

SURVEILLANCE BLOODSTREAM INFECTIONS in HOSPITAL ('SEP') RESEARCH PROJECTS

SEP Workgroup meeting

24 June 2015

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Research projects

- Sampling central line days (2014)
- Estimating trends of hospital acquired blood stream infections (HA-BSI) (University Ghent 2014)
- Prevention of central line associated infections (CLABSI): international survey (EPIET project 2015)

Indicators to measure CLABSI prevention efforts

Validity of estimating central line days via sampling

Naïma Hammami, Marie-Laurence Lambert, Karl Mertens, Rosanna

Overholser (University Ghent)

Objectives:

Find valid alternative for time-consuming daily count cvc days

- Evaluate validity :
 - estimates CVC days from sampling strategies,
- Assess factors 'predicting' precision of sampling and establish rules for sampling

Methods : study design

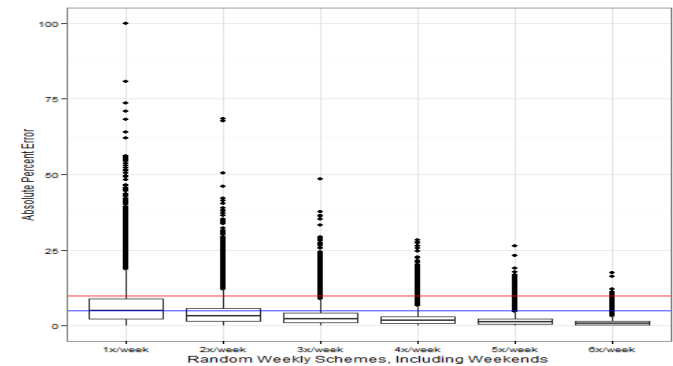
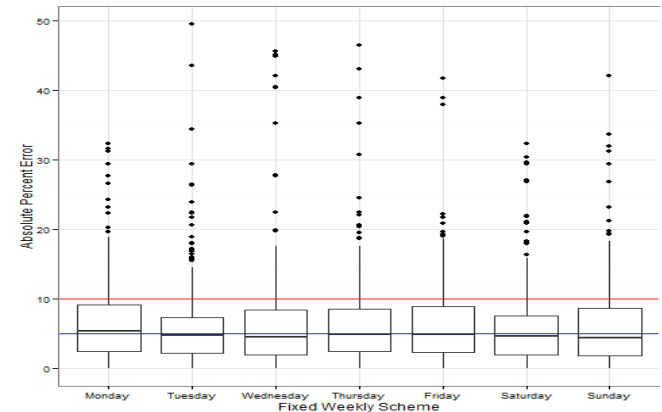
- Retrospective study in Belgian hospitals :
 - Using existing surveillance **ICU data**
- Mixed linear modeling
 - to compare the various sampling schemes
 - To establish rules for sampling
- Validation of rules for sampling: simulation

Sampling schemes

Sampling Strategy	Weekly
	Once a week on fixed day
	Once, twice or three times a week on random day, exclusive of the weekend
	Once, twice, three, four, five, six times a week on random day, inclusive weekend
	Monthly
	Once a month (15th)
	Bi-monthly (10th & 20th)
	Three times a month (5th, 15th, and 25th)
	First week of the month
	Last week of the month

Results accuracy

- Differences in accuracy per sampling strategy:
 - differences in precision ~day of sampling (> Tue)*
 - more days/week sampled: higher precision
 - sampling 1x or 2x /month : not an option



Results: sampling rules

- sampling rule based on number of CLD/ICU trimester:

Sampling Scheme	Rules for sampling
	Minimum CLD per trimester (C10) to predict within 10% error with 90% confidence
Monthly 1x	>1800
Monthly 2x	
Weekly Wed	
Weekly Sun	
Weekly Fri	
Weekly Thu	1200
Weekly Sat	1320
Weekly Mon	850
Monthly 3x	650
Weekly Tue	480
Random 1x/ week	650
Random 2x/ week	250
Random 3x/ week	120
Random 4x/ week	70
Random 5x/ week	40
Random 6x/ week	20

What's next?

- Integration in the protocol and tool:
 - Calculation of device utilization ratio (DUR) based on estimated CLD and administrative patient days
- Consult Healthdata to facilitate this
- Publication in progress

“Epidemiology of hospital-acquired bloodstream infections in Belgium: a retrospective dynamic cohort study”

