

International Forum on Infection Prevention and Control Broadcast live from the Infection Prevention Society 2013 conference

Infection Prevention 2013
Broadcast live from ... ips Infection Prevention Society
ExCeL London
30th September - 2nd October 2013

International Forum on Infection Prevention and Control

Successes and Challenges



Professor Dale Fisher - Singapore
Robert Garcia - USA
Professor Hugo Sax - EU
Carole Fry - UK

www.webbertraining.com October 1, 2013

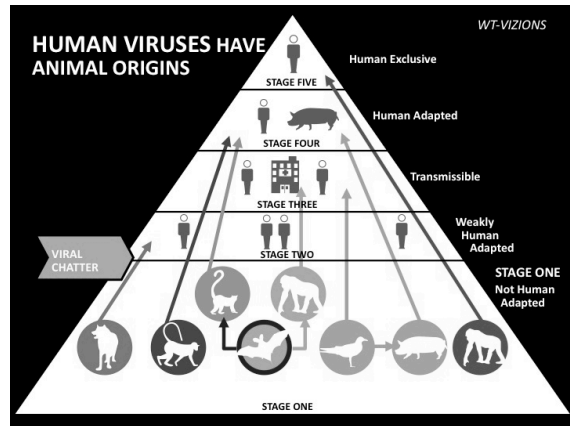
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An Asian Perspective

Associate Professor Dale Fisher
Head and Senior Consultant
Division of Infectious Diseases
University Medicine Cluster
National University Hospital
Singapore

www.webbertraining.com October 1, 2013

- Some success in target programmes
 - Bundles
 - MRSA, VRE
 - Hand Hygiene
- Slow off the mark in CRE's
- Major concern is in health infrastructure to manage a pandemic
 - Likely accelerators of transmission



H5N1 2003-2013



Now endemic in poultry in several countries inc Egypt, Indonesia, Bangladesh
Countries: 15
Infections: 637 (upto Aug 29, 2013)
Deaths: 378
Cost.....

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SARS

- 8,422 cases and 916 deaths

FIGURE 1. Chain of transmission among guests at Hotel M - Hong Kong, 2003

CHAIN EFFECT

20-minute visit, one person dead, two ill

POLIO HAS RETURNED to AMERICA!

NOTICE. PREVENTIVES OF CHOLERA!

Dengue serotypes 1970 to 2004

- 230 million cases annually
- 500,000 hospitalised
- 25,000 deaths

Nature Reviews | Microbiology

Global dissemination of methicillin-resistant Staphylococcus aureus (MRSA).

The white arrows indicate the early movements of healthcare-associated MRSA around the world. Note lack of data for some regions.

Legend:
 Healthcare-Associated MRSA
 Community-Associated MRSA
 Methicillin-resistant *S. aureus*

The Global Spread of Healthcare-Associated Multidrug-Resistant Bacteria: A Perspective From Asia. JS Molton, PA Tambyah, BSP Ang, ML Ling, DA Fisher. Clin Infect Dis. 2013 May;56(9):1310-8.

Global dissemination of carbapenem resistant enterobacteriaceae (CREs).

Note lack of data for some regions.

Legend:
 CRE positive Enterobacteriaceae
 NDM-1 positive Enterobacteriaceae

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INFLUENZA PANDEMIC MORTALITY IN AMERICA AND EUROPE DURING 1918 AND 1919

Between April 2009 and January 2010, 209 countries had reported 14141 deaths

What if MERS reached an Asian Hospital?

Hospital Outbreak of Middle East Respiratory Syndrome Coronavirus

Between April 1 and May 23, 2013, a total of 23 cases of MERS-CoV infection were reported in the eastern province of Saudi Arabia. As of June 12, a total of 15 patients had died, 6 had recovered, and 2 remained hospitalized.

- 21 of the 23 cases were acquired by person-to-person transmission
- hemodialysis units, intensive care units, or in-patient units
- three different health care facilities. Sequencing data from four isolates revealed a single
- A family members, 2 health care workers



- "It is time to close the book on infectious diseases, and declare the war against pestilence won"
- Dr. William H. Stewart, US Surgeon General 1965-'69

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**HAI Prevention in the United States:
Successes and Challenges**

Robert Garcia, BS, MMT(ASCP), CIC
Infection Control Preventionist

www.webbertraining.com October 1, 2013

Disclosure

- Robert Garcia is a member of the Speaker's Bureau of Sage Products, Inc.

