



Is the Swedish and Finnish surveillance system a good indicator for quality?

When it comes to infection prevention and control purposes

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Is the Swedish surveillance system,
inspired by the Finnish,
is a good
indicator for quality?

Both systems are electronic surveillance systems
Not identical

Disclosure

Declaration of interest: None

Sweden – a federation

- 9,5 million inhabitants
 - 21 counties – each individually politically governed
 - County = “trust” in UK
 - 10 university hospitals
 - 120 regional hospitals
 - 25 000 hospital beds

Majority (>95%) of hospitals is
public and funded by
taxes

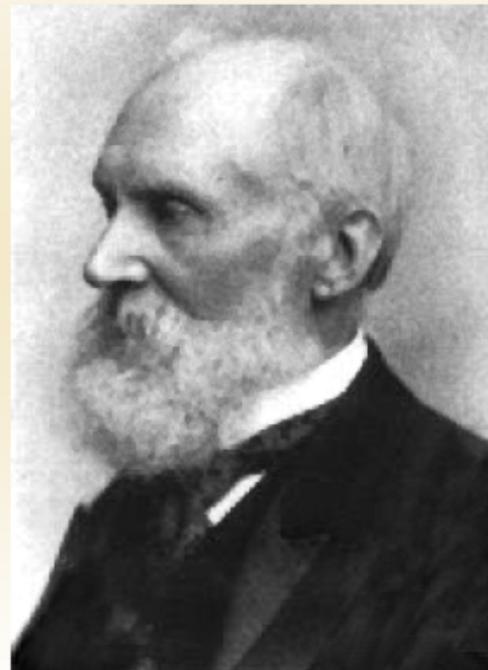
21 regions and counties



290 municipalities



Starting point- surveillance



**"If you cannot
measure it,
you cannot
improve it"**

Lord Kelvin, 1824-1907

What indicators should be surveilled?

In the context of infection prevention and control?

SALAR

Swedish Association of Local Authorities and Regions



Introduced three quality indicators for infection prevention and control
National, hospital and ward level

1. Point prevalence surveys of compliance with hand hygiene and dress code since 2010 PROCESS
2. Point-prevalence surveys of HAI since 2008 RESULT
3. Incidence measures of HAI and antibiotic consumption since 2013 RESULT

Inspired by the Finnish electronic surveillance system

Compliance with hand hygiene and dress code

PROCESS INDICATOR

POINT PREVLENCE SURVEY

SINCE 2008

TWICE YEARLY –APRIL AND OCTOBER

Dress code

Doctors
Nurses

Hand hygiene rules according to
WHO "five moments"

Short sleeves
Uniforms
changed daily

No doctor's coats

"How we keep the hospital healthy"



Short hair and hair up

Gloves and aprons only
in contact with body fluids

No watches and bracelets
No rings

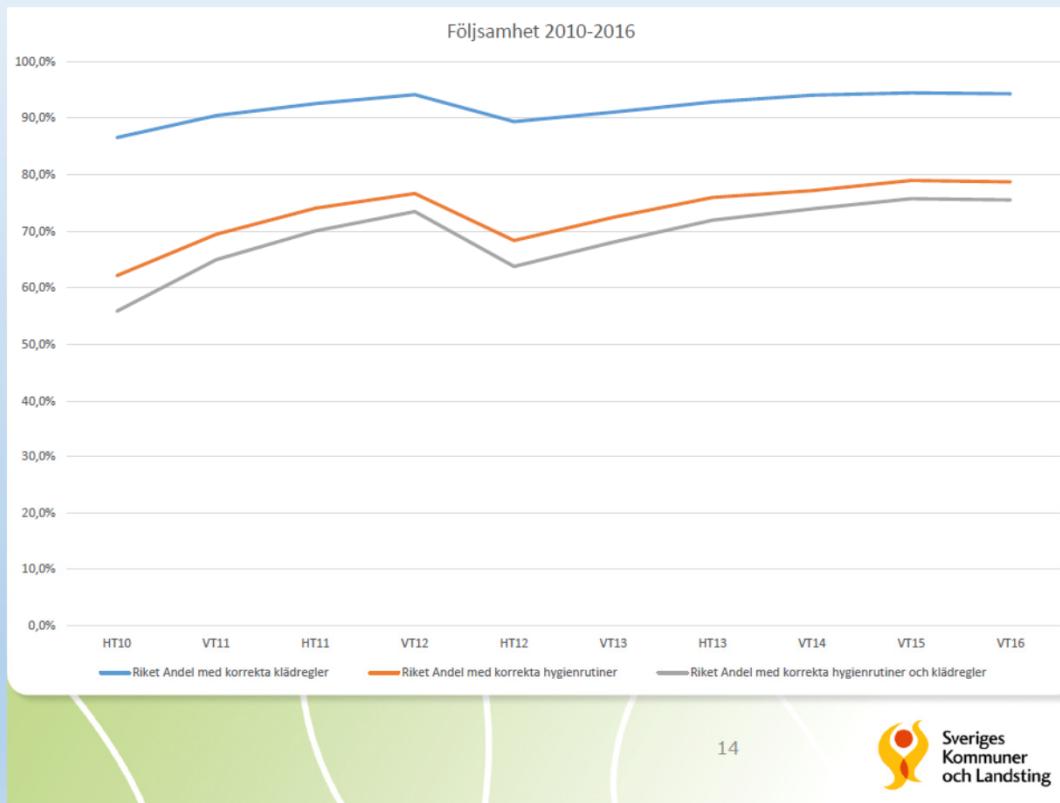
Short nails
Nail polish and
artificial nails forbidden

Data collection – direct observation

Hand hygiene							Dress code			
Hand hygiene observation form Ward: _____ Date(from to): _____ Project phase: _____ Observer: _____										
Hand hygiene performed										
Observed person/ procedure*	Profession	Before touching a patient	Before clean/ aseptic proced- ure	After body fluid risk	After touching patient	After touching patient surroundings	Rings watches and bracelets removed	Are gloves used correct ly?	Bare fore- arms	Correct in all aspects
1.										
2.										
3.										
4.										
5.										
6.										
7.										
8.										
9.										
10.										
Rate =>	No of correct/No of observed									

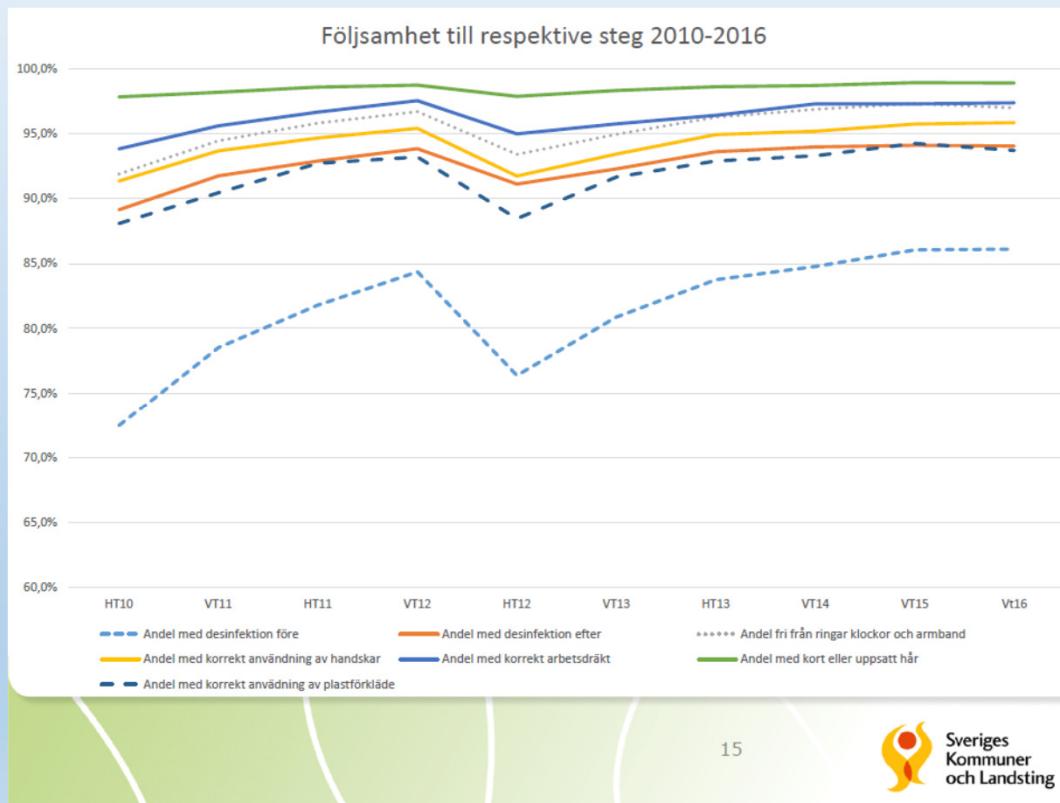
*each number represents one person performing an entire procedure.
Yes means correct, No means incorrect, - means not relevant in the situation

National level – compliance to HH and dress code



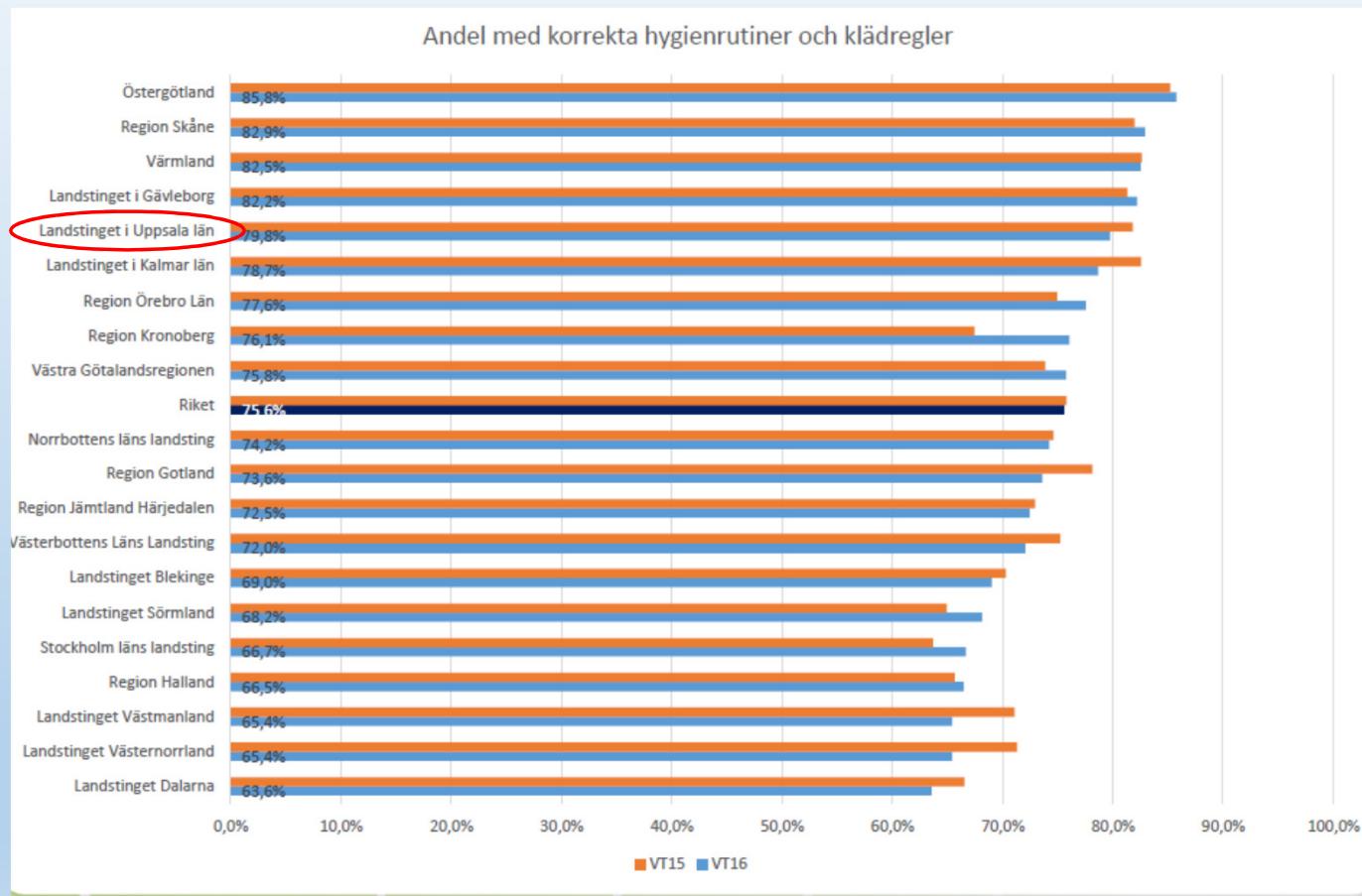
Compliance to hand hygiene and dress code