**Clerkship – Research training for Hospital Doctor –
Koen Blot**

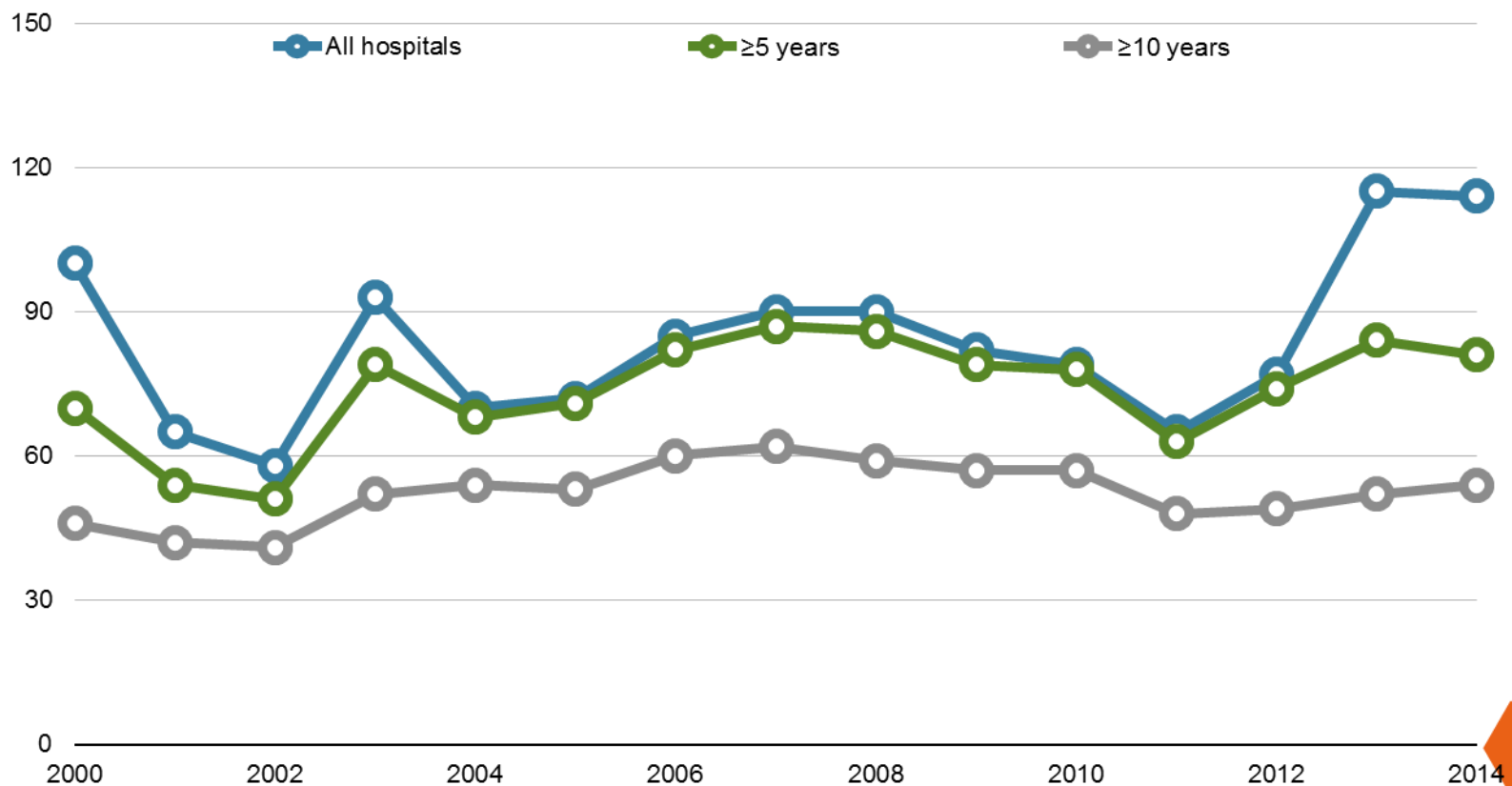
**Naïma Hammami, Marie-Laurence Lambert, Dirk
Vogelaers**

Objectives:

- Better estimation of trends of HA-BSI incidences from year 2000-2014
 - Annual SEP report: selection bias as comparing different hospitals over the years
- Description of seasonal variation for HA-BSI

Results modeling (master thesis): selecting hospital with regular participation in time

Figure 3. Hospital participation frequency



Results modelling (1)

Trends from 2000-2014

- Trends bloodstream infection (BSI) in hospital : ↓ but not significant ($p=0.055$)
- Trends BSI in ICU : ↓ ($p=0.003$)
- Incidence in teaching hospital significantly higher than in non-teaching hospitals
- Trends in origin:
 - BSI associated to central line (CLABSI): no change ($p=0.63$)
 - Unknown ↓, significant ($p<0,001$)
- Trends microorganism: gram negatives ↑ ($p<0,001$)

Results modelling (2)

Seasonality

- summer peaks for:
 - *Acinetobacter* (IRR +80%; $p=0,002$),
 - *Klebsiella* (IRR +69%; $p<0,001$),
 - *Enterobacter* (IRR +67%; $p<0,001$), and
 - *Pseudomonas* species (IRR +28%; $p<0,001$);
- winter spikes for:
 - *Streptococcus* spp. (IRR +32%; $p<0,001$).

What's next?

- Formulation of suggestions for analysis of trends in annual report
 - Selection of hospitals participating ≥ 3 y?
 - Relevance as mandatory since 2014?
- Publication in progress

Open access to data



- Use of data by external partner: university of Ghent
- Approved by privacy commission

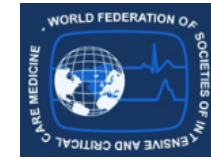
- To be continued...



