UK Prevalence Survey

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Aims

- Briefly describe surveillance methods
- Describe the background to the survey and the process of development
- Outline the survey methodology
- Provide a brief overview of the preliminary results

HCAI Prevalence Survey 2006

Adapted from the Preliminary Report

Presented at HIS Conference
Amsterdam
October 2006

On behalf of:

HIS/ICNA Steering Group (England)
NPHS, Wales
HISC, Northern Ireland
Health Service Executive, Republic of Ireland

Types of Surveillance

- Prospective
  - Carried out contemporaneously during a patient stay. For example following all patients who have a central line inserted from the point of insertion to the point of removal
- Retrospective
  - Carried out after the event of hospitalisation or healthcare contact. For example, reviewing the clinical records of all patients in Intensive Care over a three-month period for signs of infections

Types of Surveillance

- Targeted surveillance
  - The surveillance of specific infections in specific patients. For example, urinary tract infection in patients undergoing gynaecological surgery
- Alert organism surveillance
  - Surveillance of infections due to specific organisms of clinical relevance, for example, MRSA and *Clostridium difficile*

Types of Surveillance

- Incidence survey
  - The number of cases of infection that occur in a cohort of patients usually over an extended period of time
- Prevalence survey
  - The number of infections present when surveyed over a defined period in time – a 'snapshot'

Background and Process (1) UK and Ireland

- In 2004 HIS was approached by the DH (England) to conduct a HCAI Prevalence Survey in England
- Steering Group convened in collaboration with ICNA
- HIS in conjunction with the ICNA issued invitations to DHs in Wales, Scotland, Northern Ireland and the ROI to participate
- All agreed

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Background and Process (2)

- To provide Department of Health with baseline information on the total prevalence of HCAI in acute hospitals
- Information to be made available to guide priority setting in the development of strategy and policy
- To develop a consistent methodology for repeated prevalence surveys will allow the impact of measures taken nationally to reduce the burden of HCAI to be evaluated through an analysis of trends over time

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Background and Process (3)

- Include healthcare associated infections that are now part of the mandatory surveillance programme in England
  - MRSA and GRE bacteraemias
  - Surgical site infections (orthopaedics)
  - *C. difficile* infections
- Urinary tract infection
- Ventilator associated pneumonia
- Outbreaks of Norovirus infection (because of their impact on health service delivery)

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Background and Process (4)

- Use identical methodologies (CDC Definitions of Infection)- these will allow aggregation of data from each country
- To include data from Scotland, Wales, Northern Ireland and the Republic of Ireland to enable a UK and Ireland analysis to be undertaken

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Background and Process (5)

- Identify the priority areas for targeted surveillance of incidence
- Identify the priority areas for interventions to prevent and control HCAI
- Determine the acceptability, feasibility and cost of undertaking prevalence surveys
- Production of a suitable methodology for repeated prevalence surveys which give comparable information

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Background and Process (6) UK and Ireland

- Scotland, however, were already planning a prevalence survey which included an economic analysis of the burden of HCAI
- DH (England) funded the HIS/ICNA survey in England and HISC asked to take the lead
- DHs in Wales, Scotland, Northern Ireland and the ROI also funded their respective surveillance centres to undertake the survey

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Background and Process (7)
UK and Ireland

- Agreement from all 5 countries to employ the same core dataset
- Additional agreement to use the CDC definitions of infection
- Scotland just completed data collection (results available in 2007)
- Data collection in other countries performed between February and May 2006

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Background and Process (8)
England & Northern Ireland

- Appointment of central data coordinator in England (Joanne Enstone)
- 10.5 regional coordinators (+1 Northern Ireland)
- Intensive 4 day training course for coordinators and HIS/ICNA supporters
- Regional symposia organised for IP&C teams and surveillance nurses

Survey Protocol

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Background and Process (9)
Data Collection
England, Wales, Northern Ireland & ROI

- Protocol & survey questionnaire were identical in England, Wales, Northern Ireland and ROI
- Optical scanning technology used to capture data
- Scanned images retained for validation purposes
- Exported to SPSS for final data cleansing and analysis

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Definitions used

CDC DEFINITIONS OF NOSOCOMIAL INFECTIONS

Horan TC, Gaynes RP.
Surveillance of nosocomial infections.
Hospital Epidemiology and Infection Control, 3rd ed.
Philadelphia:Lippincott
Williams & Wilkins, 2004:1659-1702

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What is a healthcare-associated infection?

A healthcare-associated (or nosocomial) infection is a localised or systemic condition resulting from an adverse reaction to the presence of an infectious agent(s) or its toxins

that meet the following criteria:

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Criteria for healthcare-associated infection

- Occurs in the survey population

and

- There is no evidence that it was present or incubating at the time of admission to this hospital unless the infection was related to a previous admission to this hospital (i.e. the hospital under surveillance)

and

- It meets the criteria for a specific infection site

"For most bacterial nosocomial infection, this means that the infection usually becomes evident 48 hours (i.e. typical incubation period) or more after admission."

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What infections were collected?

