

Antibiotic use and resistance in Swedish hospital care

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China-Sweden Conference on Antibiotic Resistance
Beijing, April 28, 2009

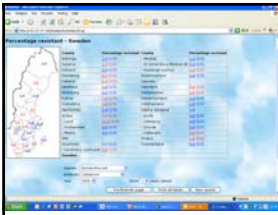


Strama: Activities in hospitals

- **Surveillance of antibiotic use and resistance**
- **Updated guidelines:**
National: ESBL (2008), Peri-operative prophylaxis,
Regional: Drug and Therapeutics Committees – yearly updates
- **Interventions:** on three indications
- **International co-operation:** ESAC (antibiotic use)
- **Media:** Information to the public and the profession



Systems for surveillance of resistance

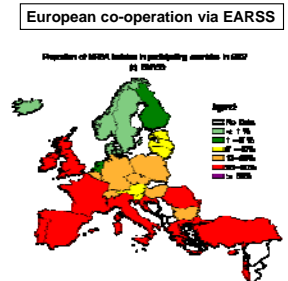


Regional resistance data
All local data

Resnet
National resistance data based on mixed data from regional laboratories

European co-operation via EARSS

Prevalence of MRSA isolates in participating countries in EARSS in 2008



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Resistance and out-breaks in hospital care

Staphylococci

- **MRSA** Methicillin-resistant *Staphylococcus aureus*

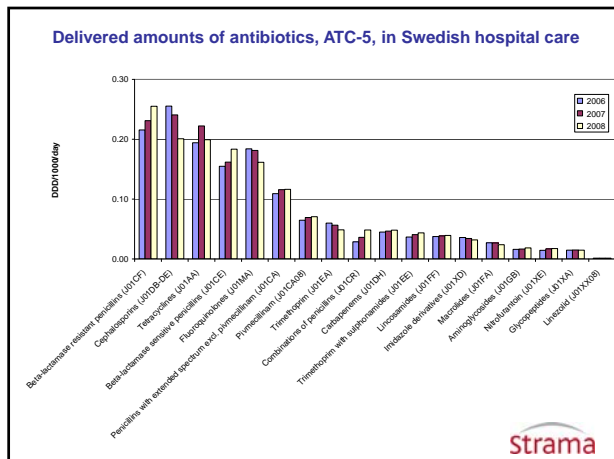
E.coli/enterobacteriaceae

- **ESBL** Extended betalactamase producing bacteria
Fluoroquinolone resistance

Enterococci

- **VRE** Vancomycin resistant *Enterococcus faecium*, van B





Why point prevalence surveys?

- Is current use rational?
 - Patterns of prescription
 - Causes for prescription
- Quality assurance and patient safety!
- Local data - Feed-back to prescribers!
- Local data - Benchmarking!

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Point Prevalence Surveys, PPS

- PPS in November 2003, 2004, 2006, 2008
- Protocol and a web-based soft-ware (Skoog, ECCMID 2004)
- Demographic data and some patient characteristics
- Antimicrobials against bacteria and fungi, dosing, cultures
- 19 pre-defined diagnosis groups
- Therapy reasons: community and hospital acquired infection or prophylaxis

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The PPS Protocol

Hospital	Department	Patient (10 fig no)	Sex		ICU	Admitt.dept	Ward			
			F	M						
Name of the drug	Dose per adminis. (ml/g)	No of doses per day*	Route of administration	Diagnose-group	Historic. suspicion***	Foreign material: aortic	Indication for therapy****	Relevant culture before therapy	Indication for given therapy (5 records)	Assessment of given treatment
	g/ml		Oral/Parent/Rectal	Code	Yes / No	Yes / No	A 1-6 B 1-6 C 1-3 D	Yes/No/Unknown	Yes/No	1-6****
1										
2										
3										
4										
5										

