Rijksinstituut voor Volksgezondheid
en Milieu
*Ministerie van Volksgezondheid,
Welzijn en Sport*

The importance of national surveillance on antimicrobial resistance

The Dutch example

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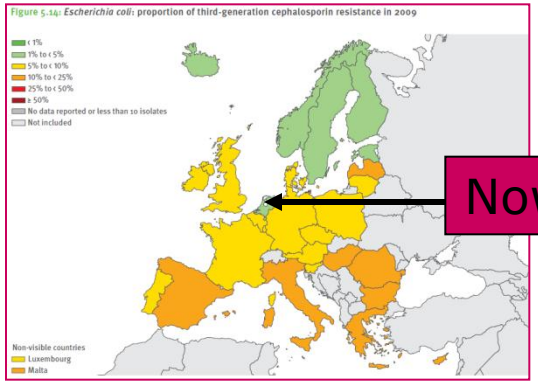
24 november 2011

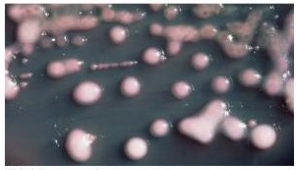
The Dutch AMR situation



Cipro R *E.coli:* 7% in 2003 to 14% in 2010

Now yellow!

Maasstad Ziekenhuis faalt bij aanpak resistentie



Klebsiella pneumoniae
Wikimedia Commons

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Door redacteur gezondheidszorg Rinke van den Brink

Het Maasstad Ziekenhuis in Rotterdam worstelt al zeven maanden met een uitbraak van een zeer gevaarlijke en nagenoeg onbehandelbare bacterie. Het ziekenhuis doet pas sinds afgelopen donderdag onderzoek naar de bacterie.

Introduction: Know your enemy

With the increasing antimicrobial resistance rates, surveillance is an essential tool to:

- monitor trends
- rapidly detect / actively react to new resistance elevations
- evaluate policies
- compare laboratory results for quality improvement

International <> National <> Local Hospital

Interaction between layers is essential for surveillance:

- Awareness
- More insight in your data (translation to improved patient care)
- Standardisation/Quality improvement
- Communication/Exchange of knowledge

Knowing what is going on at your neighboring hospital or country is essential for combined action against AMR.

The Dutch surveillance system ISIS-AR

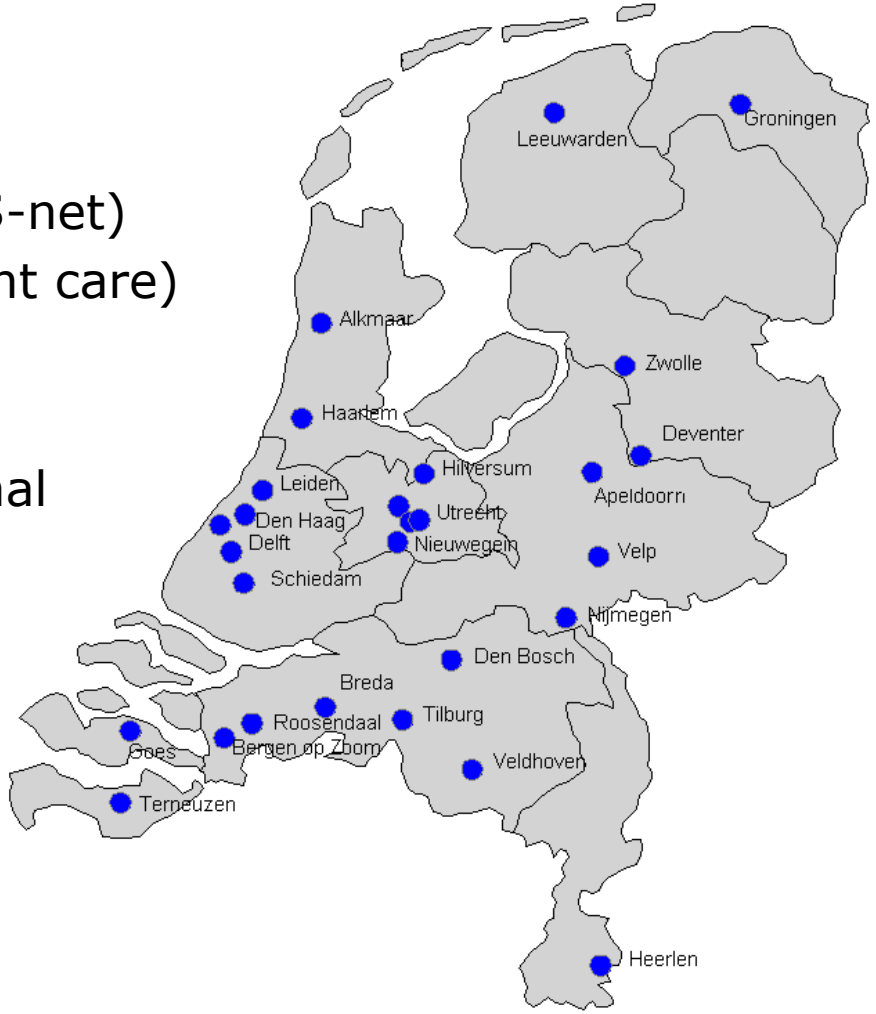
For this purpose, the Dutch Infectious Diseases Surveillance Information System on Antibiotic Resistance (ISIS-AR) and the interactive database ISISweb were developed.