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Today's Objectives

- Review major successes in the prevention of VAP and CLABSI in the United States
- Define future challenges in the prevention of VAP and CLABSI in the United States

"The Sixth Evolutionary Era of Our Profession: Interventions & Implementation for the Prevention of Healthcare Associated Infections"
(pending publication, AJIC, 2013)

IC Evolution since 2000 – Robert Garcia
 Leadership – Chris Nutty
 ICP programs – Sue Barnes
 Hand Hygiene – Robert Garcia
 Surgical Site Infections – Charles Edmiston
 Ventilator-associated Pneumonia – Linda Greene
 Central Line Associated Bloodstream Infections – Rabih O. Darouiche, MD
 Catheter-associated UTIs – Robert Garcia
 MDROs – Robert Garcia
Clostridium difficile – Russ Olmsted & Charles Edmiston
 Environmental contamination and disinfection – D. Weber, MD, W. Rutala
 Pediatrics – Craig Gilliam
 Guidelines and Regulations – William Jarvis, MD


Ventilator-Associated Pneumonia

NHSN, ICU VAP Rates

2006									
Type	# ICUs	# VAP	VDs	Mean	10%	25%	50%	75%	90%
Cardiac	48	100	35,727	12.3	0.0	0.0	1.3	4.5	6.6
Medical	64	339	109,277	3.1	0.0	0.9	2.8	4.6	7.2
Surgical	61	384	73,205	5.2	0.0	1.8	4.1	6.0	10.0
Neurosurg	15	97	13,799	7.0					
Peds	32	81	32,936	2.5	0.0	0.0	1.0	2.8	6.1
2011									
Type	# ICUs	# VAP	VDs	Mean	10%	25%	50%	75%	90%
Cardiac	161	138	128,369	1.0	0.0	0.0	0.0	1.3	3.8
Medical	89	188	174,412	1.1	0.0	0.0	0.7	1.8	3.0
Surgical	70	290	122,472	2.4	0.0	0.6	1.7	3.5	6.4
Neurosurg	66	161	70,894	2.3	0.0	0.0	0.7	3.0	5.9
Peds	121	146	135,585	1.1	0.0	0.0	0.0	1.4	3.2

Available at: <http://www.cdc.gov/nhsn/dataStat.html>

U.S. CDC: Improving Surveillance for Ventilator Associated Events in Adults



- New Definition
 - Detects complications and conditions including, but not limited to VAP
 - Requires a minimum period of time on ventilator
 - Focuses on readily available, objective, clinical data
 - Does not include chest radiograph findings
- The goal for implementation in NHSN (National Healthcare Safety Network) is January 2013.

The New VAE Algorithm

- It is a surveillance algorithm and is not intended for use in the clinical management of patients
- There are 3 Tiers of the new VAE definition

Tier	Category	Elements
1	Ventilator Associated Conditions	FiO ₂ , PEEP
2	Infection-Related Ventilator-Associated Complications	Fever or WBC and New antimicrobial agent
3	Possible and Probable VAP	Purulent secretions and/or other positive laboratory evidence

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VAP Challenges


- International standards for VAP definition
- Use of subglottic secretion suction devices
- Use of silver coated tracheostomy tubes
- Use of tapered, cylindrical endotracheal tubes
- Implementation of comprehensive oral care, including frequency of protocols
- Extend intervention efforts to HAP

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Central Line-Associated Bloodstream Infections

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CLABSI Reductions, U.S.



- National reporting from all 50 U.S. States via NHSN
- Used Standardized Infection Ratio (SIR) metric
- SIR = observed # of HAIs/predicted # of HAIs
- A 41% reduction in CLABSI rate since 2008

<http://www.cdc.gov/national-annual-sir/index.html>

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CLABSI Challenges

- Increasing compliance with maintenance bundles
- Appropriate use of skin antiseptics
- Type, disinfection, and replacement of needless connectors
- CLABSI prevention among neonates
- CLABSI prevention among immunocompromised patients
- Decolonization of patients with central lines with chlorhexidine

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Meta-Analysis on Daily Bathing with CHG HA-BSI