* Combination (weight, duration and administration against "ICU" are registered in numbers of tablets or ml volume, or ml injection fluid, respectively.
 ** Dose every 18h n=1; 12 hourly, every 18h n=3; once daily, each 24h n=2; 4 hourly, each 6h n=5; 8 hourly, each 12h n=7.
 *** Immunocompetent, a.) bacterial, b.) fungal, c.) parasitological, d.) mycological, e.) viral, f.) unknown, g.) unknown, h.) unknown, i.) unknown, j.) unknown, k.) unknown, l.) unknown, m.) unknown, n.) unknown, o.) unknown, p.) unknown, q.) unknown, r.) unknown, s.) unknown, t.) unknown, u.) unknown, v.) unknown, w.) unknown, x.) unknown, y.) unknown, z.) unknown.
 **** Indication for therapy:
 A: Community acquired infection
 B: Hospital acquired infection B1 Post-operative infection (infection at operation site, debut <30 days after surgery), or <1 year after surgery with implants
 B2 Other intervention related infections (e.g. CAD, CVC and PVC-related, VAP)
 B3 C. difficile enterocolitis (debut in hospital or <30 days after discharge)
 B4 Other hospital acquired infections, debut <30 days after admission to hospital, not infection from other dept., not B 1-3.
 B5: Infection is present at admission from another hospital
 C: Peri-operative prophylaxis, prescribed for: C1: 30g dose, C2: 30g/day, C3: <1 day
 D: Medical prophylaxis (immunosuppression, HD, prophylaxis against relapsing infections, a.) (g), and hospital acquired mains infection associated with treatments in hospital, B 2-4 includes infection debut during stay at, <30 days after discharge
 Evaluation of given treatment:
 1: Adequately directed therapy (drug, dosing, and an etiology verified by culture)
 2: Adequate empirical therapy (prophylaxis (drug and timing)
 3: Obviously incorrect dosing, eg. scheduled dose in relation to age and renal function (weight decrease <50 min and given full dose of drug)
 4: Obviously incorrect choice of drug = ineffective therapy / prophylaxis
 5: Other drugs
 Prescriber signed by: _____ Registered date/sign: _____ Patient nr: _____

Graphs
The demography of the study
Age distribution
Therapy by diagnose group
Consumption of antimicrobial drugs by admitted patients
Therapy by therapy reason
Therapy by therapy reason and diagnose group

Analysis
Numerical analysis
Miscellaneous
Help and information about the studies
Back to the main page

Choice
Reports from PPS

Rows: ATCS
Columns: Diagnose group
Reported: Number of therapies

Selection
PPS 2008
All ICU/Admitt.dept/Wards -
All indications for therapy -
Immunosuppression -
Sex -
All substances -

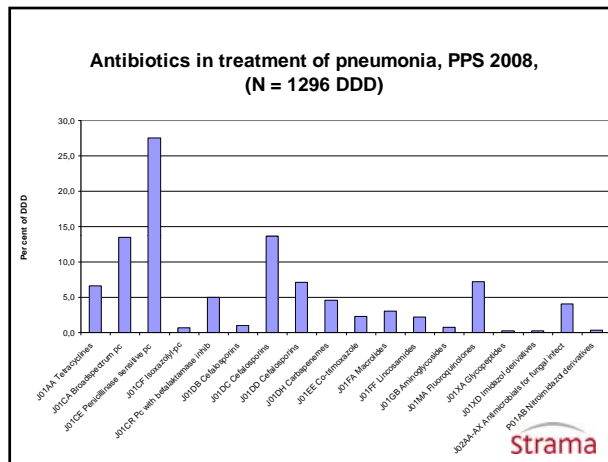
All hospitals -
All diagnose groups -
All assessments -
Relevant culture before therapy -
Age -

All departments -
All routes of administration -
Foreign material assoc -
Indication in records -
All drugs -

