal links that exerted normative pressures on members
3. Reframing CVC-BSIs as a social problem and addressing it through a professional movement combining “grassroots” features with a vertically integrating program structure
4. Using several interventions that functioned in different ways to shape a culture of commitment to doing better in practice
5. Harnessing data on infection rates as a disciplinary force
6. Using “hard edges

Dixon-Woods. Milbank Quarterly 2011;89:167
Multimodal strategies in the prevention of catheter-related or catheter-associated bloodstream infections have become standard in the intensive care-setting.
BACKGROUND

THE GENEVA “REDCO-CVC project“

PROHIBIT

PROHIBIT – The catheter project

PROHIBIT – In Depth

SUMMARY
„Réduction des complications des Cathéters Veineux Centraux“
The aim of the study was to test the effectiveness of a hospital-wide training program on the reduction of central venous catheter-related bloodstream infections (CRBSI) by standardization of practice upon insertion and care.
Multidisciplinary task force
Anesthesiology, infection control, board of nursing

Education strategy, training tools

Physicians

Simulator training workshops

Nurses

Modular E-learning program
REDCO – CVC: Materials

Line cart

Comprehensive insertion kit
Simulator training

Half day training course

- Interactive theoretical lecture
- Simulation based practice on a
- Videotape review
Two workshops per clinical service:

- Presentation of the E-learning tool
- Simulated training sessions
REDCO – CVC: Implementation

Preparation

- Physician training: tools

Baseline

- Nurse training: modular E-learning program

Training

- Workshops for physicians
- Training for nurses
- Adoption by school of nursing

Surveillance

- 2007
- 2008
- 2009
- 2010
- 2011
REDCO – CVC: Outcome

Zingg W. 52nd ICAAC, San Francisco 2012
Key factors for success

- Administrative support
- Multidisciplinary task force
- Improved equipment (carts, insertion kits)
- Engagement of front-line staff
- Professional groups were addressed separately
- Practical workshops
Outline

BACKGROUND
THE GENEVA “REDCO-CVC project“

PROHIBIT

PROHIBIT – The catheter project
PROHIBIT – In Depth

SUMMARY
## EC Framework 7 – Project

<table>
<thead>
<tr>
<th>Collaboration</th>
<th>Acronym</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Geneva</td>
<td>UniGE</td>
<td>Geneva, Switzerland</td>
</tr>
<tr>
<td>Rijksinstituut voor Volksgezondheid en Milieu</td>
<td>RIVM</td>
<td>Bilthoven, Netherlands</td>
</tr>
<tr>
<td>Charité Universitätsmedizin Berlin</td>
<td>CUB</td>
<td>Berlin, Germany</td>
</tr>
<tr>
<td>Universitätsklinikum Freiburg</td>
<td>UKL-FR</td>
<td>Freiburg, Germany</td>
</tr>
<tr>
<td>Imperial College London</td>
<td>ICL</td>
<td>London, UK</td>
</tr>
<tr>
<td>World Health Organization</td>
<td>WHO</td>
<td>Geneva, Switzerland</td>
</tr>
<tr>
<td>Jagiellonian Medical College</td>
<td>JUMC</td>
<td>Krakow, Poland</td>
</tr>
<tr>
<td>Orszagos Epidemiologai Központ</td>
<td>NCE</td>
<td>Budapest, Hungary</td>
</tr>
<tr>
<td>Centre Hospitalier Régional de Marseille</td>
<td>APHM</td>
<td>Marseille, France</td>
</tr>
</tbody>
</table>

### Collaborations

- European Centres for Disease Control: ECDC
- Universitair Medisch Centrum Groningen: UMCG
- University of Michigan Ann Arbor, USA: UMich
- Johns Hopkins School of Public Health, Baltimore, USA: JHSP
Aims

The aim of PROHIBIT is to provide the vision for policy makers, managers and healthcare workers to prevent transmission of HAI by improving understanding of European guidelines and hospital policies and practices for HAI* prevention, by overcoming common barriers for implementing evidence-based best practices, and by testing the effectiveness of 2 interventions to prevent catheter related bloodstream infection

*HAI: healthcare-associated infection
Project

WP1 Project organisation
WP2 Guidelines
WP4 InDepth
WP5 Multicentre intervention
WP3 Activity survey
WP6 Project dissemination
BACKGROUND
THE GENEVA „REDCO-CVC project“
PROHIBIT

PROHIBIT – The catheter project
PROHIBIT – In Depth
SUMMARY
The objective of the catheter project was to test the effectiveness of bundle strategies and hand hygiene in the prevention of central line-associated bloodstream infections.