Steps in compliance to hand hygiene



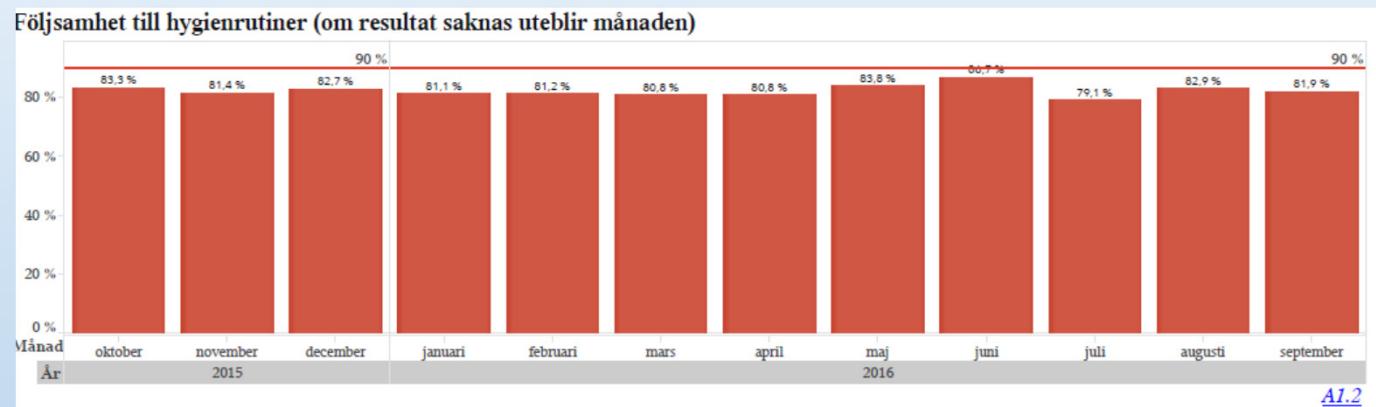
Results by counties

My county



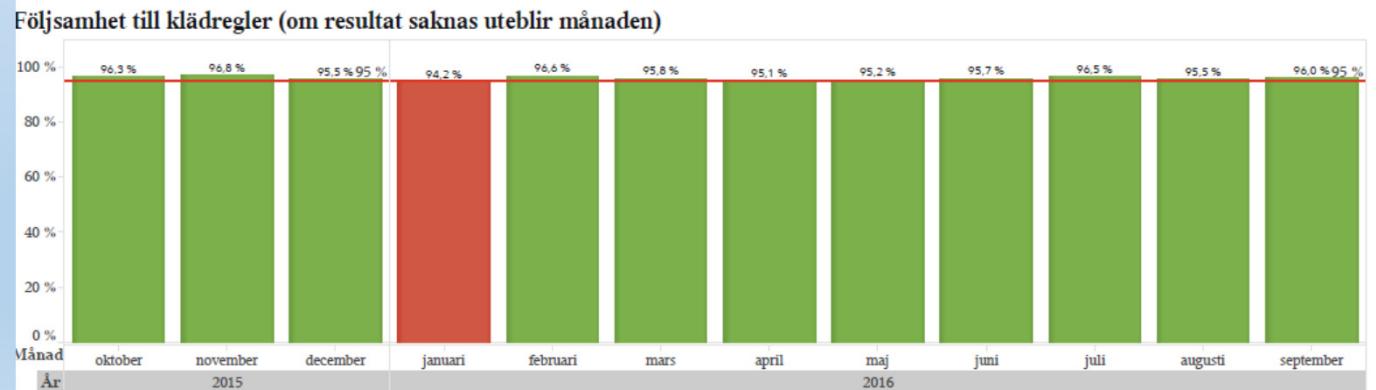
Uppsala University Hospital 2016

Hand hygiene



Target 90%
compliance

Dress code

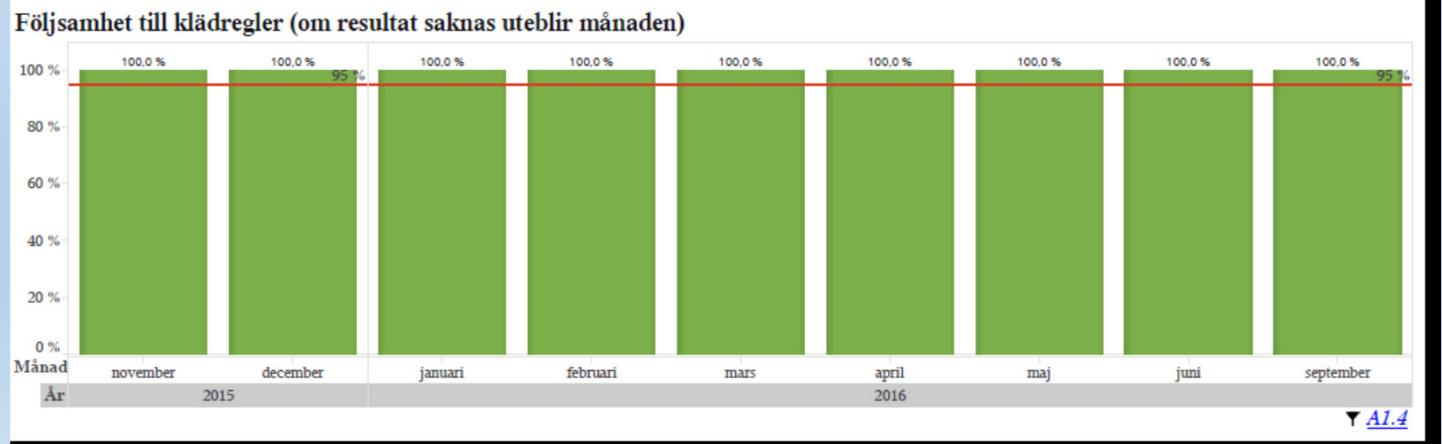
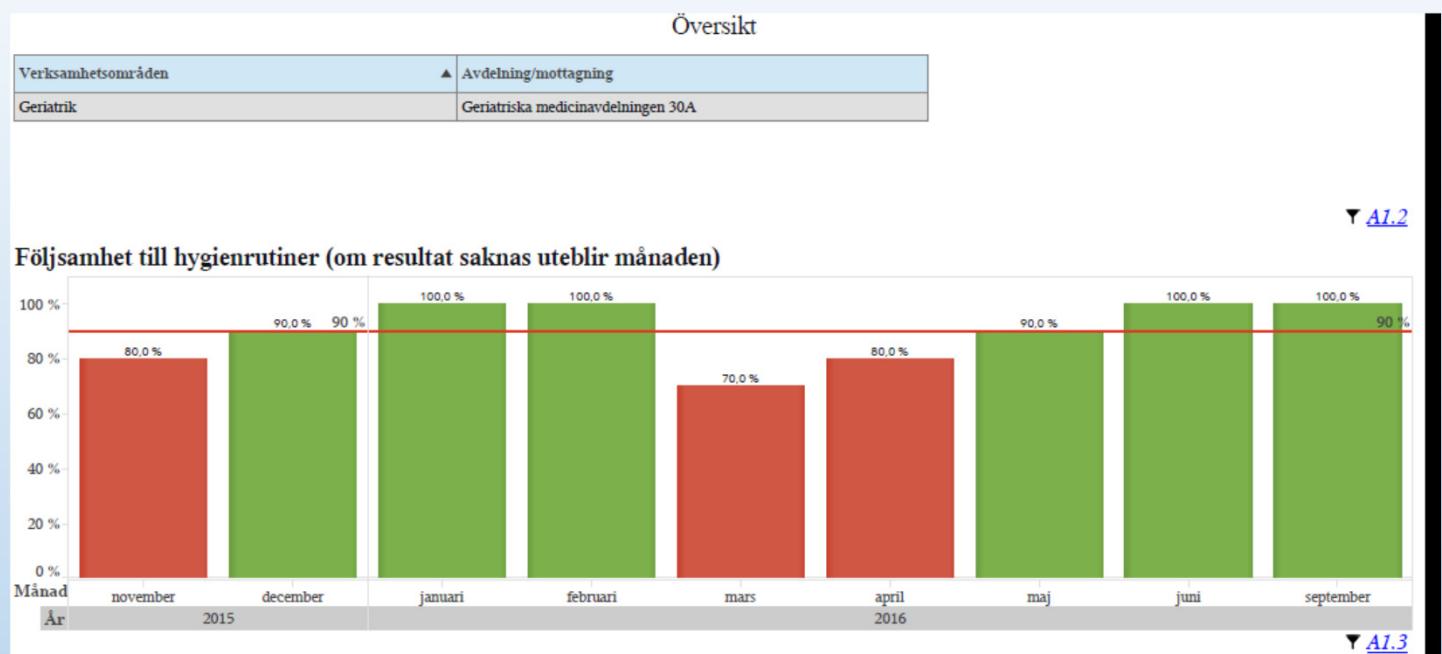


Target 90%
compliance

Ward level

Internal medicine ward

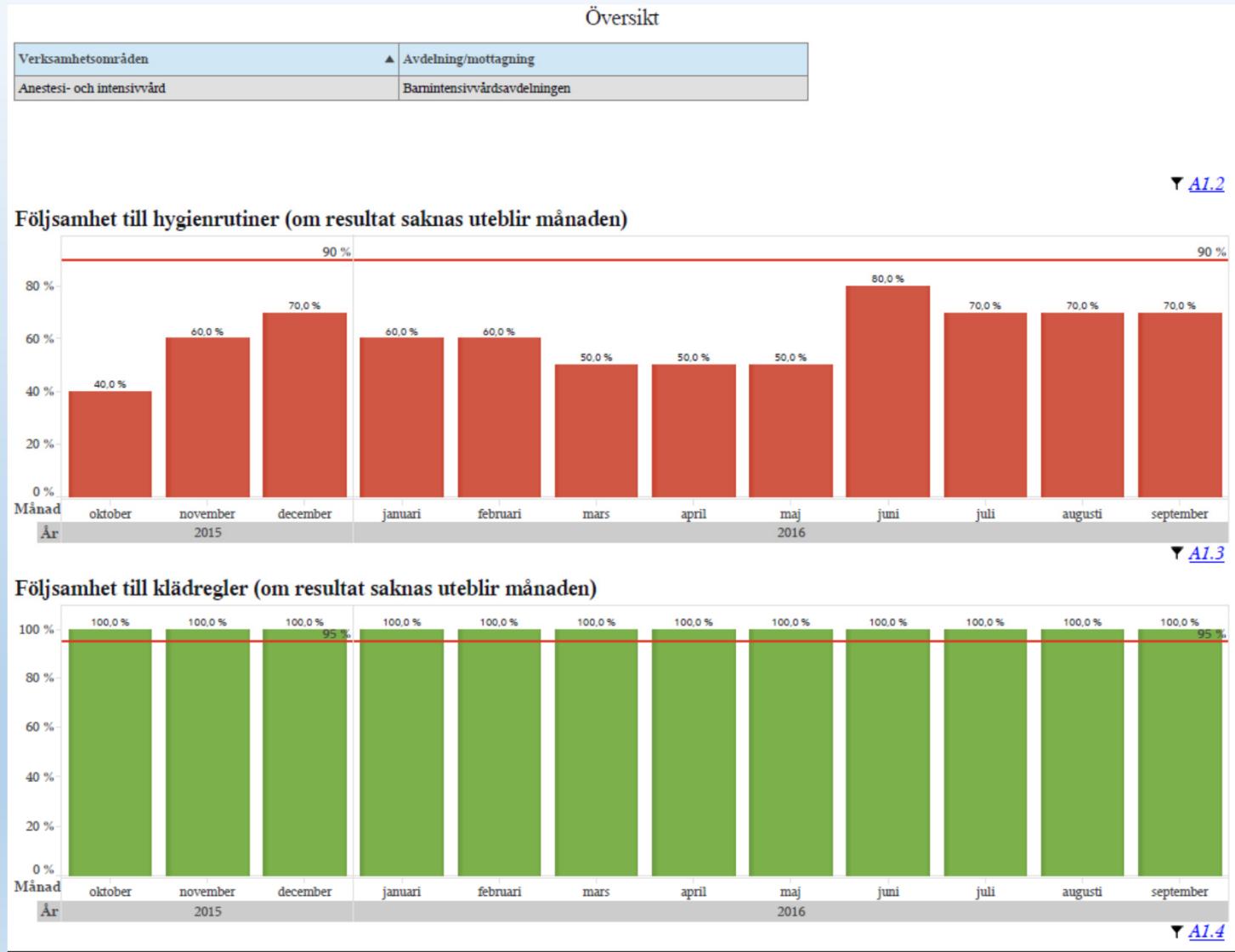
Hand hygiene



Ward level

ICU for children

Hand hygiene



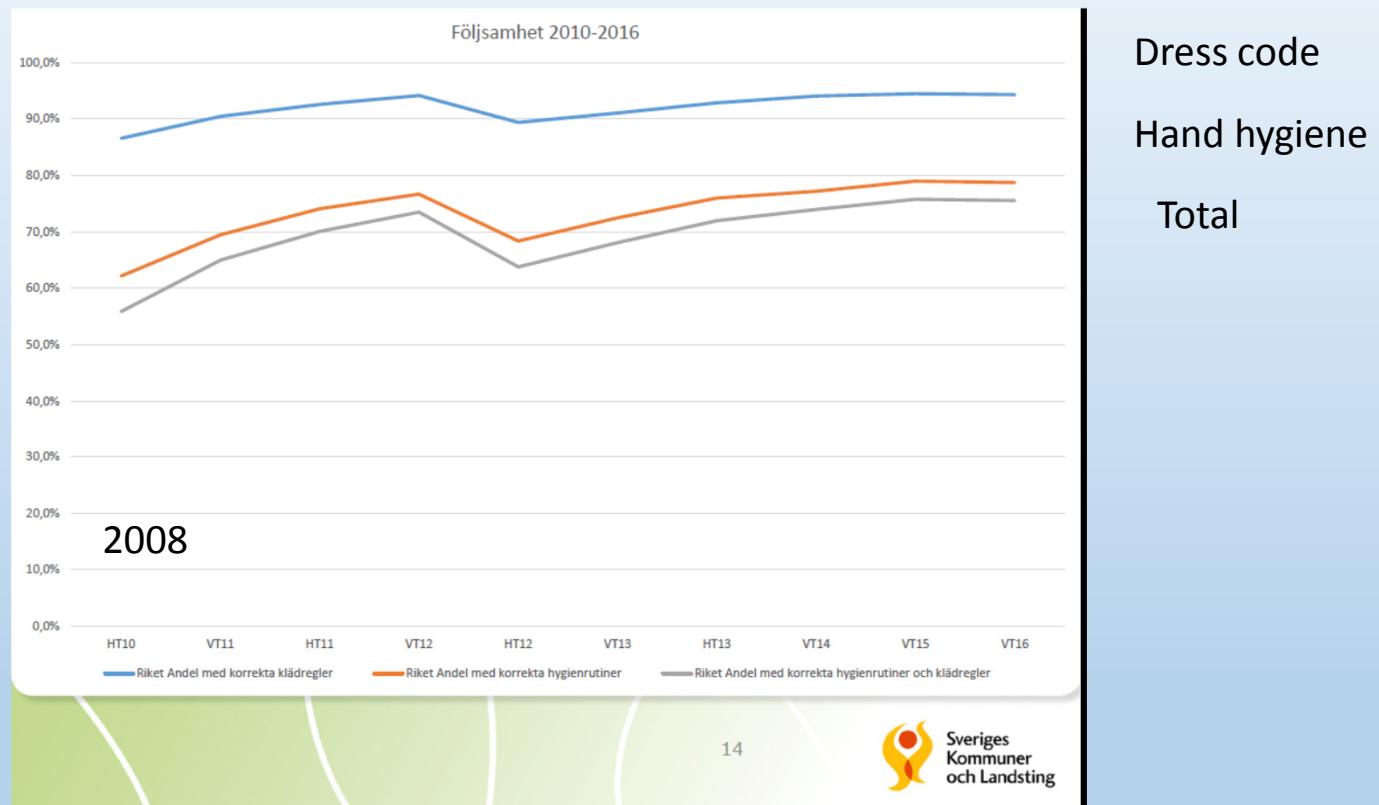
Effect of this quality indicator



- Administration knows results from every ward
- Monthly follow up
- Stake holders in wards must report how results could improve
- IPC staff keeps an eye on results and work in close collaboration with HCW in wards to improve figures