Show report Clear

Number of therapies

ATCS	Diagnose group	Reported
A07AA Antibiotics	B.JI: Bone and joint Bron: Bronchitis	0
J01AA Tetracyclines		3
J01CA Penicillins with extended spectrum		6



Prevalence of cultures in oral and parenteral treatments in PPS 2008, per cent

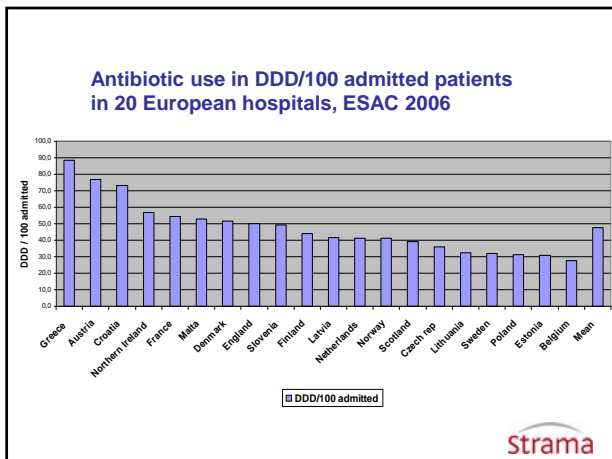
	Cultures before oral treatment (N=2235)	Cultures before parenteral treatment (N=2540)
Community acquired infections (N=2999)	62	76
Hospital acquired infections (N=1776)	70	78
All septicemia (N=381)	89	95

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Results – PPS
Indications and proportions of antibiotic treatments for admitted patients in somatic care (%)

	2003 N=13536	2004 N=11348	2006 N=17113	2008 N=16318
Community acquired infections	17,0	18,0	18,7	18,2
Hospital acquired infections	9,2	9,4	9,9	10,7
Prophylaxis	6,3	6,3	6,3	6,6
Per cent treated	32,5	33,9	34,9	35,5

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PPS in conclusion

Areas for improvement

- Shorter peri-operative prophylaxis
- Decrease the use of cephalosporins in CAP
- Control the use of quinolones
- Urinary tract infections: hospital infection? or asymptomatic bacteriuria!?

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A leaflet for information and intervention to all hospital physicians

Development of resistance must be reduced by rational antibiotic use

Förhindra utveckling av resistens genom rationell antibiotikabruk. Detta innebär att använda antibiotika endast när det är nödvändigt och att välja rätt antibiotika och dosering. För mer information kontakta Strama på telefon 08-737 70 00.

Mycket viktigt varningar: Stamma, PPS / november 2008

Community acquired pneumonia

- Amoxicillin
- Clindamycin

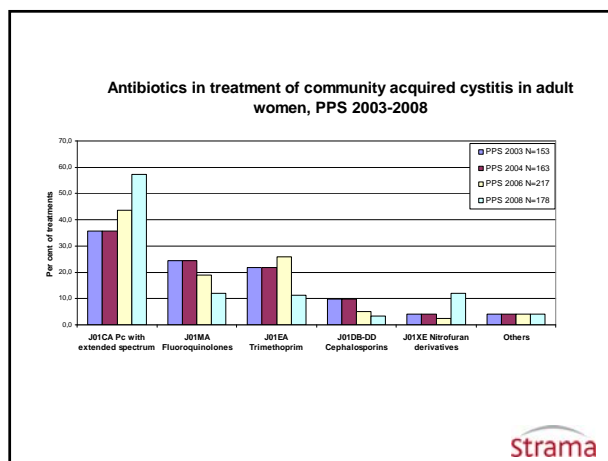
Uncomplicated cystitis in women

- Nitrofurantoin
- Fosfomycin
- Amoxicillin

Perioperativt profylax

- Klindamycin och/eller Nitrofurantoin - viktig åtgärd före åtgärden
- Clindamycin och/eller Nitrofurantoin

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Guidelines does not work unless
they are implemented!

Implementation does not work unless
there is local commitment and
educational outreach!

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