The setting was a stepped-wedge cluster-randomization in intensive care units among 15 European hospitals.
Best practice in central venous catheter insertion and catheter care
Randomization for staggered intervention start

15 hospitals (EARSS network)

Randomization for study arm

Randomization for study arm

Randomization for study arm

Randomization for study arm

Randomization for study arm

Hand hygiene

CVC bundle

Both strategies

Hand hygiene

CVC bundle

Both strategies

Hand hygiene

CVC bundle

Both strategies

Hand hygiene

CVC bundle

Both strategies

Hand hygiene

CVC bundle

Both strategies
The Catheter Project

15 Hospitals in the European Union – participating in the randomized controlled trial to reduce catheter-associated bloodstream infections
A stepped wedge randomised controlled trial has sequentially rolled out defined intervention packages over a period of 36 months.

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The Catheter Project

Centralised training of hospital delegates

- Simulator-based training
- “Carepractice.net”
- WHO hand hygiene strategy
- Implementation strategy

University of Groningen
Outcomes and process indicators

*Catheter-related bloodstream infections in all CVCs in ≥ 1 ICU*

Patient characteristics

CVC characteristics

*Hand hygiene compliance*
- Measured according to the WHO “5 Moments for Hand Hygiene”
- On average 5 observations per week

*CVC bundle compliance*
- On average 3 observations per week
The Catheter Project

3,784 observations
The Catheter Project

Overall HH compliance

59,122 hand hygiene opportunities from 6,749 observation sessions
Data from 25,377 patients with 35,894 central venous catheters: 263,093 catheter-days and 384 catheter-related bloodstream infections
The Catheter Project

CRBSI incidence in HH hospitals
The Catheter Project

CRBSI incidence in CVC hospitals
The Catheter Project

CRBSI incidence in hospitals with Both interventions
Hospitals with baseline incidence > 1.5 only
The Catheter Project
BACKGROUND
THE GENEVA “REDCO-CVC project“
PROHIBIT
PROHIBIT – The catheter project
PROHIBIT – In Depth
SUMMARY
The objective of *InDepth* was to determine key factors for success or failure in the implementation of good practices in the prevention of healthcare-associated infections among a representative sample of hospitals participating in the catheter project.
“Why are some hospitals more successful in implementing best infection control practices than others?”

“What are the barriers and facilitators in implementing best infection control practice?”

Grounded approach

Sensitizing schemes

Diffusion of innovation
Sensemaking
New institutionalism

Comprehensive framework for implementation research
Diffusion of innovation

Case finding

Purposeful sampling

Who???
Case finding

Sampling of extremes

Unchallenged

Challenged
Case finding

Sampling of extremes

Unchallenged

Challenged
Figure 1 Temporal scheme of study procedures.
Institutional context

Past implementation stories

Implementation fitness

‘Baseline’ visit

PROHIBIT implementation story

PROHIBIT implementation success

‘One-Year’ visit
CEO (administrative top manager)
Head nurse
Head physician

Infection control
Head nurse
Head physician
Practitioner

ICU
Head nurse
Head physician
Front line physician
Front line nurse

Interviews
12 two-day site visits

132 recorded interviews (±1 hour)
6’336 pages of transcripts

48 hours of ethnographic observations

500 photographies

>200 artefacts (guidelines, posters, etc.)
Major codes at 1st site visit

Material & Environment
Training
Influential individuals
Network & Communication
Staffing
Monitoring & Feedback
Safety culture
Innovation

Resources
Staff issues
Education, training commitment
Safety culture
Internal policies
External policy
Influential individuals / Leadership
Networks and communication
De-facto power distribution
Attitude of excellence, cosmopolitanism and guideline uptake
Work attitude
Consequential disruptive events
Previous implementation experiences
Monitoring and feedback
Physical environment and equipment
Perceived value of the intervention
Implementation Process and activities
Intervention Adaptation
Perceived Implementation Success
Hospital Management Priorities
Major implementation codes

Perceived value of intervention
Intervention adaptation
Perceived implementation success
Hospital management priorities
Innovation(s)
‘Individuals make a difference’
Street-credit

An individual who earns respect through their "on the ground" presence and (clinical) experience

+ “They would not so much accept somebody who’s just coming and say, I’ve got a Novel prize and then he’s not here all the time. So it’s nice for, this is different, you know, they really like the people who are involved in medical care.”

Head of IC, talking about ICU staff

“it’s very important for us to go to the wards, talk to the people, which like we, doctors, like we did that before, but now that she’s coming it’s, we do it even more, and I think it’s very important. To show them that we’re there, to show them that you know what they’re doing…”

IC Physician, talking about ICU Head Physician

- “Our previous head was very much lab person, and a person who would do things from his office. But you would never see him on the ward.”

IC Physician, talking about previous IC Head Physician

“The communication between the Nurse chief and the nurses is problematic… conflict about planning, and nurse Chief telling the nurses to do something at the patients, but they know, the Nurse chief hadn’t seen or wasn’t at the patient since 20 years, and stuff like this.”