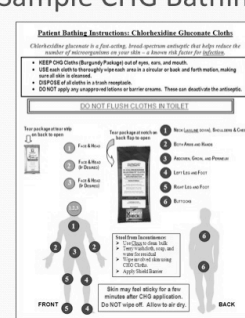
Study or Subgroup	Experimental Events	Control Events	Total	Weight	M-H, Random, 95% CI	Odds Ratio	Odds Ratio
						M-H, Random, 95% CI	
1.2 CHG Bathing							
Bevan et al. 2007	2	1008	1010	3.3%	0.16 [0.06, 0.76]		
Carroll et al. 2005	4	1995	2000	5.3%	0.49 [0.29, 0.72]		
Chen et al. 2005	14	1472	1486	10.5%	0.16 [0.11, 0.22]		
Covert et al. 2007	171	1684	1855	17.1%	0.46 [0.14, 0.80]		
Wardlaw et al. 2009	79	702	781	11.2%	0.49 [0.21, 0.82]		
Subtotal (95% CI)	3339	32218	35557	93.3%	0.47 [0.31, 0.71]		
Total events	222	390					
Heterogeneity: Tau ² = 0.13; I ² = 11.07; H ² = 4; P = 0.03; I ² = 64%							
Test for overall effect: Z = 5.53 (P < 0.0001)							
1.2.2 CHG Integrated Cloths							
Reardon et al. 2007	9	2230	2239	8.2%	0.19 [0.10, 0.40]		
Diener and Carter 2010	8	1348	1356	8.0%	0.15 [0.14, 0.48]		
Kaplan et al. 2010	4	1780	1784	5.2%	0.28 [0.09, 0.85]		
Waller and Silligren 2009	7	2000	2007	5.3%	0.24 [0.06, 0.74]		
Hennrich et al. 2010	27	1184	1211	11.8%	0.18 [0.12, 0.48]		
Popovich et al. 2009	2	1010	1012	4.6%	0.13 [0.05, 0.30]		
Popovich et al. 2010	17	3792	3809	9.2%	0.14 [0.11, 0.21]		
Subtotal (95% CI)	8416	37790	46206	92.7%	0.44 [0.31, 0.62]		
Total events	69	173					
Heterogeneity: Tau ² = 0.19; I ² = 12.85; H ² = 4; P = 0.01; I ² = 13%							
Test for overall effect: Z = 3.78 (P = 0.0002)							
Total (95% CI)	6775	10617	17392	100.0%	0.44 [0.31, 0.59]		
Total events	291	517					
Heterogeneity: Tau ² = 0.13; I ² = 16.17; H ² = 1.1; P = 0.06; I ² = 38%							
Test for overall effect: Z = 5.32 (P < 0.0001)							
Test for subgroup differences: Chi ² = 0.15, df = 1; P = 0.68; I ² = 0%							

- One randomized and 11 nonrandomized trials
- 291 CHG pts. with BSI in 67,775 PDs; 557 control pts. With BSI in 69,617 PDs
- Odds ratio 0.44%

Ohoro J.C, et al. The efficacy of daily bathing with chlorhexidine for reducing healthcare-acquired bloodstream infection. A meta-analysis. ICHE 2012;33:257-67.

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Sample CHG Bathing Protocol



- Study outlining daily CHG bathing flow chart:
- Holder C, et al. Daily bathing with chlorhexidine in the ICU to prevent central line-associated bloodstream infections. JCOM 2009;16:509-13.

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**Thank You!
Questions?**

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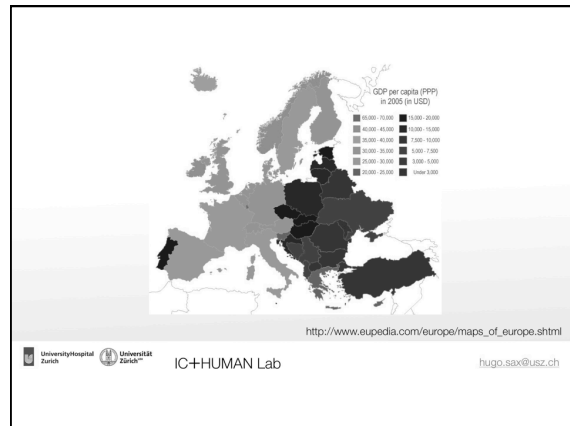
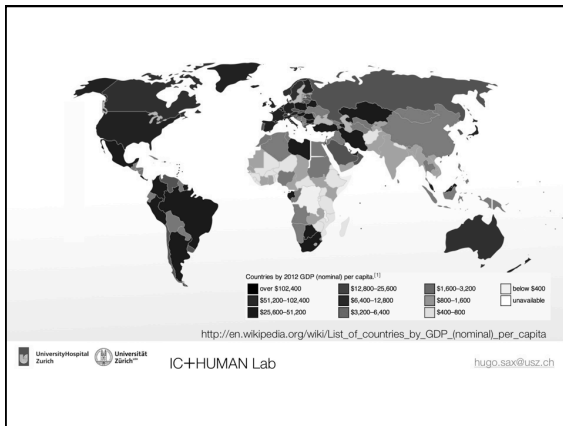
Success and failure in infection control