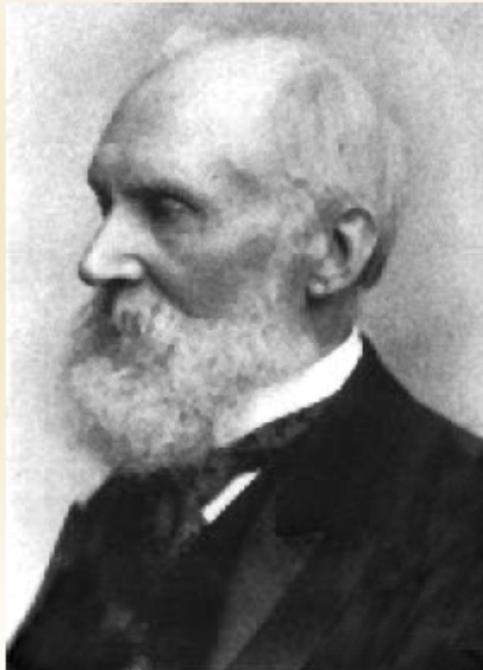
Data for action

Surveillance and feed-back gives result



Hand hygiene and dress code

Lord Kelvin would be pleased with this indicator



**"If you cannot
measure it,
you cannot
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Lord Kelvin, 1824-1907

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National, hospital and ward level

1. Point prevalence surveys of compliance with hand hygiene and dress code since 2010 PROCESS
 2. **Point-prevalence surveys of HAI since 2008** RESULT
 3. Incidence measures of HAI and antibiotic consumption since 2013
- Inspired by the Finnish surveillance system

Point prevalence survey of HAI in Sweden

RESULT INDICATOR

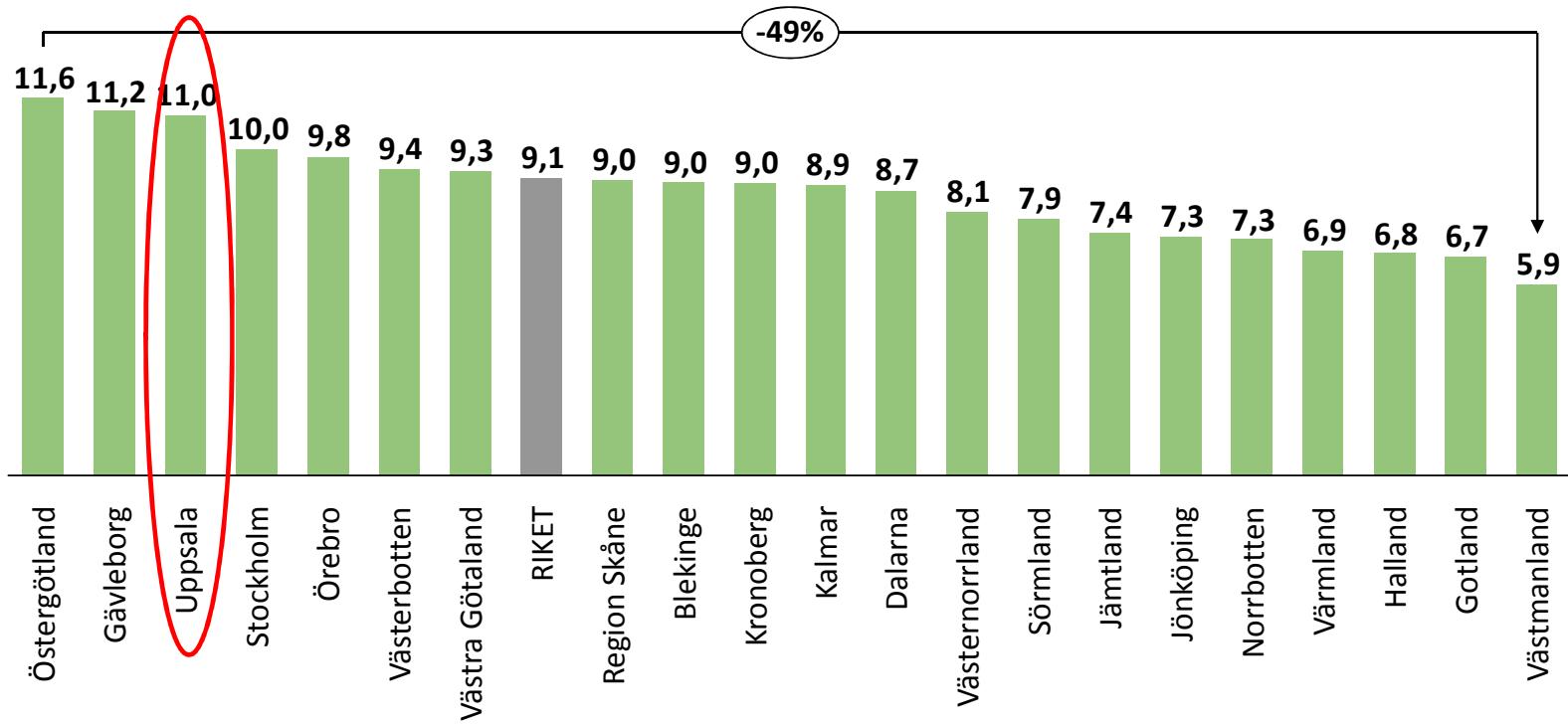
SINCE 2008 TWICE YEARLY –APRIL AND OCTOBER

National level

SSI the most commonly reported HAI



Differences between counties (trusts)



Effect of the point- prevalence surveys

- Comparisons between hospitals has put HAI and patients safety in the national agenda
- Media attention twice a year results are made public
- Prevalence of HAI is today on the agenda in hospital when it comes to patient's saftey
- Despite all the limitations with point-prevalence studies of HAI

Point-prevalence studies underestimate the true number of HAI

Journal of Hospital Infection 91 (2015) 220–224

 Available online at www.sciencedirect.com

Journal of Hospital Infection

journal homepage: www.elsevierhealth.com/journals/jhin



Point-prevalence surveillance of healthcare-associated infections in Swedish hospitals, 2008–2014. Description of the method and reliability of results

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^b Lung Immunology Group, Department of Internal Medicine and Clinical Nutrition, Institute of Medicine, Sahlgrenska Academy at the University of Gothenburg, Gothenburg, Sweden

Validation of point-prevalence study in 2012

Incidence HAI in Sweden

RESULT INDICATOR

SINCE 2013

INPIRED BY THE FINNISH SYSTEM

Electronic surveillance systems for HAI - advantages

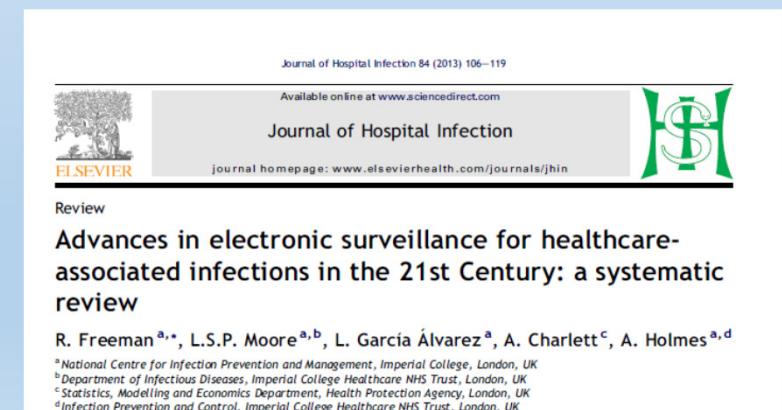
Less labour consuming compared to manual collection

Integrates hospital information systems

Maximize efficacy of abundant electronic data already existing within hospitals

Real-time data

Time could be spent on preventing HAI rather than collecting surveillance data



Freeman et al. JHI 2013

Identified 44 studies of which 21 assessed performance versus manual (traditional)



SAI – Finnish model since 2006

- SAI- Sjukhusets Antibiotika och Infektionssystem
Incidence of HAI and CA-infections
Antibiotic consumption
 - Windows-based electronic system extract of data from
Antibiotic prescription, surgical procedures , microbiology results and discharge codes
- Tested in one Swedish county in 2008 (Borås)



“Infection tool” – Swedish model

- Based on the same principles of the Finnish SAI-system
- 2013: Implemented nationwide in all Swedish counties
- 2016: Most Swedish hospitals and wards use the tool

**Incidence of infections: HAI and community acquired
Antibiotic consumption base antibiotic stewardship**

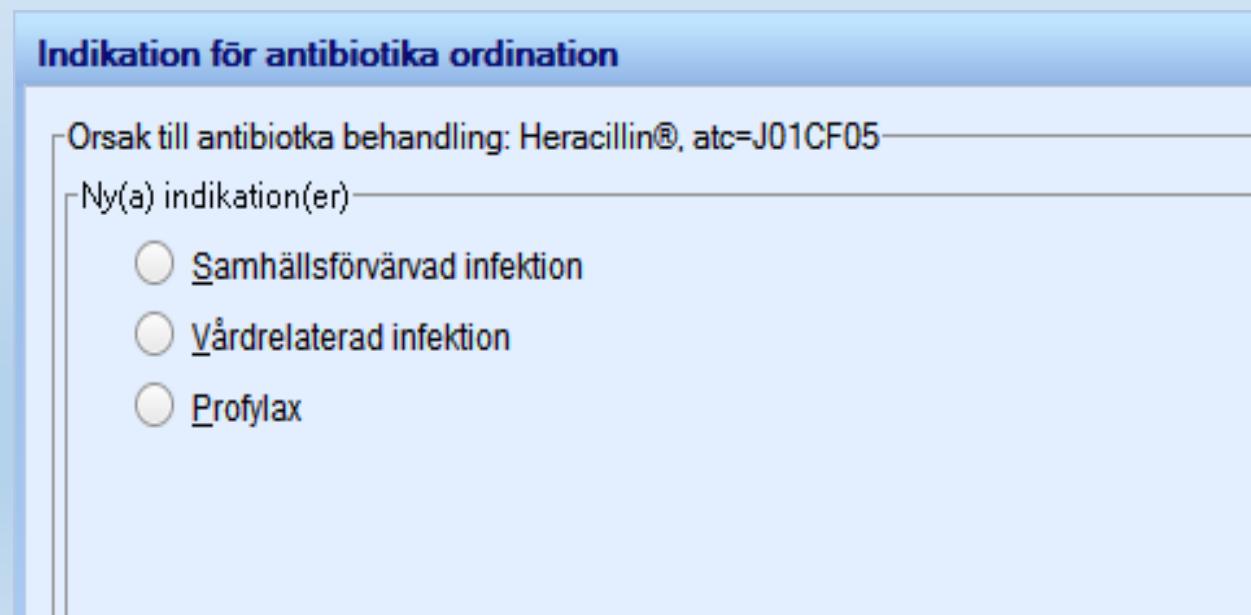
**Electronic antibiotic prescription
Discharge codes
Microbiology database for C. difficile**

Data collection - triggers

"INFECTION TOOL"

Doctor's prescription of antibiotics

1. First mandatory pop-up when selecting the antibiotic (ATC-code)



2. Second mandatory pop-up define what type of infection

Indikation, mål och ändamål

X

Orsak till antibiotika behandling: Doxyferm®, atc:J01AA02

Ny(a) indikation(er)

Samhällsförvärvad infektion

Vårdrelaterad infektion

Profylax

Välj	Term för indikation
<input type="checkbox"/>	Lunginflammation
<input checked="" type="checkbox"/>	Urinvägsinfektion
<input type="checkbox"/>	Blodförgiftning
<input type="checkbox"/>	Ytlig postoperativ sårinfektion
<input type="checkbox"/>	Djup postoperativ sårinfektion
<input type="checkbox"/>	Infektion med clostridium difficile
<input type="checkbox"/>	Annan vårdrelaterad infektion