ICU Physician, talking about ICU Head Nurse
Solution Finder

An individual who presents solutions and makes things happen

"I would summarize it like this: she shows both the problem and the solution and I prefer this method. I do not need to ask what I have to do, because she tells me. And she does it in a friendly, not authoritarian way. She supports me during the implementation."

CEO, talking about head of Infection Control

"The overall relationship is more negative than positive with the head of the department: mostly the answer is that you have to find a solution yourself, and I don't feel that there's so much support."

ICU Head Nurse, talking about ICU Head Physician

"It happened that I was watching them using this alcohol hand scrub and I could see they didn't have enough and I asked what happened, and then they told me that hadn't any more because they had no budget for it, so then I immediately contacted the management and asked them to give like higher budget for this disinfectant and then this could be solved."

Head of Infection Control
Innovator (a.k.a. Ideator)

An individual who brings new ideas to an organization and promotes innovation

“For instance, non invasive ventilation, not very common [in this country]... I saw in a congress, so I asked a firm to give me this equipment. We opened a publication and... we try on one of our colleagues.

This is, in this team is, main part are young doctors, they’re really enthusiastic, they want to try something new."

Head of ICU

“He’s also someone who is very practical but also innovative. He brings new things. And I think that we’re just trying a little bit more to, not just do what was always have been done, but try to focus and see what can be changed, whether it makes sense to put power in, and what’s maybe not so important."

IC Physician, talking about ICU Physician
Relationship-oriented leader

An individual that channels interpersonal interactions to build effective working relationships

"(When asked about how to gain respect in the ICU)
Constantly working with them! Constantly being there, constantly talking to people. Um, getting to know them, their names. Because there are so many staff in the ICU, it's getting to know the people."  
IC Nurse

"It's very important for us to go to the wards, talk to the people, which like we, doctors, like we did that before, but now that she's coming it's, we do it even more, and I think it's very important."  
IC Physician

"But maybe there's another problem, because hospital department Head nurses [have] bad communication with hospital Head nurse."  
IC Nurse, talking about administration

"I have a good relationship with the consultant, if there's a specific problem in an area, I've no difficulty in going to the consultant or the chair of surgery, or the chair of medicine, to say to them, "listen this report is not good, you know, what are you going to do about it?"  
Head Nurse
Other themes...

- Communication
- Champions
- Generations of healthcare workers
- “Brain drain”
- Work attitude
- Safety culture (teaching, critical incidents)
Outline

BACKGROUND
THE GENEVA „REDCO-CVC project“
PROHIBIT
PROHIBIT – The catheter project
PROHIBIT – In Depth

SUMMARY
Adoption
Summary

Adoption

Implementation
Summary

Adoption

Implementation

Evaluation
Summary

Adoption

Implementation

Evaluation

Barrier Identification
Summary

Adoption → (Re-) Implementation → (Re-) Evaluation → Barrier Identification → Adoption

Sustainability → iterative process
Summary

- High vs. low baseline CLABSI-rates
- Multidisciplinarity – ICU professionals as teachers
  - Multimodality
- Leadership – Role model
- Safety culture – Learning from errors
- Communication – Speaking up
- Generations – Younger healthcare workers more flexible, but also less knowledgeable
- Staffing issues – Brain drain
- Culture of excellence
- External pressure
INNOVATION AND IMPLEMENTATION
STRATEGIC APPROACHES TO REDUCE CATHETER-RELATED BACTERAEMIA: THE RESULTS OF A EUROPEAN MULTICENTRE STUDY (PROHBIT)
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<td>January 29</td>
<td>Innovation and implementation strategic approaches to reduce catheter-related bacteraemia: The results of a European multicentre study (PROHIBIT)</td>
<td>Dr. Walter Zingg, Switzerland</td>
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<td>March 7</td>
<td>How to prevent the spread of multiresistant bacteria</td>
<td>Dr. Stephan Harbarth, Switzerland</td>
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<td>April 9</td>
<td>Highlights on SSI prevention: The new CDC guidelines and more</td>
<td>Dr. Joseph Solomkin, USA</td>
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<td>May 5</td>
<td>Special lecture for International Hand Hygiene Day</td>
<td>Prof. Didier Pittet, Switzerland</td>
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<td>September 3</td>
<td>New WHO global campaign to eliminate unsafe therapeutic injections</td>
<td>Dr. Benedetta Allegranzi, Switzerland</td>
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<td>October 8</td>
<td>Public reporting and disclosure of HAI rates: Positive impact or confusion?</td>
<td>Dr. Maryanne McGuckin, USA</td>
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<td>November 5</td>
<td>Global application of behaviour change models and infection control strategies</td>
<td>Dr. Michael Borg, Malta</td>
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