Hugo Sax, MD
Division for Infectious Diseases and Infection Control



Europe

UniversityHospital Zurich Universität Zürich



Success

UniversityHospital Zurich Universität Zürich

IC+HUMAN Lab hugo.sax@usz.ch

European Union
Council Recommendation: 2009/C 151/01

On patient safety, including the prevention and control of healthcare associated infections.

Paragraph 8. c)

(c) establish or strengthen active surveillance systems by:

(i) at national or regional level:

— organising prevalence surveys at regular intervals, as appropriate;

<http://eur-lex.europa.eu>


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Point prevalence survey of healthcare-associated infections and antimicrobial use in European acute care hospitals
2011–2012



www.ecdc.europa.eu

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With more than 1 000 hospitals in 30 countries, ECDC's point prevalence survey (PPS) of healthcare-associated infections (HAIs) and antimicrobial use is the largest survey of its kind ever performed in Europe.

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Objectives

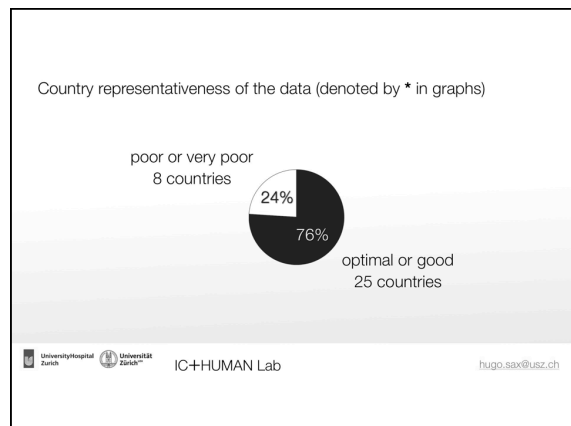
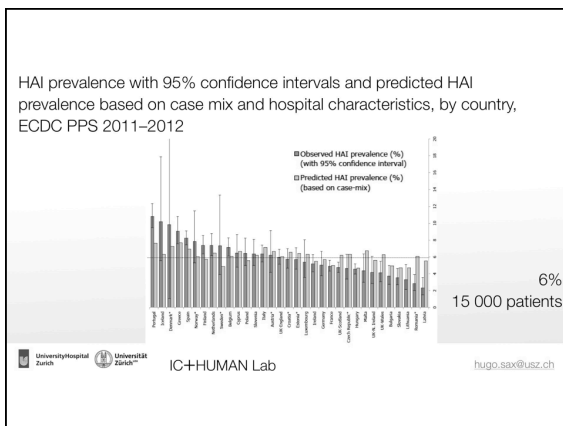
- Burden of disease
- Antimicrobial use
- Healthcare-associated infections, stratified

Disseminate
Awareness
Issues and priorities
Standardized tool for quality improvement