The clinical judgement of the doctor

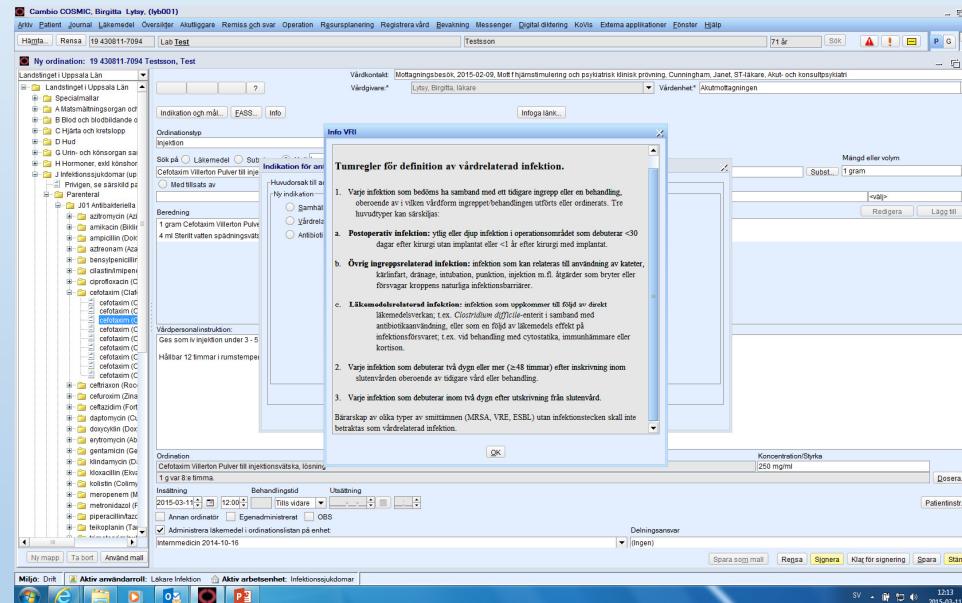
Community-acquired infection

1. Pneumoniae
2. COPD
3. UTI without fever
4. UTI with fever
5. Sepsis unknown focus
6. Abdominal infection
7. Erysipelas
8. Other skin and/or tissue infection
9. Other community acquired infection

Health-care associated infection

1. Pneumoniae
2. UTI with fever
3. UTI without fever
4. Sepsis unknown focus
5. SSI superficial
6. SSI deep/organ
7. Clostridium difficile
8. Other health-care associated infection

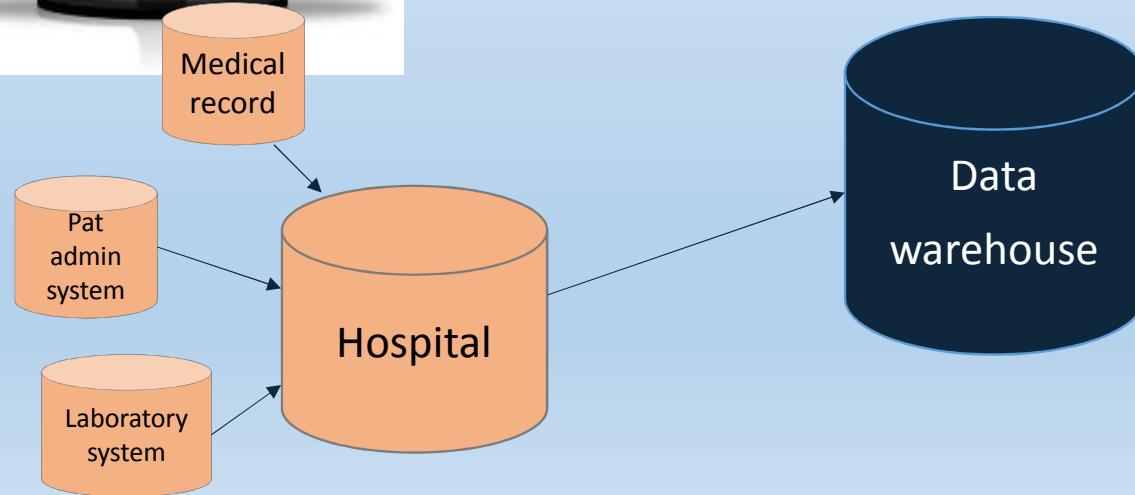
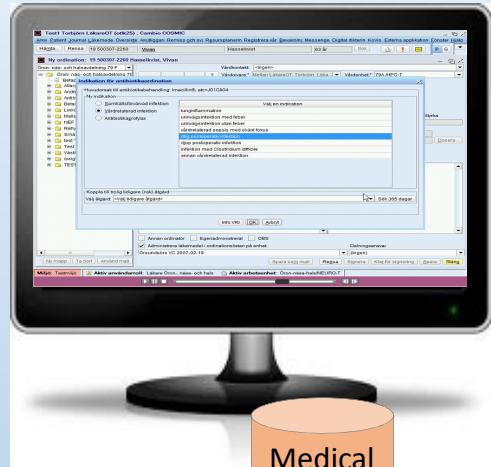
Help with definition of HAI



The clinical judgement of the doctor

Architecture

Antibiotic ordination by doctor



Reporting tool

Data from the “infection tool”

Examples

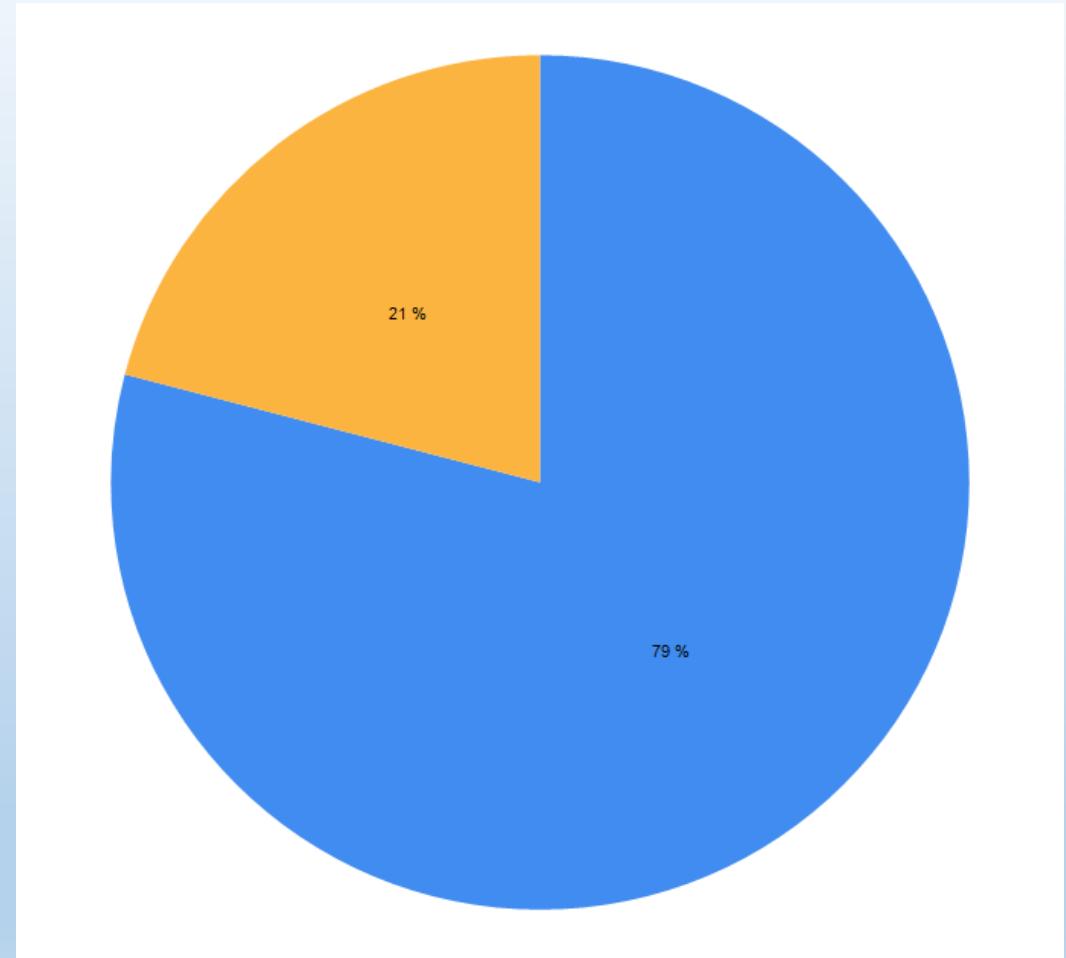
Proportion infections

Health-care associated (yellow)

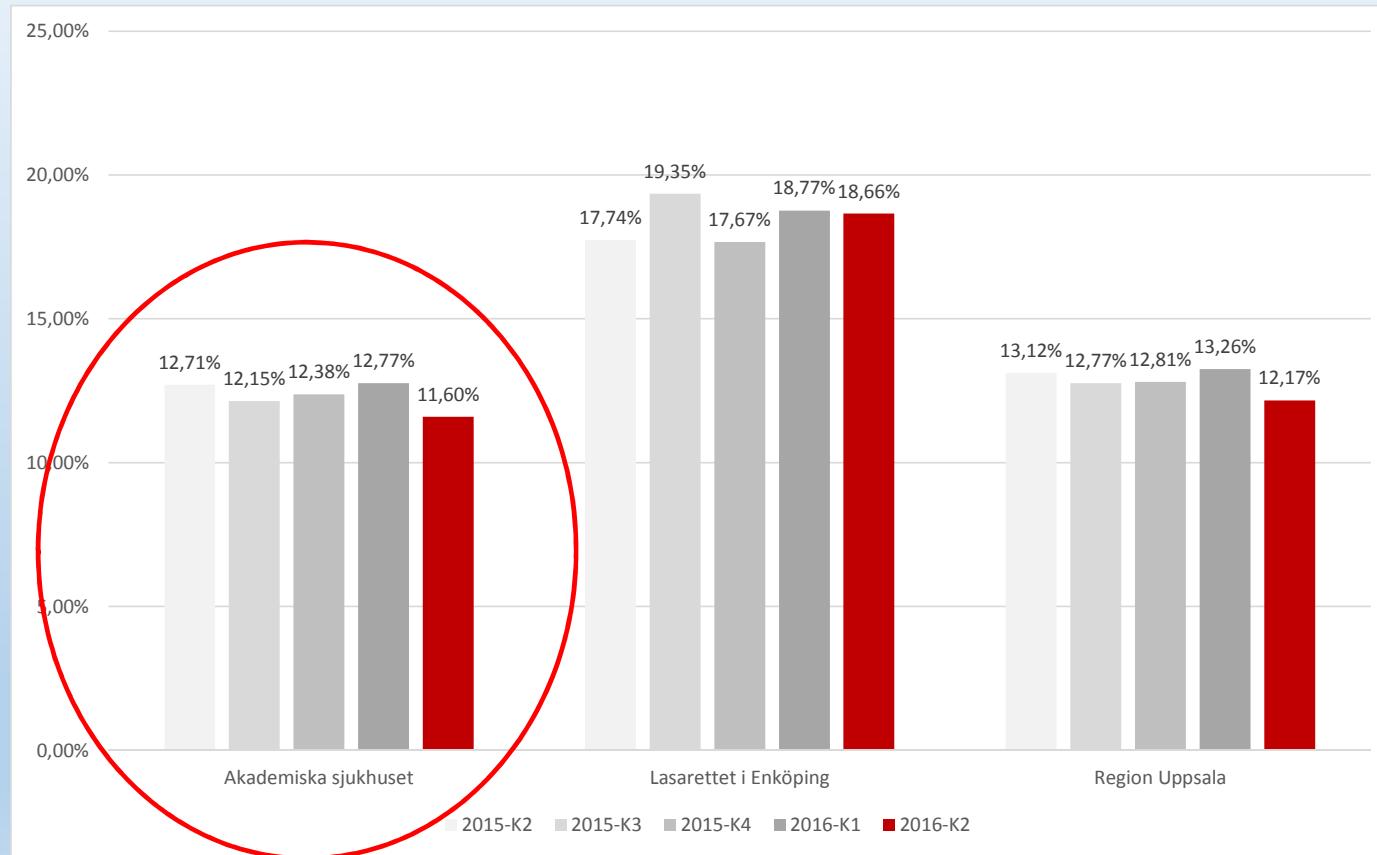
Community acquired (blue)