Multidisciplinary ISIS-AR team started in July 2007

Now, in 2011 30 of the 66 Dutch Medical Microbiology Laboratories are participating

Goals ISIS-AR

- Monitor AMR trends (Nethmap, EARS-net)
- Produce 'mirror' data (improve patient care)
    - › Feedback reports
    - › ISISweb
- 'Early' detection of (multi-)institutional elevations
- Active response to new resistance development (guidelines)



How does it work?: Dataflow ISIS-AR and ISISweb

LIS

query

Standard.

Monthly file

Secure - FTP

ISIS-AR database - RIVM

	#Pat	#Iso
Escherichia coli	639	732
Klebsiella pneumoniae	88	104
Klebsiella oxytoca	33	41
Enterobacter cloacae groep	20	31
Citrobacter freundii groep	14	21
Serratia marcescens	22	31
Morganella morganii	0	0
Proteus mirabilis	76	86
Salmonella enteritidis	2	2
Salmonella paratyphi	0	0
Salmonella typhi	0	0
Salmonella typhimurium	1	1
Shigella spec	1	1
Yersinia spec	0	0
Acinetobacter spec	36	38
Pseudomonas aeruginosa	111	151

Feedback report

ISISweb

ISIS-AR methodology

- Data are collected on a monthly basis
- Only standardised data are collected, no free text
- Clinically relevant micro-organismen (>50)
- All positive cultures with an antibiogram
- Included: Culture site (material), Distinction between screening and clinical isolates.
- S I R interpretation, MIC-values, diameters (if available) and E-test and Confirmation results are collected
- Patient information, Institution (Hospital, OPD, GP, Nursing homes) Department (at least ICU/non-ICU)
- For analysis purposes; first isolate per patient per year, but all successive cultures per patient are collected

Feedback report

- Overview of dataset
- Datamanager check of data send in to RIVM. If necessary consultation with medical microbiologist.
- Table with unknown values
- Table unusual resistance phenotypes are included, and have to be confirmed by the medical microbiologist.
- Medical microbiologist of ISIS-AR team can contact the lab in case of special findings that are worrisome.
- After confirmation the data go online.
- Improvement of quality, awareness and communication!