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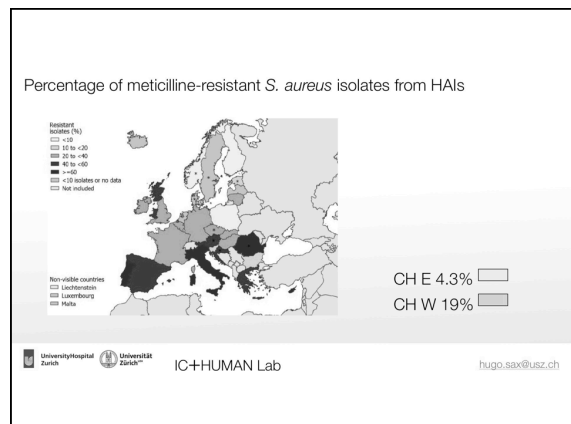
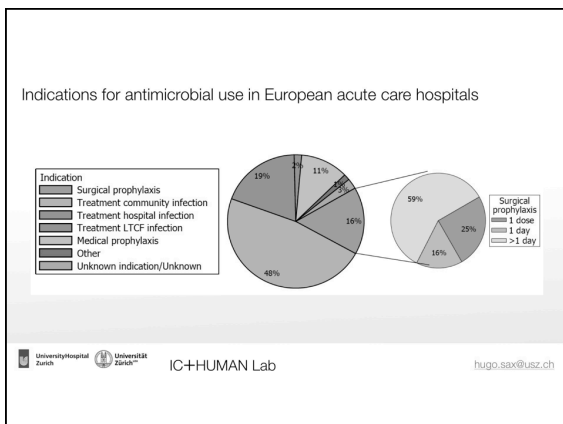
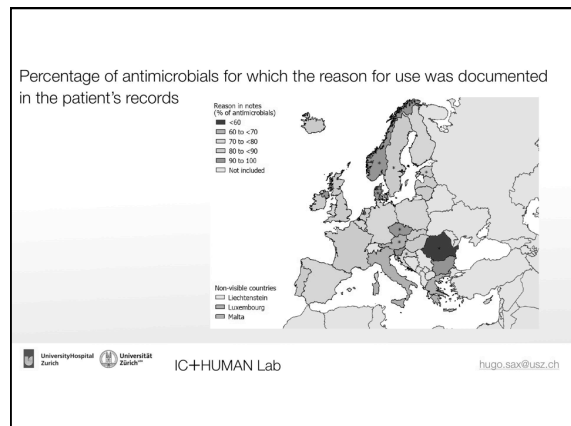
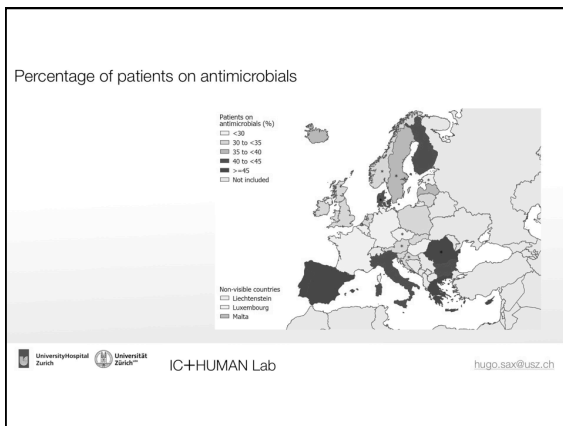
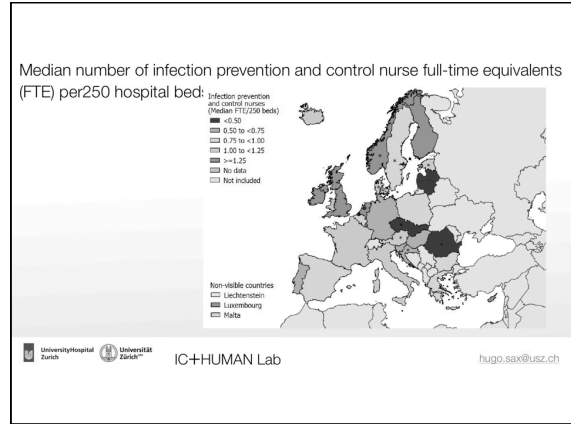
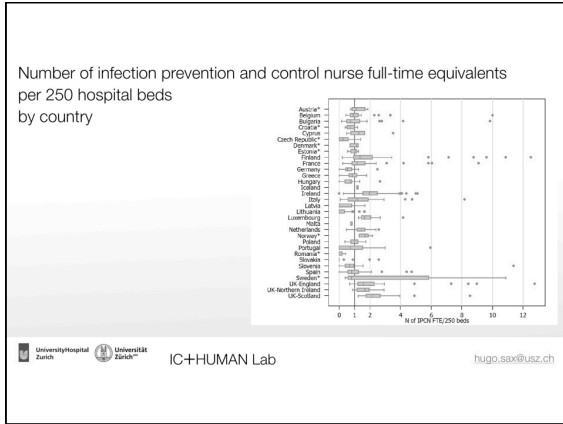
Results (Failure-s included)