Uppsala University Hospital

2014-2016



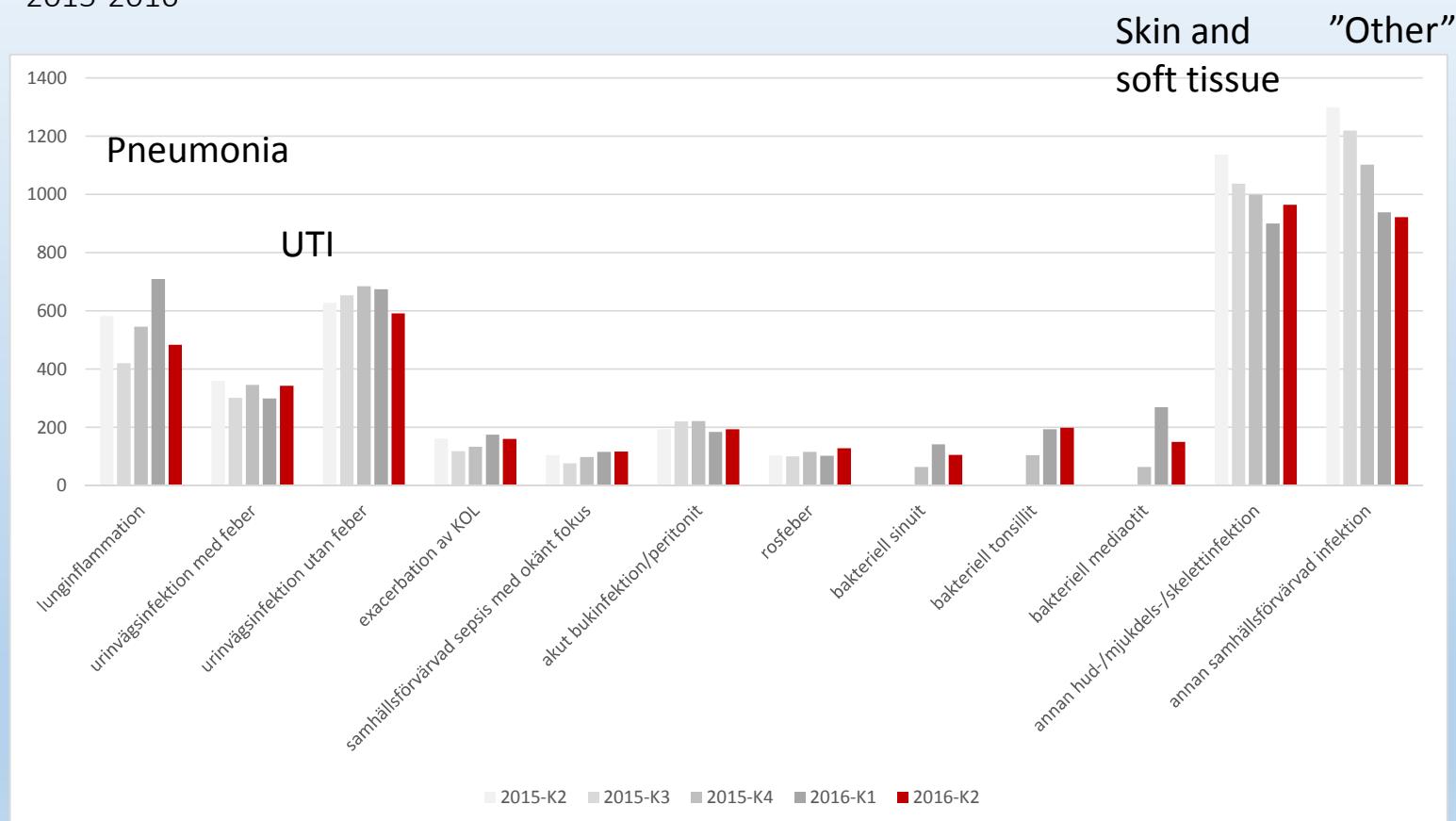
Incidence CA-infections (quarterly) Uppsala University Hospital 2015-2016



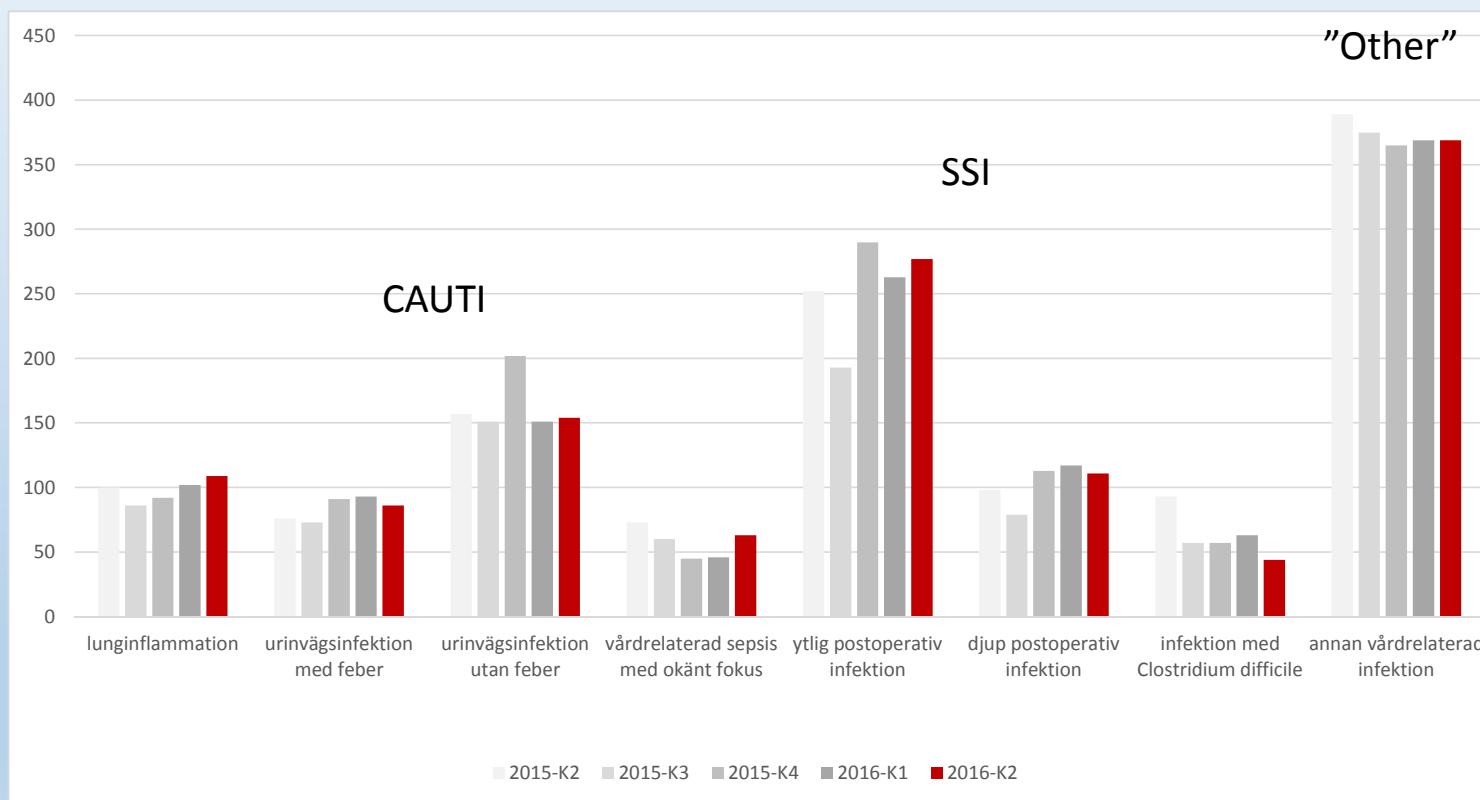
Incidence HAI (quarterly) Uppsala University Hospital 2015-2016



Types of CA-infections at Uppsala University Hospital
2015-2016



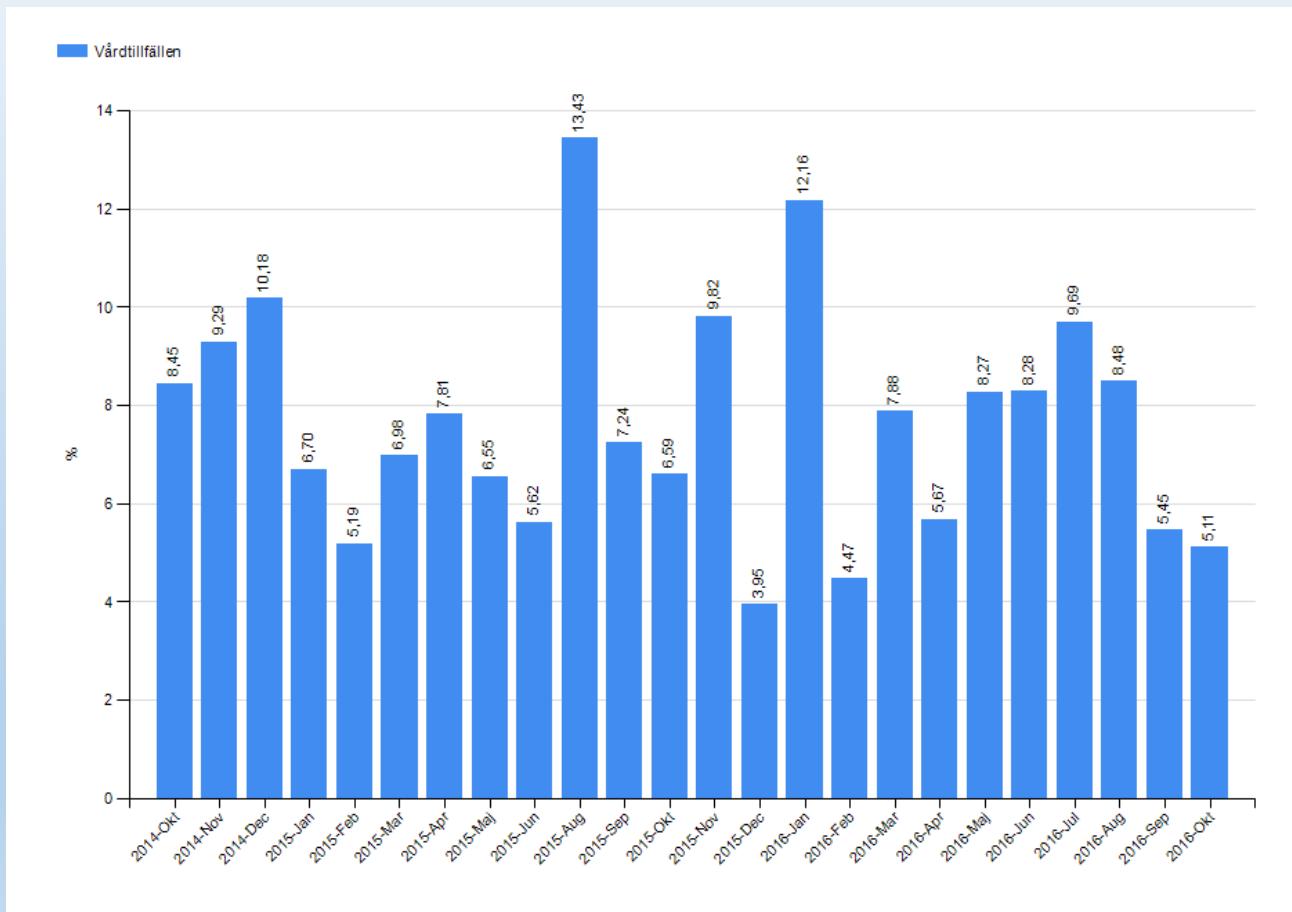
Types of HAI at Uppsala University Hospital
2015-2016