Aanlevering

Lab-code	ISIS002
Maand	April
Jaar	2011
Aanlevering-ID	4194
Datum	14-07-2011

Onbekende sleutelwaarden

Gegeven	Onbekende waarde	Aantal	Soort
AFDELING	HOOG2	1	monsters

Totaal Overzichten

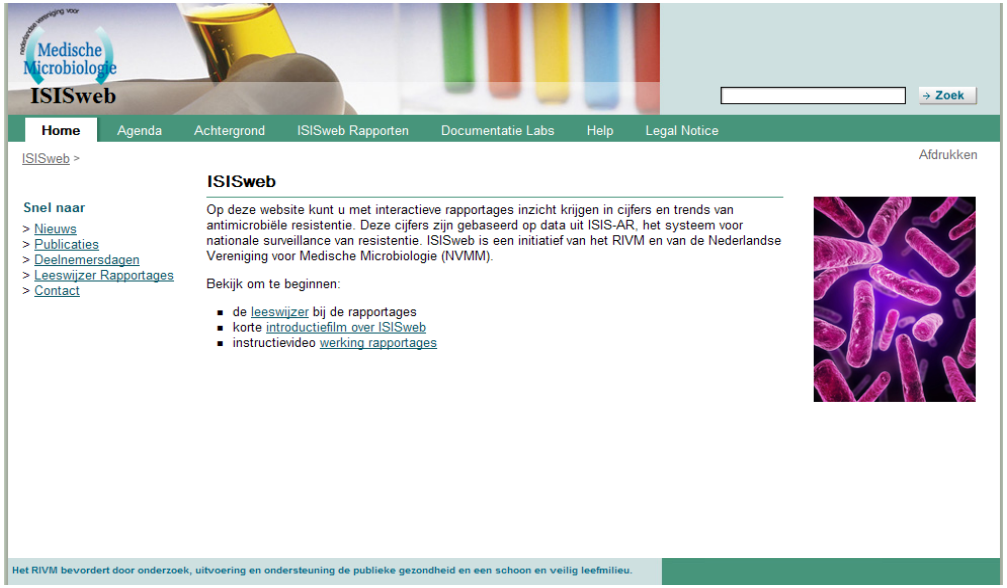
#Isolaten ISIS	#Isolaten	#Patienten ISIS	#Patienten
1619	1802	764	817