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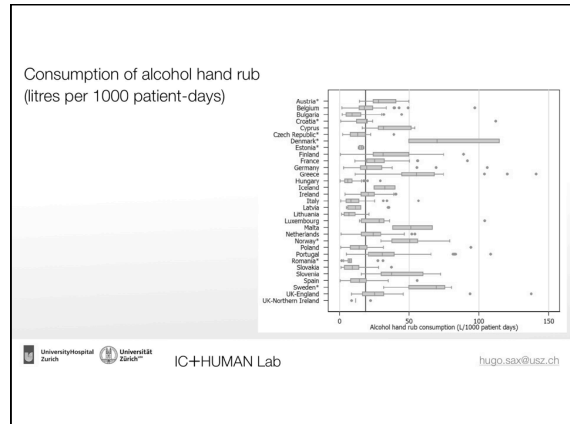
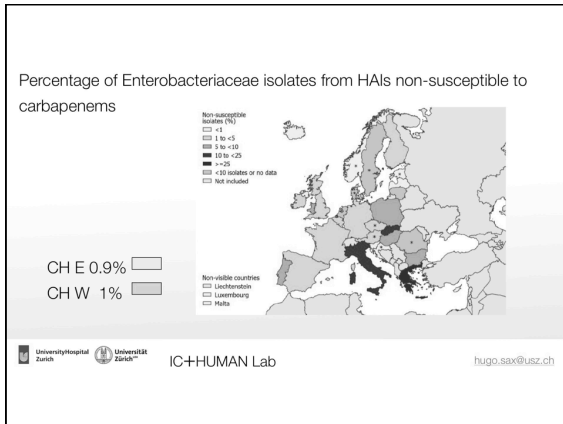
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In Europe, on each single day 80'000 patients suffer from at least one healthcare-associated infection.

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Department of Health

Carole Fry
A view from England

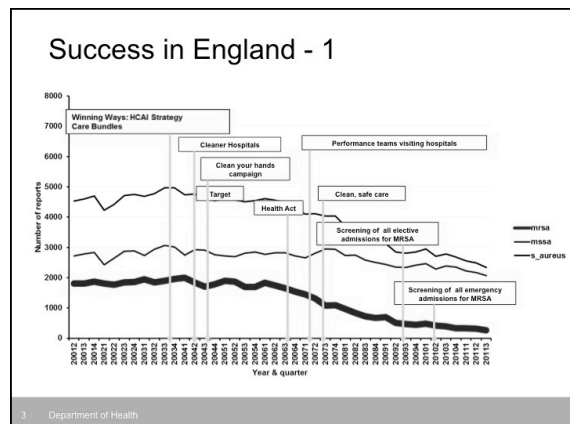
The media view

MRSA..THE FORGOTTEN MASSACRE

OUR SQUALID HOSPITALS

The deadly superbug that puts Britain's hospitals to shame

THE PLAGUE 2004
Filthy NHS wards kill 5,000 a year



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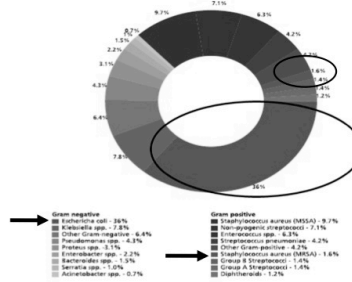
Success in England - 2

- Spot light
- Management and organisational awareness
- Clinician engagement
- Change in nomenclature
HAI → healthcare associated infection
infection control → infection **prevention** and control

4 Department of Health

Future challenges - 1

Figure 1.1: Organisms causing blood stream infections in adults in England, Wales and Northern Ireland, April 2011-March 2012



5 Department of Health

Future challenges - 2

- Global problem
- Increased incidence of Gram negatives
- Antimicrobial resistance
- Behavioural change
- Sustainability

6 Department of Health

Acknowledgements:
Susan Hopkins – Public Health England
CMO annual report

ABOUT US PUBLIC INFO JOINING IPS EVENTS & PROFESSIONAL DEVELOPMENT

IPS Infection Prevention Society
www.ips.uk.net
Patrons Professor Didier Pittet and Professor Tricia Hart

30th Sept - 2nd Oct 2013 Infection Prevention 2013
Monday 30th September 2013 Infection Prevention in Care Homes One Day Conference Contributing to Safety & Quality
Tuesday 1st October 2013 Infection Prevention in Perioperative Practice
Tuesday 1st October 2013 Infection Prevention in Dentistry
Wednesday 2nd October 2013 Infection Prevention in General Practice One Day Conference
Friday 25th October 2013 IPS Northern Ireland & Ireland Branches South Conference 2013

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