Ward-level HAI

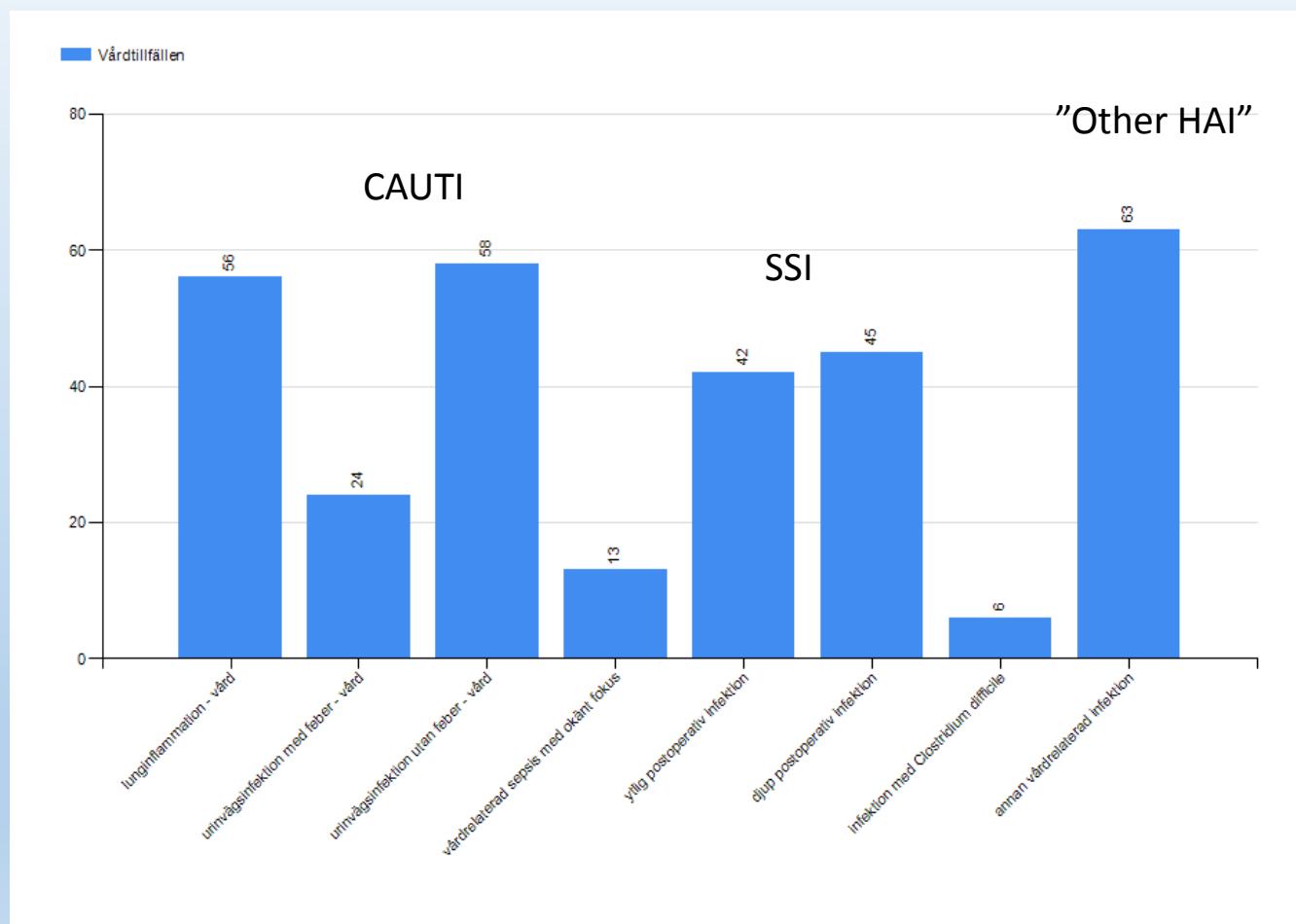
ORTOPAEDIC WARD

Incidence HAI Ortopaedic ward Oct 2014-Oct 2016



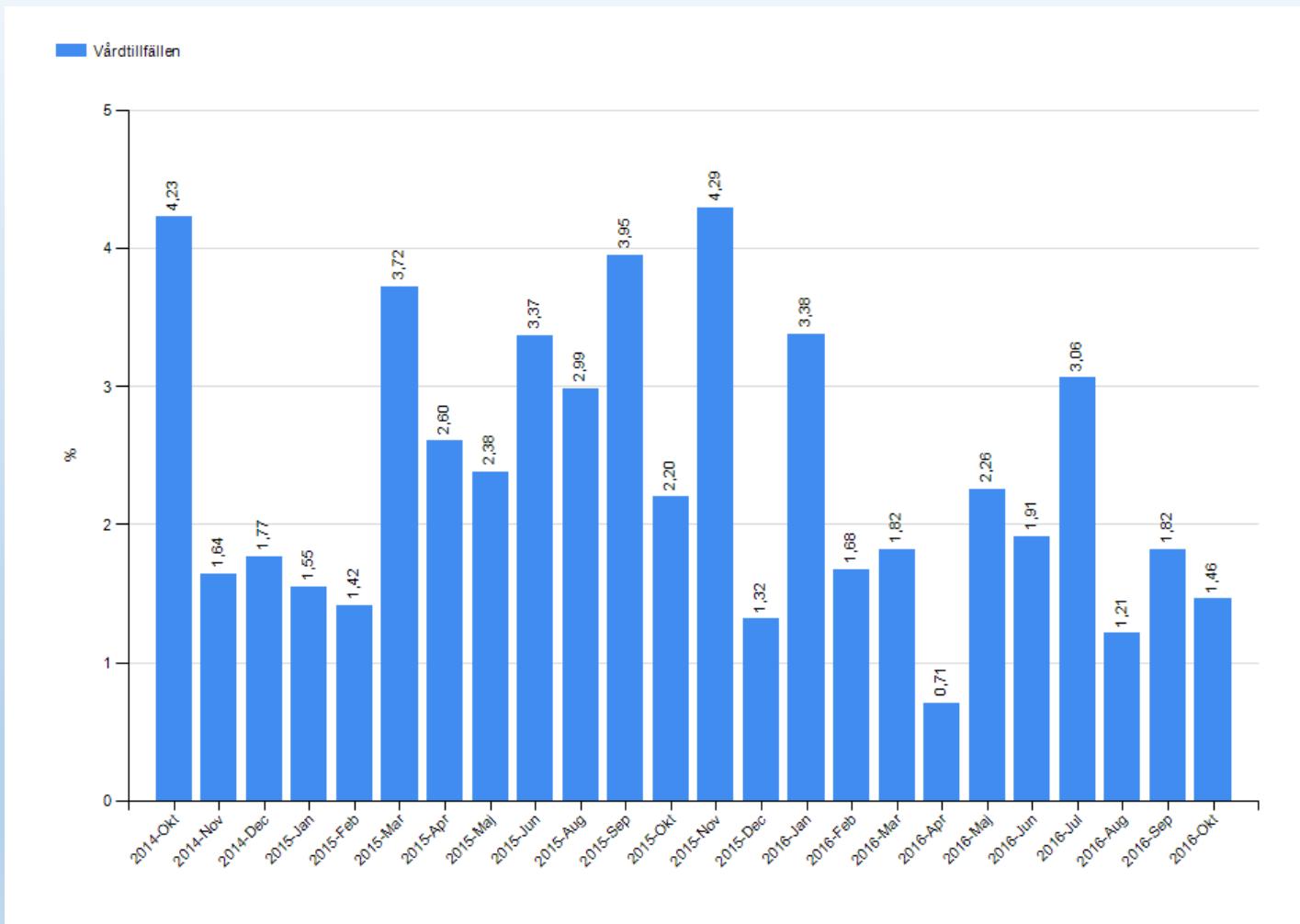
: [Vårdtillfällen] fördelat på [Tid - år - månad], avgränsad till [Organisatorisk enhet: Ortopedavdelning 70 D, Ortopedavdelning 70 D2], [Tidsperiod: 2014-10-27 -- 2016-10-27], [Infektion: Lunginflammation - vård, Urinvägsinfektion - vård, Urinvägsinfektion med feber - vård, ...], som andel av Vårdtillfällen, avgränsad till [Organisatorisk enhet: Ortopedavdelning 70 D, Ortopedavdelning 70 D2], [Tidsperiod: 2014-10-27 -- 2016-10-27]

Types of HAI Ortopaedic ward Oct 2014-Oct 2016



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Incidence SSI Ortopaedic ward Oct 2014-Oct 2016