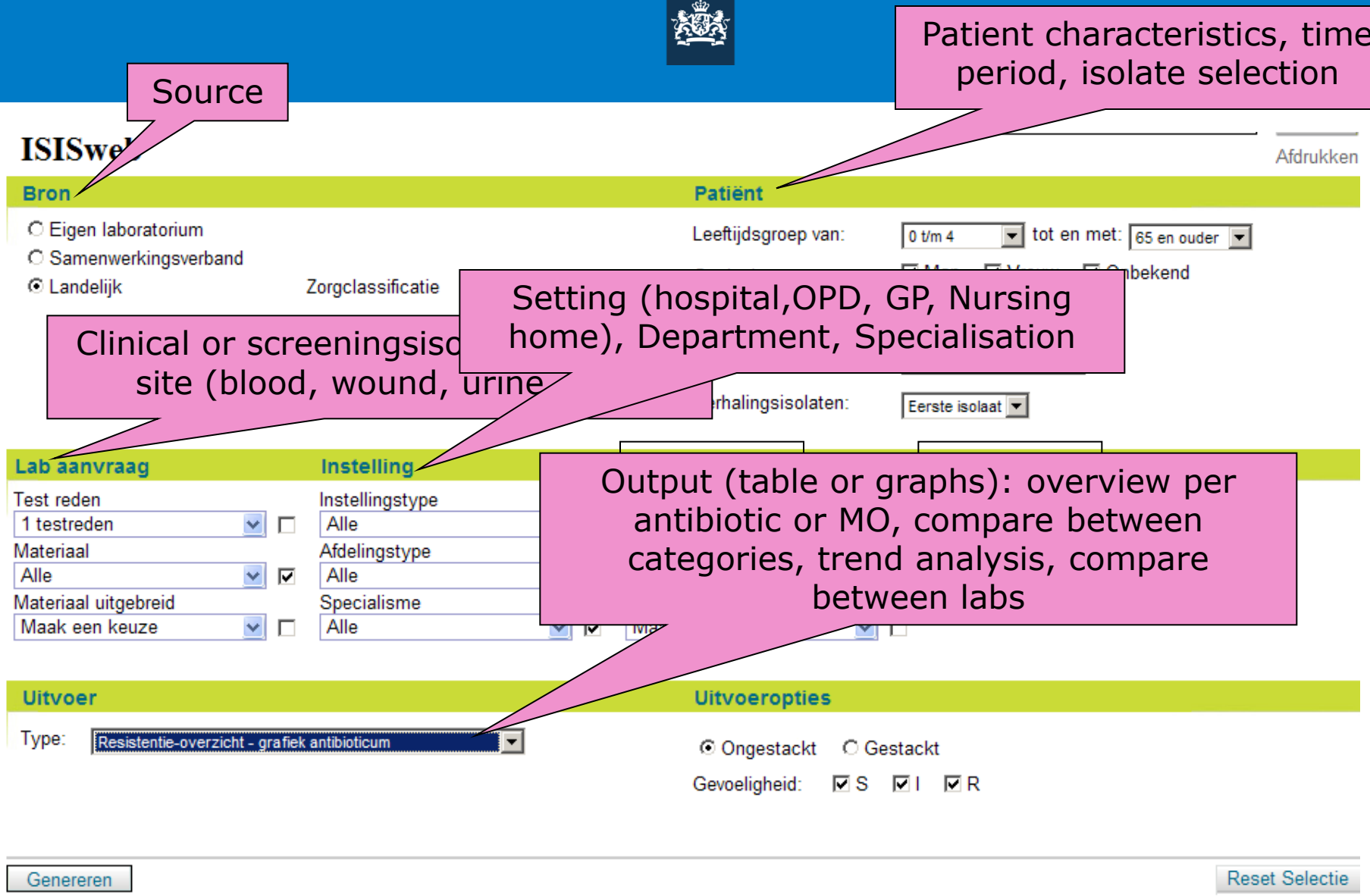
Samenvatting Bijzondere Resistenties

Antibiotica-pathogeen combinaties	#Pat	#Iso	Monster.Isolaatvolgnr
Moraxella catarrhalis intermediair/resistent t.o.v. ceftriaxon (TR07)	1	1	11-530555.2
Overige Enterobacteriaceae (excl. Proteus/Morganella) resistent t.o.v. carbapenem (TR07a)	1	1	11-526400.1
Acinetobacter spp. carbapenem resistent (TR07a)	3	8	11-526412.1, 11-527796.1, 11-528068.1, 11-532577.1, 11-532582.1, 11-532584.1, 11-532831.1, 11-525604.1
Overige Enterococcus spp. penicilline groep en vancomycine resistent (TR07a)	1	1	11-525095.1
6.2a Coagulase-negative staphylococci Resistant to vancomycin (TR08b)	1	1	11-531927.1