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Society of
Critical Care Medicine
The Intensive Care Professionals



Prevention of Central Line associated Bloodstream Infections (CLABSI) in ICUs *An international online survey*

WIV-ISP, 24th June 2015

Cristina Valencia

Naïma Hammami

Marie-Laurence Lambert

Objective

- ✓ To document knowledge, attitudes and practices regarding CLABSI prevention in intensive care units in 2015 worldwide

Target Group

- ✓ Medical Doctors and Nurses working in intensive care units worldwide

The survey is not intended for infection control practitioners

Methods



The Questionnaire

- ✓ Short (15 minutes)
- ✓ 4 parts
 - Characteristics of ICU and respondent
 - Clinical Practices (to be evaluated as per 2014 CDC guidelines)
 - Measurement of CLABSI-related outcome and processes
 - Attitudes towards measurement as a tool for improvement

Methods



- ✓ Online June 2015-October 2015
- ✓ **Languages-***English, Spanish, French, Dutch, Portuguese, Mandarin, Italian, Japanese, Russian and German*
- ✓ **Endorsed by 4 international Societies:**
 - ✓ European Society of Intensive Care Medicine (ESICM)
 - ✓ Society of Critical Care Medicine (SCCM)
 - ✓ World Federation of Societies of Intensive Care and Critical Medicine (WFSICCM)
 - ✓ International Symposium of Intensive Care and Emergency Medicine (ISICEM)

Benefits for Participants

- ✓ Access in real time to selected results for those answering survey
- ✓ After completion of data collection, open (online) access to
 - ✓ Published scientific article presenting main aggregated results
 - ✓ Country-specific results
 - ✓ Entire original database (via digital repository)

Results

(As per 24 June, N= 546)

36 % females

64 % males

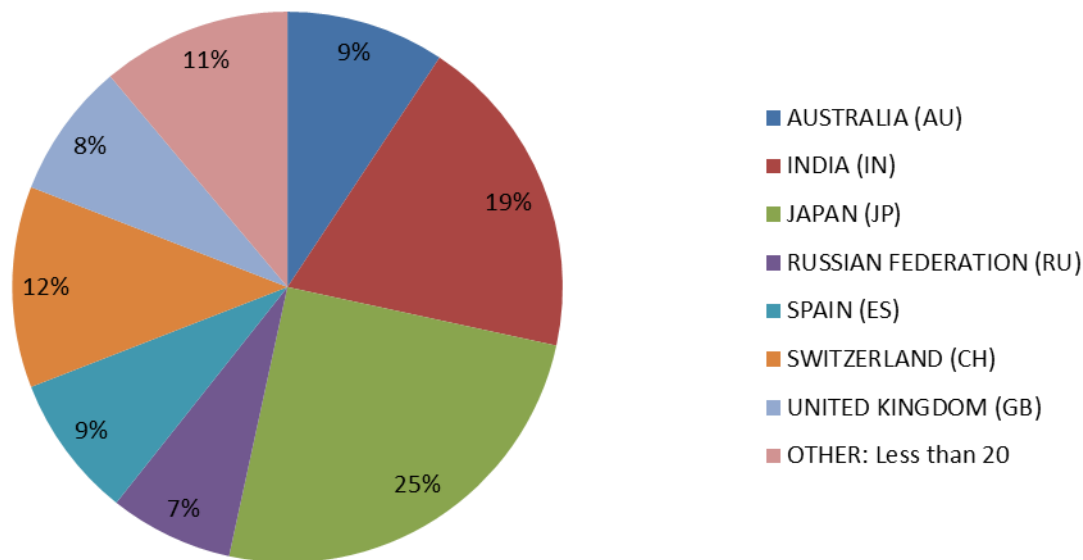
68% doctors

32 % nurses

Preliminary Results

(as per 24 June, N= 546)

Country of Practice



Results

(as per 24 June, N= 546)

The following procedures were used during the last catheter insertion I did or assisted with in my ICU.....

Using mask, cap, sterile gown and sterile gloves	96%
Using sterile drapes to cover patient from head to toes	75%

Results

(as per 24 June, N= 546)

In my ICU, when inserting a central line the following insertion sites are used...

Femoral	13%
Internal Jugular	75 %

Results

(as per 24 June, N= 546)

In my ICU, we routinely count and record CLABSI ...

YES

69%

Results

(as per 24 June, N= 546)

To what extent do you agree with the following statement...

“If you cannot measure it you cannot improve it“

Agree strongly/ agree

84%

Quick Demonstration

Prevention of Central Line associated bloodstream infections (CLABSI) in intensive care units:

[An online international survey](#)

Thank You

*We would appreciate your help with circulating the survey to ICU doctors & nurses.
(not infection control practitioners)*

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Work in progress!

Thank you!

**Questions / comments on these
research projects?**