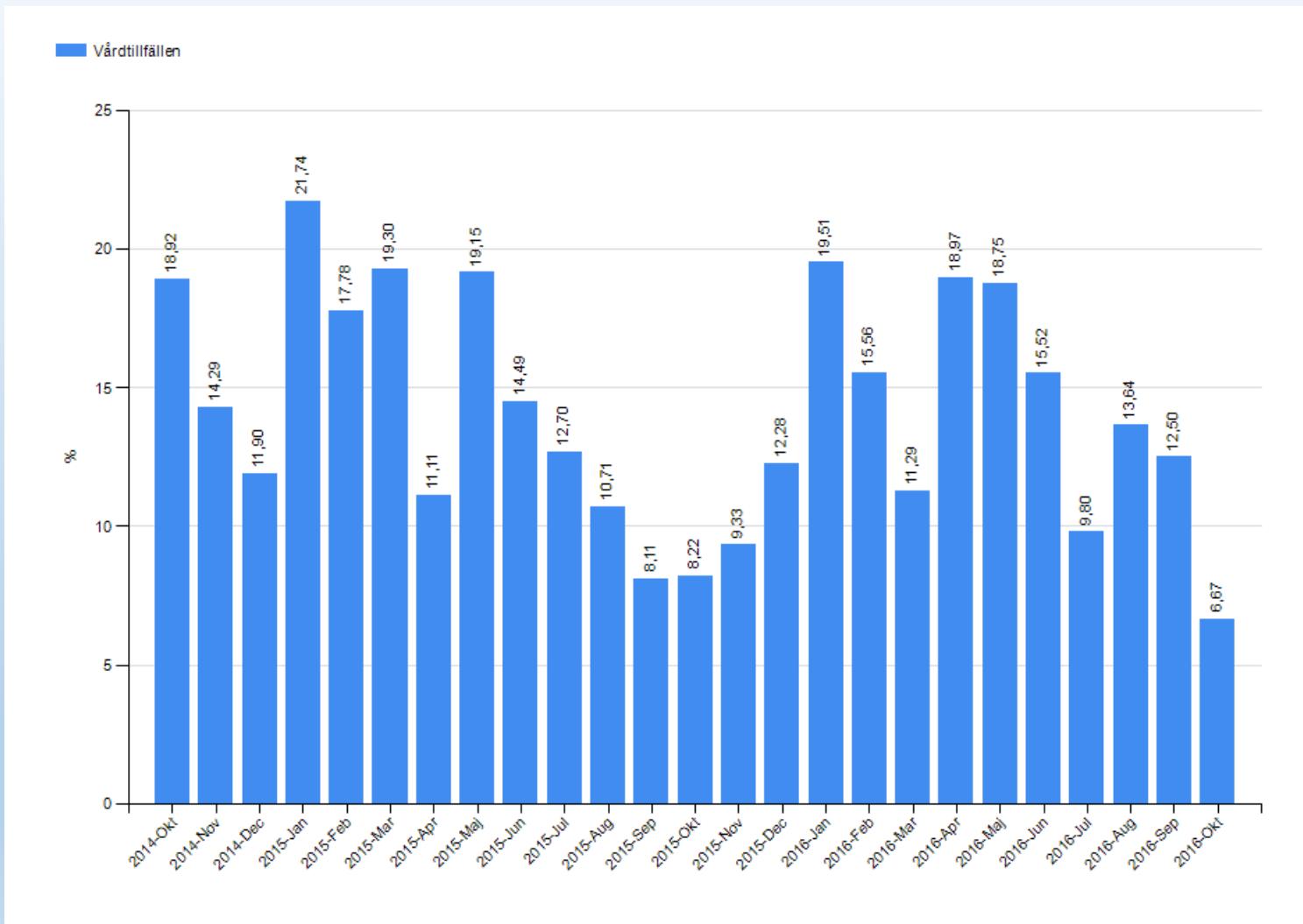


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Ward-level HAI

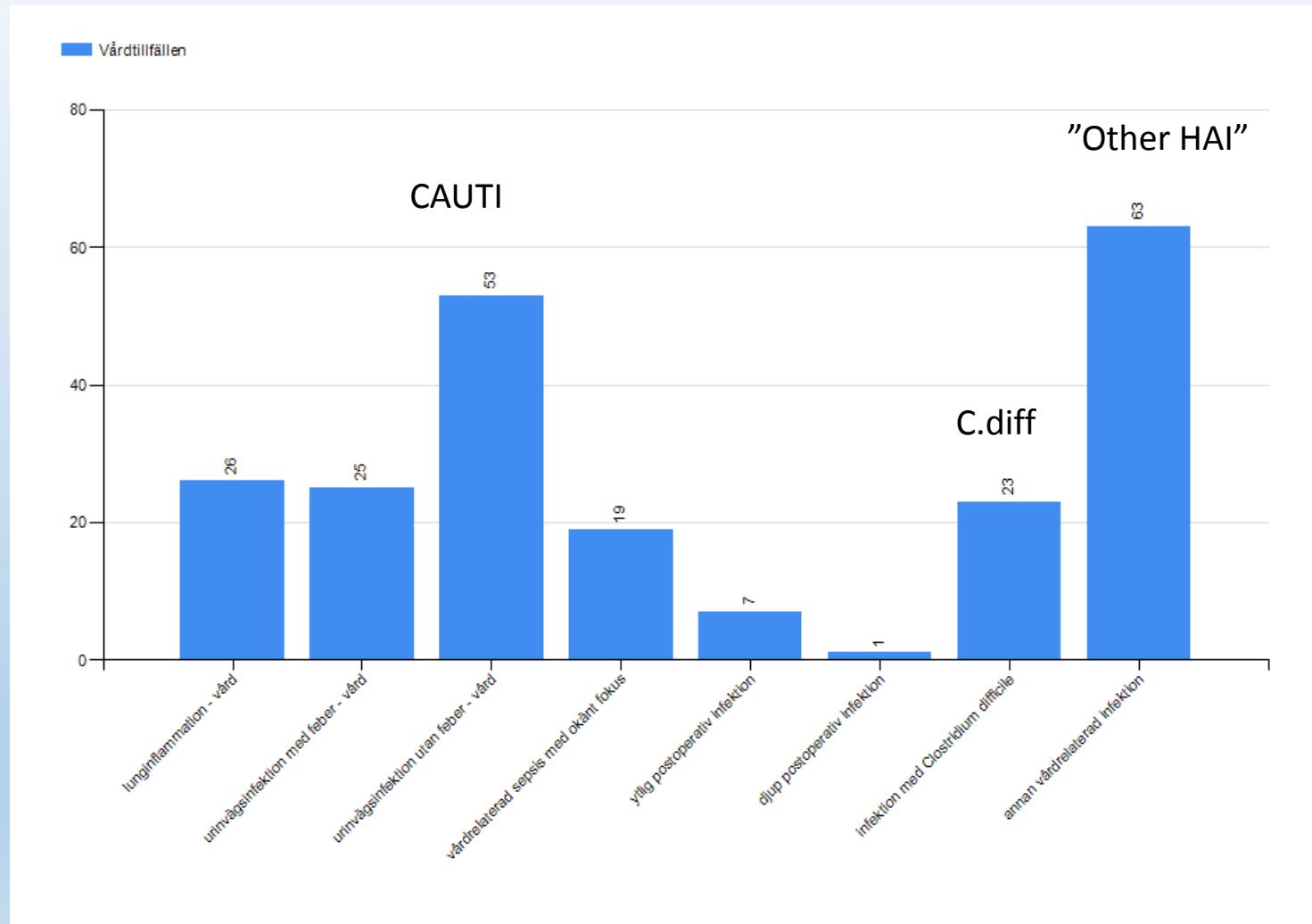
GERIATRIC WARD

Incidence HAI Geriatric ward Oct 2014-Oct 2016



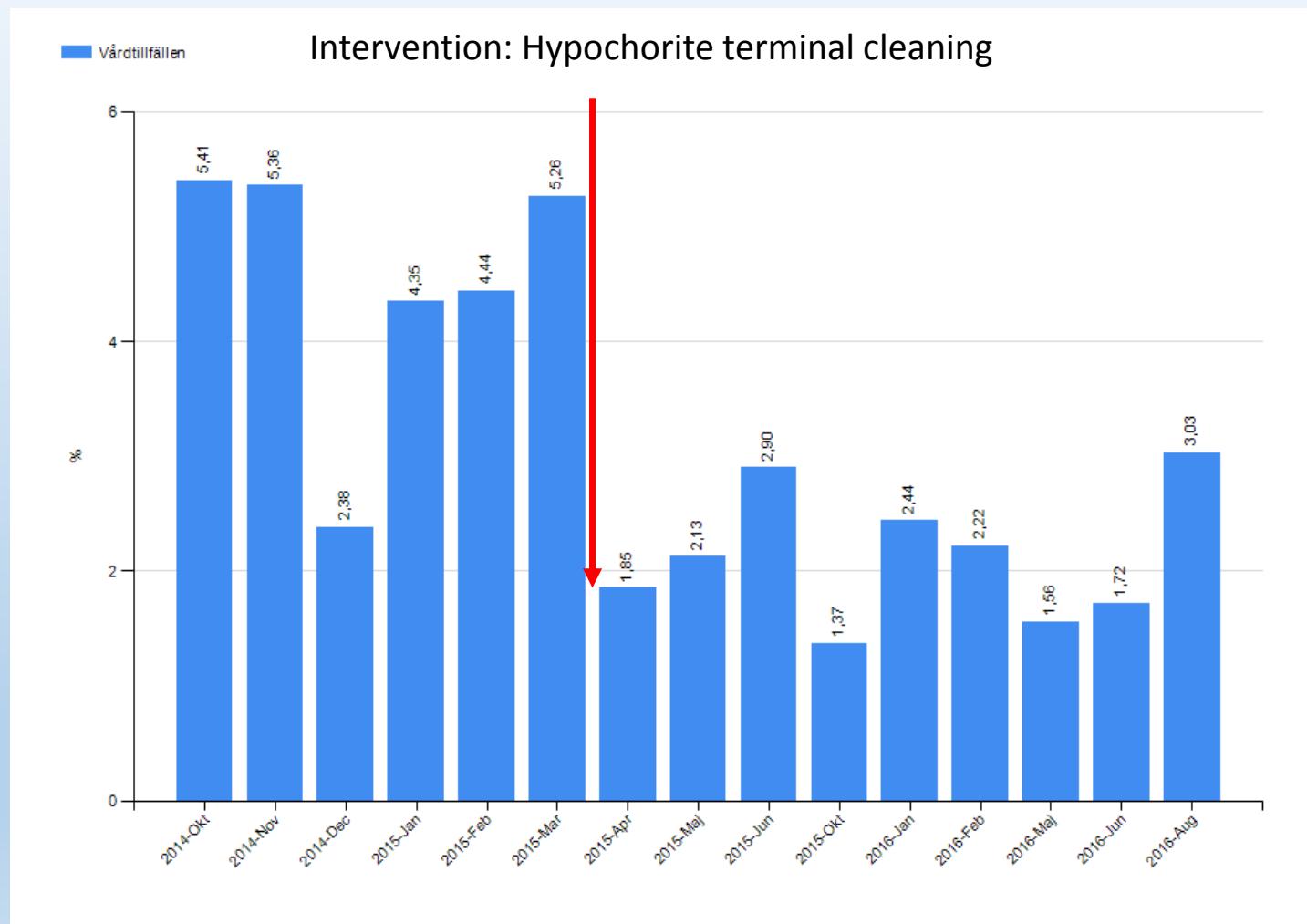
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Types of HAI Geriatric ward Oct 2014-Oct 2016



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Incidence C. difficile Geriatric ward Oct 2014-Oct 2016

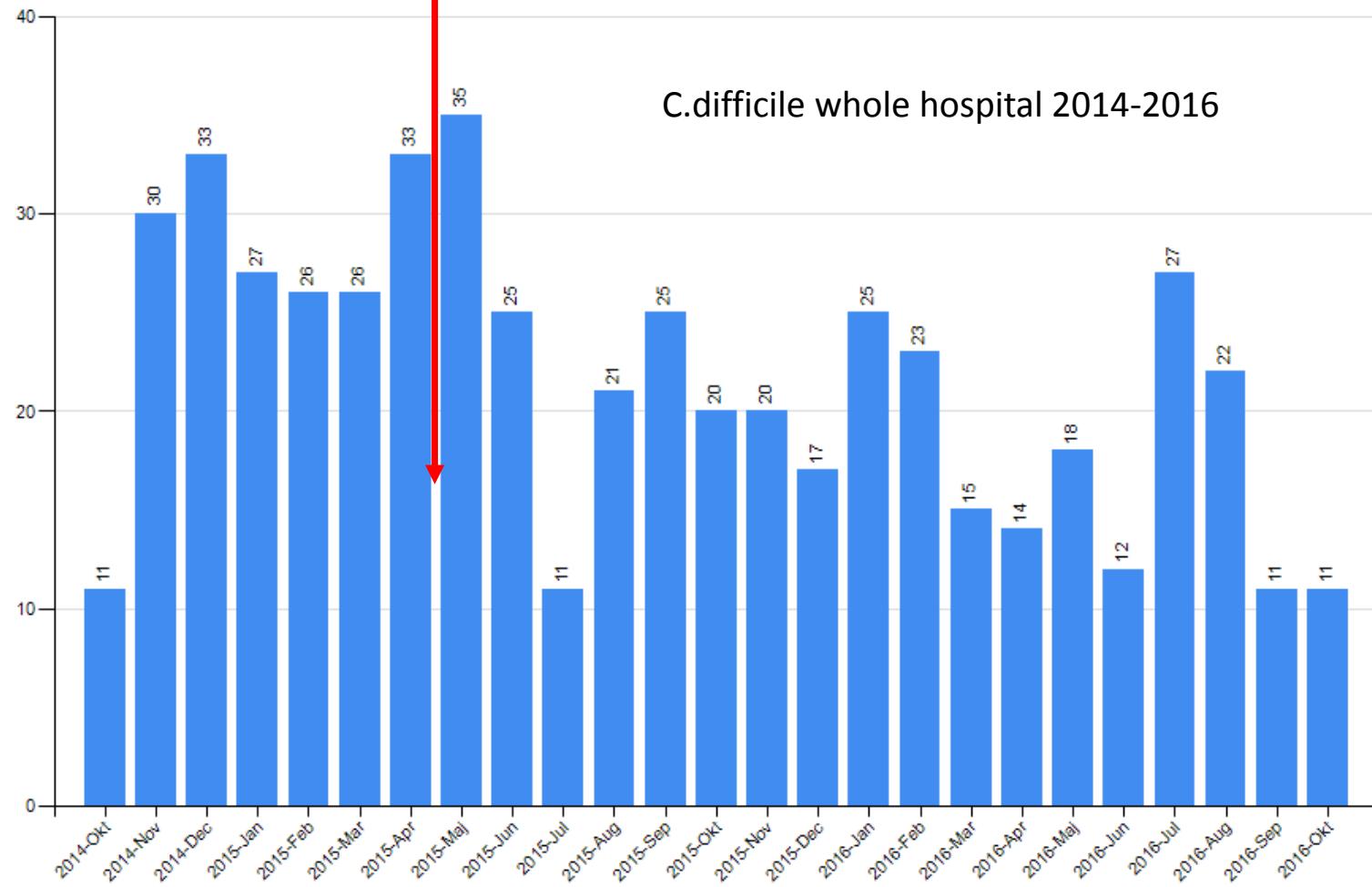


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Infektioner

Hypochorite terminal cleaning in three wards

C.difficile whole hospital 2014-2016

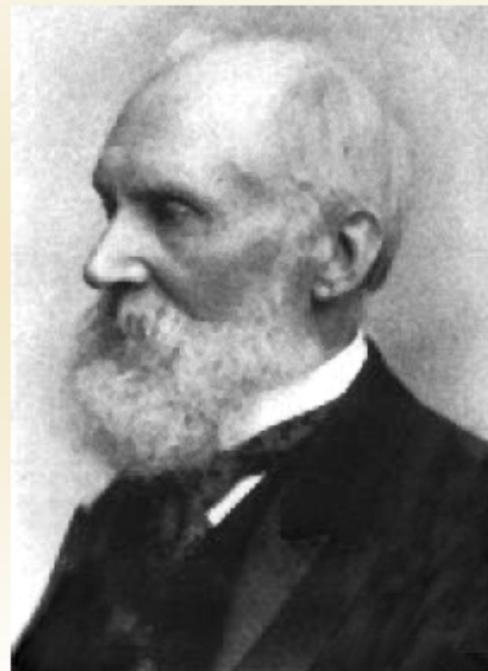


: [Infektioner] fördelat på [Tid - år - månad], avgränsad till [Tidsperiod: 2014-10-17 -- 2016-10-17], [Organisatorisk enhet: Akademiska sjukhuset, Affektiva sjukdomar, Akut- och konsulterpsykiatri...], [Infektion: Infektion med Clostridium difficile]

How interpret data?

LOTS OF DETAILED DATA

I would like to discuss the data with Lord Kelvin



**"If you cannot
measure it,
you cannot
improve it"**

Lord Kelvin, 1824-1907

Electronic surveillance systems for HAI - advantages

Integrates hospital information systems into electronic surveillance of HAI

"Maximize efficacy of abundant electronic data existing within hospitals"

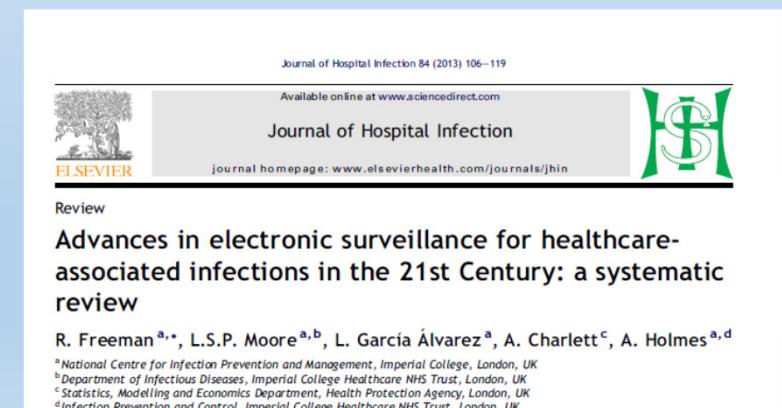
Real-time data

Less labour consuming compared to manual collection*

Data must be validated

Definitions differ

Algorithms are plenty



Freeman et al. JHI 2013

Identified 44 studies of which 21 assessed performance versus manual (traditional)

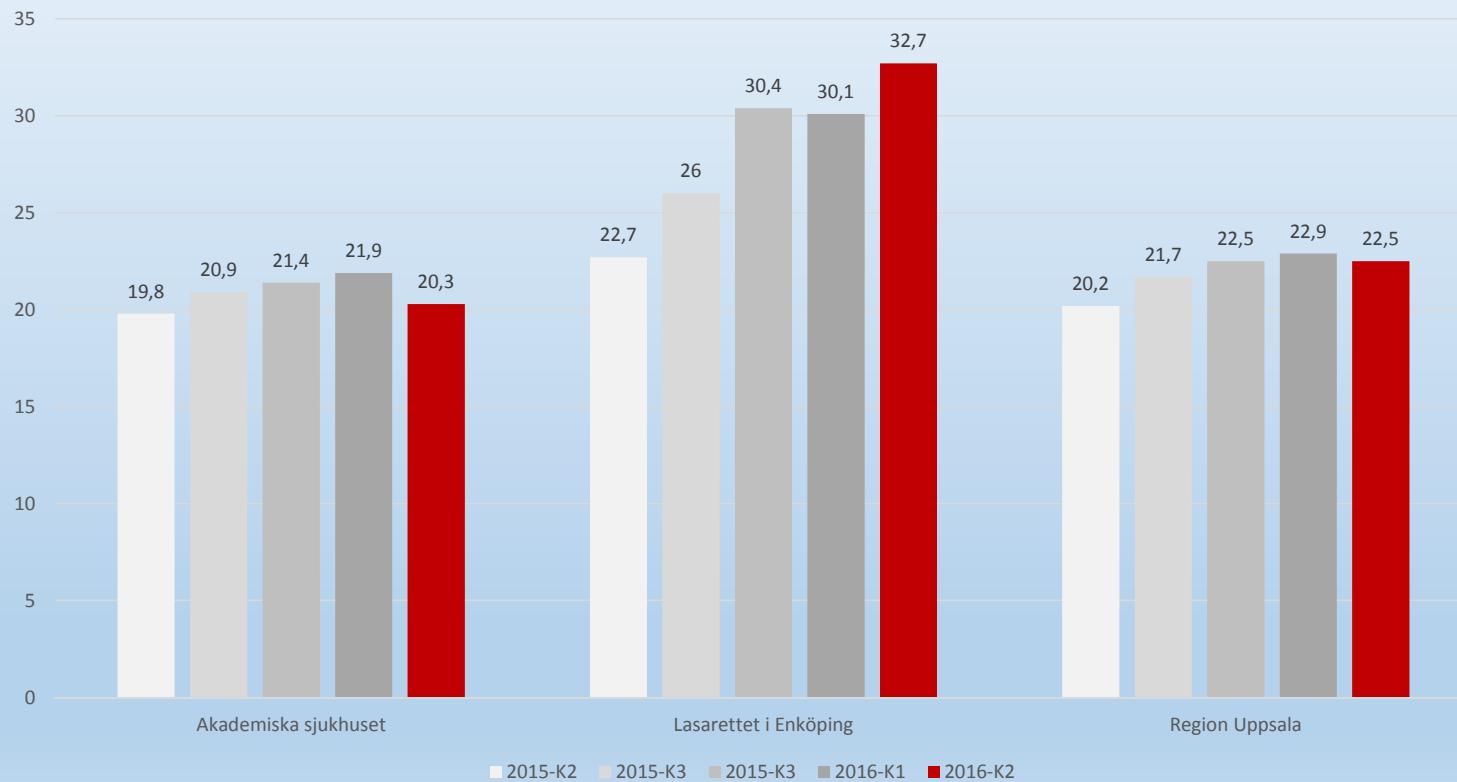
Validation is ongoing

- 30 registrations every month are reviewed
 - Every ward
 - Team of doctor and nurse
 - Base for education
-
- Main findings:
Doctors confuse HAI with CA-infections
“Other infections” are over represented due to lack of choices of indications