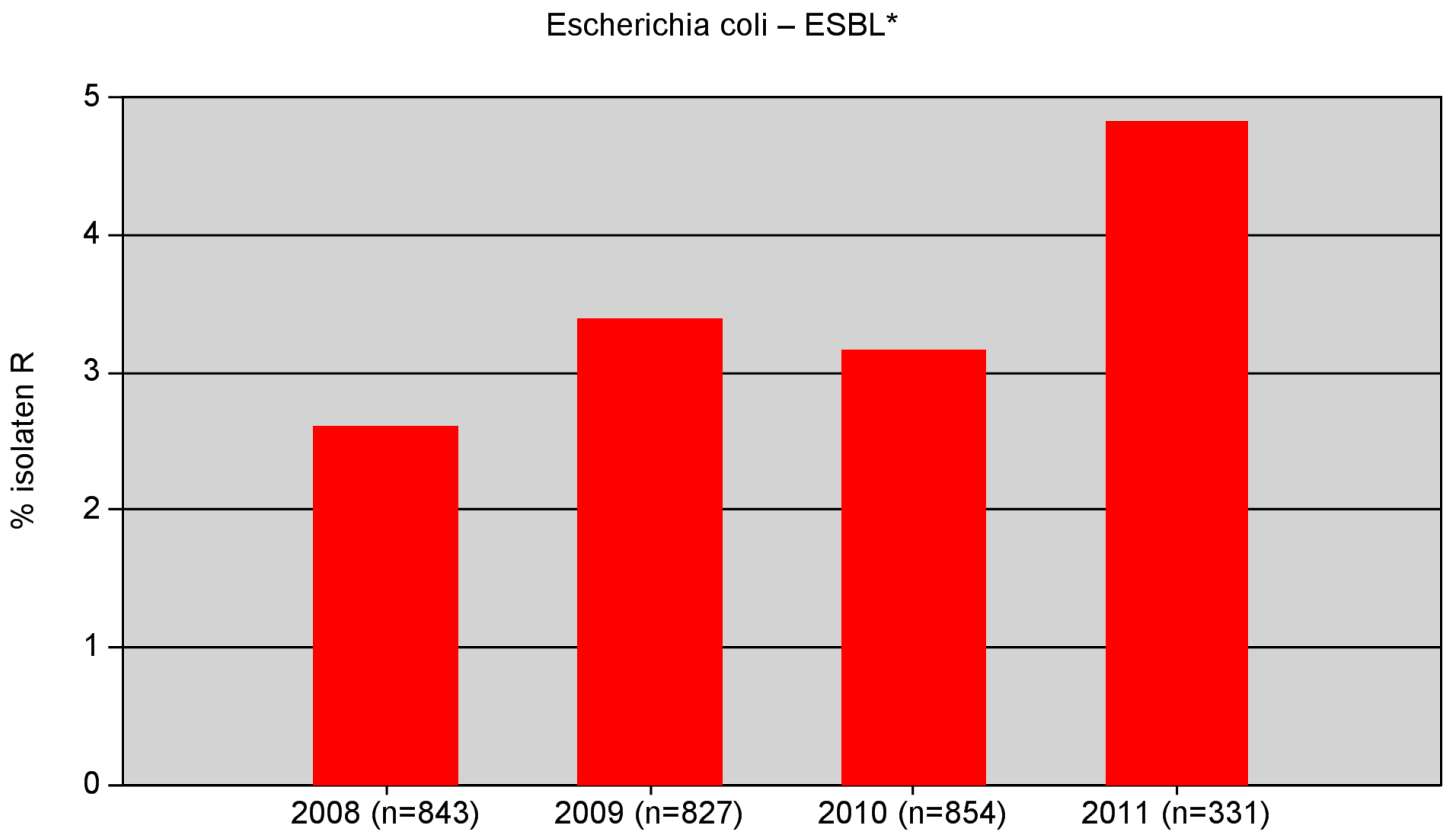
www.isis-web.nl

- Public en closed part
- National overviews and trends
- Data ‘mirroring’
- Next year: multidrug resistance en standard reports for hospital board and inspection.