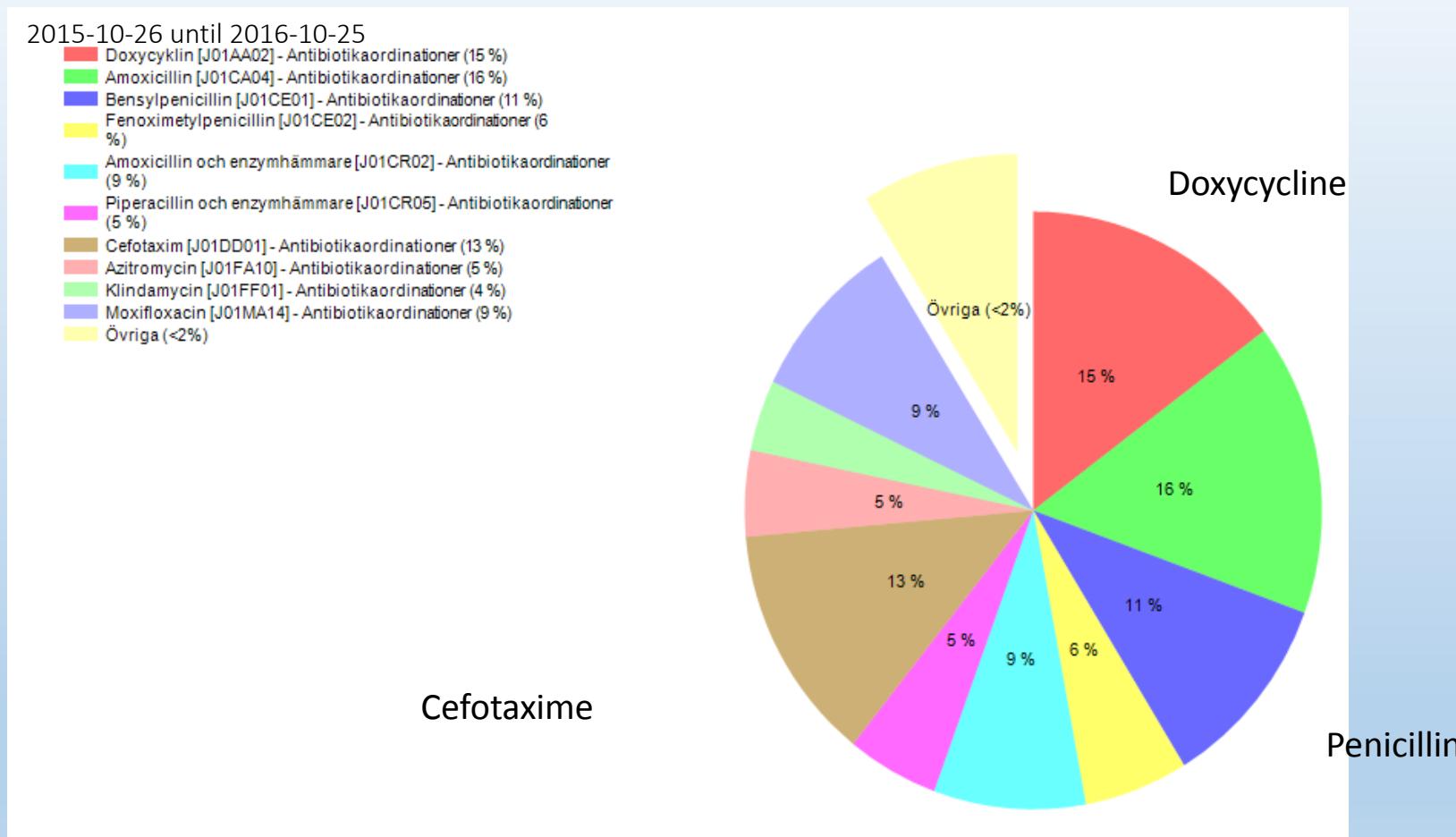
Antibiotic consumption

RESULT INDICATOR OF "INFECTION TOOL"

Proportion of CA-pneumoniae primarily treated with penicillin

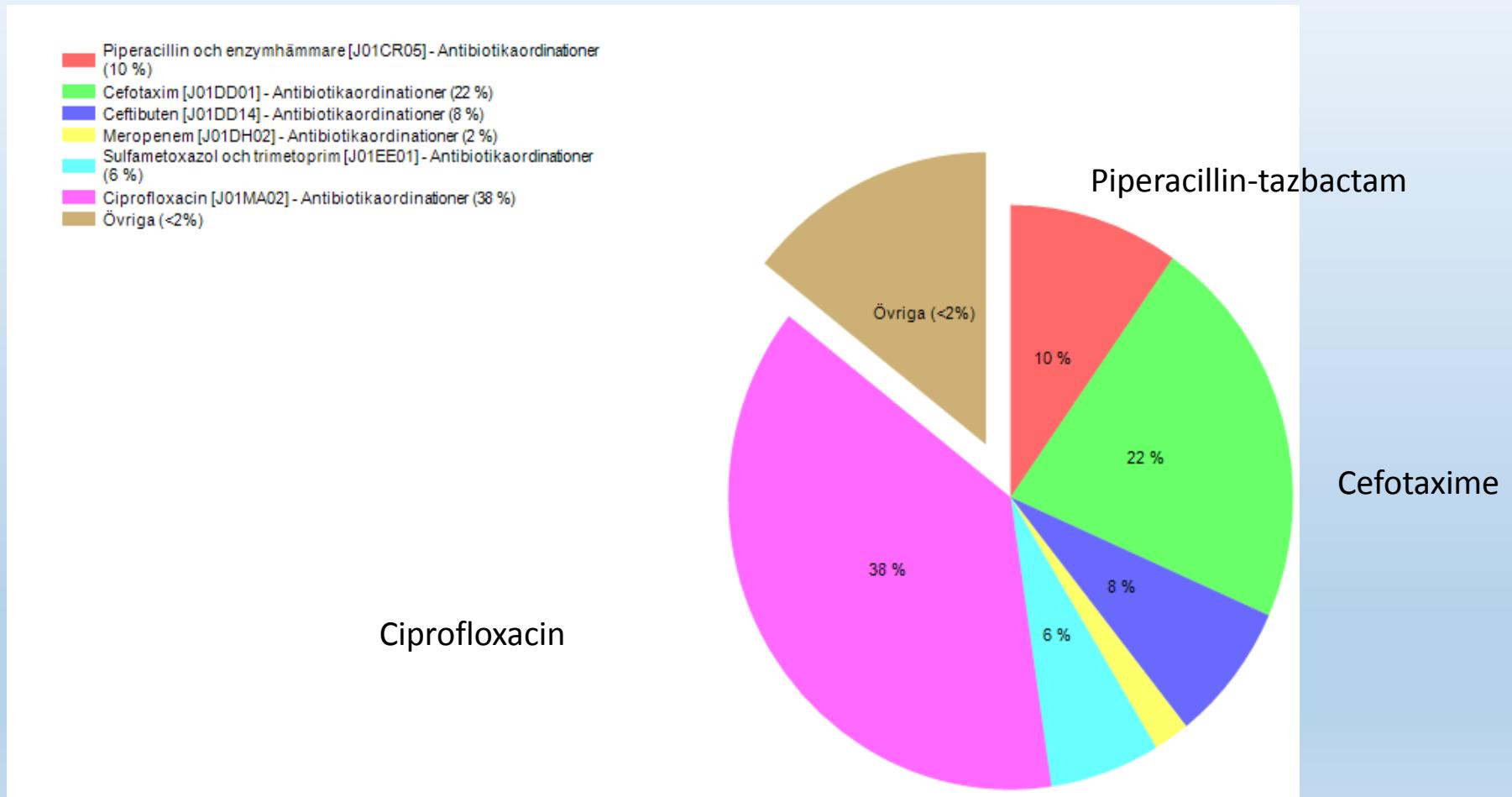


CA-pneumoiae infectious disease ward at UUH



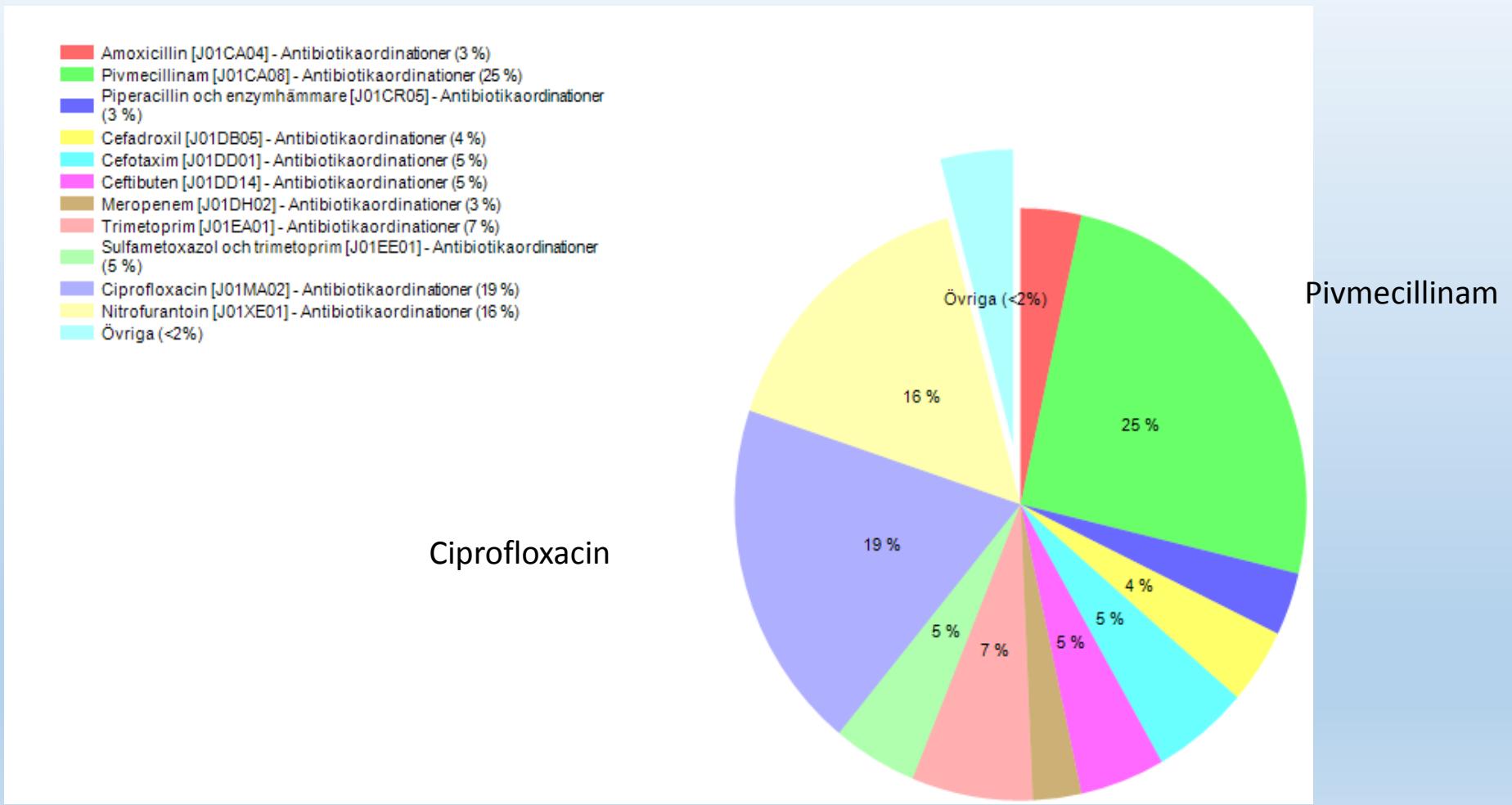
CA UTI with fever infectious disease ward at UUH

2015-10-26 until 2016-10-25



CA-UTI without fever infectious disease ward at UUH

2015-10-26 till 2016-10-25



Summary Swedish three quality indicators

- Process indicator of compliance with hand hygiene and dress code
good data for action
- Antibiotic consumption data is good data for action for antibiotic stewardship
- Point-prevalence of HAI since 2008 has served the purpose of putting HAI on the agenda, now replaced by the "infection tool" measuring incidence

CA-infection

HAI



Is the Swedish and Finnish
surveillance system for
incidence of HAI a good
indicator for quality?

“Infection tool” –positive effects

- Wards must actively use the results from the infection tool for continuous and sustained improvement work
- Feed-back results, develop action plans and follow up
- Politicians and administrators at all levels use the results for setting targets

- Data for action

HAI

Antibiotic stewardship

“Infection tool” – room for improvement

- Lots of detailed data
- Used with precaution
- Data must be validated – **data is not yet valid in many wards**

Doctors confuse concepts of HAI and CA-infections

Doctors choose “other infection” due to lack of interest and time

- Engage champions and role models in wards and start working making them interested in their data

Thank you for your attention!

Special thanks to
Ingrid Carlqvist
Jenny Kostov Bredberg
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