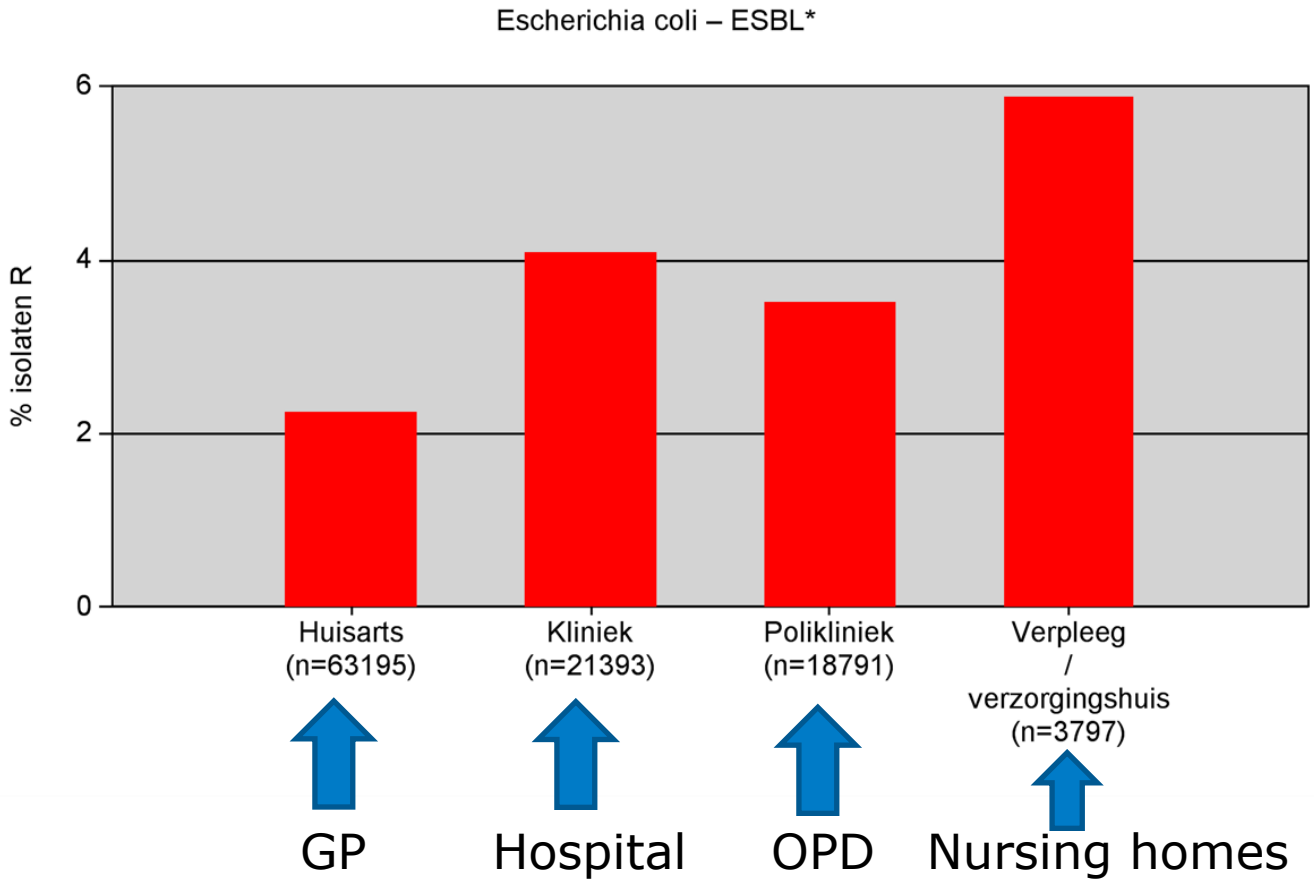



Source
Patient characteristics, time period, isolate selection
Setting (hospital,OPD, GP, Nursing home), Department, Specialisation
Clinical or screeningsiso
site (blood, wound, urine
Output (table or graphs): overview per antibiotic or MO, compare between categories, trend analysis, compare between labs
ISISwe
Afdrukken
Bron
Eigen laboratorium
Samenwerkingsverband
Landelijk
Zorgclassificatie
Patiënt
Leeftijdsgroep van:
0 t/m 4
tot en met:
65 en ouder
bekend
rhalingsisolaten:
Eerste isolaat
Lab aanvraag
Test reden
1 testreden
Materiaal
Alle
Materiaal uitgebreid
Maak een keuze
Instelling
Instellingstype
Alle
Afdelingstype
Alle
Specialisme
Alle
Uitvoer
Type:
Resistentie-overzicht - grafiek antibioticum
Uitvoeropties
Ongestackt
Gestackt
Gevoeligheid:
S
I
R
Genereren
Reset Selectie

Example ISISweb: Trends



Example ISISweb:Comparison between settings



Wake up call: OXA-48 outbreak in Dutch hospital

- 31 may 2011 outbreak of CPE was officially reported, but was going on already for some time…
- Lot of media attention that lead to political and social discussions, how to prevent these outbreaks in the future
- Due to the late discovery of the outbreak and delayed action, 4.340 patients had to be screened for possible contamination
- In total 115 patients carried the Klebsiella OXA-48
- End of July the outbreak was under control!
- Interim report Health Inspectorate october 2011. Title: Klebsiella outbreak in Maasstad hospital avoidable.
- The final report will be available in the beginning 2012; was the outbreak also blameworthy.

How to prevent these outbreaks in the future

Carbapenemase producing organisms:

- Guideline for Carbapenemase detection and infection control
- CPE surveillance in place for confirmation at RIVM ('connected' with ISIS-AR)
- ISIS-AR as a back-up to detect (multi)-institutional elevations

In general:

- Consultation of representatives of MoH, Health Inspectorate, CIb-RIVM, NVMM, SWAB, WIP, VHIG
  - Signaling structure (monthly) and response team for Healthcare associated infections, specific focus on unusual and multidrug resistance
  - Expanding ISIS-AR (each laboratory should be able to participate) and implement 'outbreak' algorithm (structural detection of defined fenotypes)
  - National Laboratory reference structure for typing

Thanks to all participating laboratories and the ISIS-AR team

- Jan Muilwijk – epidemiologist
- Jeroen Alblas – datamanager
- Jos Monen – datamanager
- Maurine Leverstein – van Hall – medical microbiologist
- Akke van der Bij – medical microbiologist
- Daan Notermans – medical microbiologist
- Marlieke de Kraker – epidemiologist
- Nienke van de Sande – project leader

- Sabine de Greeff – AMR projectleader