All active healthcare associated infections active at the time of the survey

includes

healthcare associated infections for which the patient is undergoing antimicrobial treatment on the day of the survey

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Infection sites

- **13 major sites of infection**
  - Emphasis on four main system infections:
    - Bloodstream infection
    - Pneumonia
    - Urinary tract infection
    - Surgical site infection
  - **9 other healthcare-associated infections:**

Bone and joint	Central nervous system
Cardiovascular system	Gastrointestinal system
Eye, ENT, or Mouth	Systemic infection
Reproductive tract	Skin and soft tissue infection

Lower respiratory tract infection (other than pneumonia)

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Related questions

- Only the four main infections will be identified to specific site level
- All HCAI will include questions on whether:
  - MRSA was the causative organism
  - the infection was device or procedure related
  - the patient developed a secondary bloodstream infection

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Other healthcare-associated infections

9 other healthcare-associated infections:

- Bone and joint
- Central nervous system
- Cardiovascular system
- Gastrointestinal system
- Eye, ENT, or Mouth
- Systemic infection
- Reproductive tract
- Skin and soft tissue infection
- Lower respiratory tract infection (other than pneumonia)

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UK Prevalence Survey Preliminary Results

The following slides have been provided for the purpose of this Teleclass only. Further dissemination is prohibited

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Hospitals and Patients

	Number of hospitals	Number of Trusts	% of eligible Trusts	Number of patients	% of patients
UK and Republic of Ireland*	273	-	-	75,763	100%
England	190	130	77%[1]	58,795	77.6%
Wales	23	13	100%	5,825	7.7%
Northern Ireland	15	12	100%	3,625	4.8%
Republic of Ireland	45	-	-	7,518	9.9%
Jersey	1	-	-	162	-

*Excludes Scotland and Jersey

[1]130/169

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Prevalence Surveys

	Year	Location	Number of hospitals	Number of patients	Increase in patients surveyed	Prevalence Rate
First National Prevalence Survey[1]	1980	England & Wales	43	18,186	-	9.2%
Second National Prevalence Survey[2]	1993 94	UK & Ireland	157	37,111	104%	9.0%
Third National Prevalence Survey	2006	UK & Ireland*	273	75,763	317%	7.6%

[1]Meers *et al.* 1980 [2]Emmerson *et al.* 1996

*Excluding Scotland and Jersey

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HCAI Prevalence Rate

	Prevalence Rate	95% CI
1993/94 Prevalence Study	9.0%	8.8 - 9.3
UK and ROI (excluding Scotland)	7.6%	7.4 – 7.8
England	8.2%	8.0 – 8.4
Wales	6.3%	5.7 – 7.0
Northern Ireland	5.5%	4.8 – 6.3
Republic of Ireland	4.9%	4.4 – 5.4

NB Jersey excluded from general analysis

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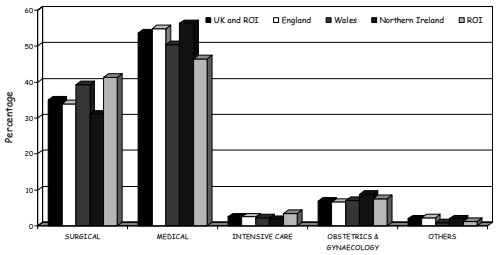
Proportions of Ward Specialties Surveyed by Country



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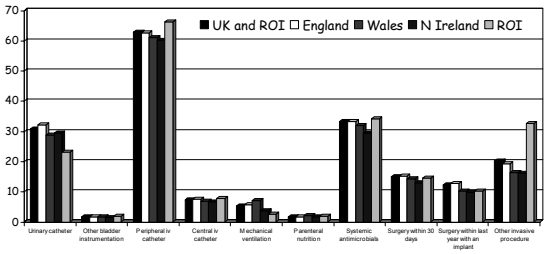
Percentage of Patients with Specific Risk Factors



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Antimicrobial use in UK and ROI

- 33.2% of patients were currently receiving systemic antimicrobials
- 46.7% of those currently receiving systemic antimicrobials were on IVs

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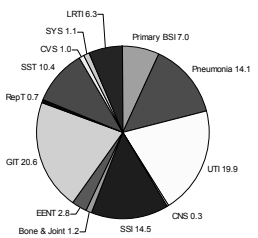
HCAI as a Proportion of Total HCAI- UK and RoI



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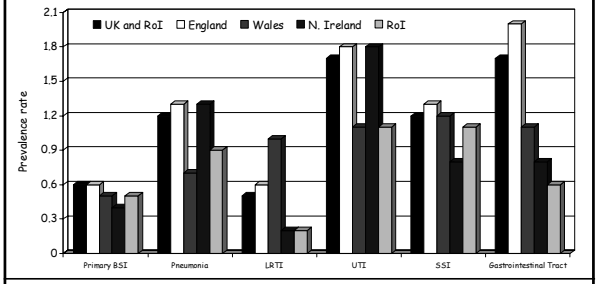
Prevalence of Specific HCAI (1)



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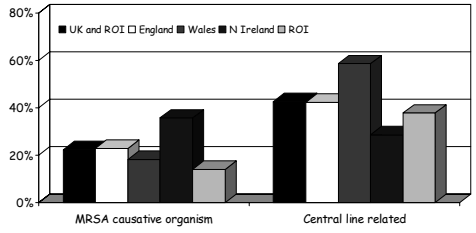
Primary Bloodstream Infection



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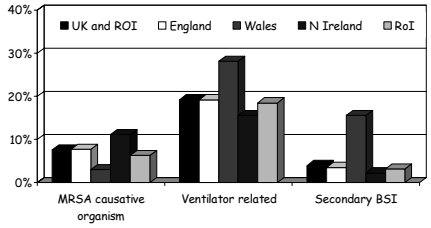
Pneumonia



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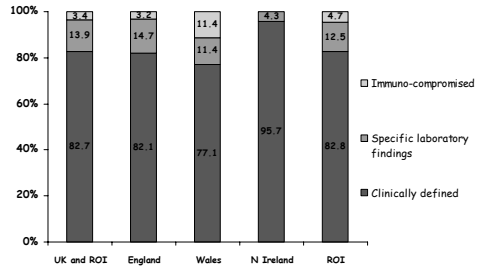
Pneumonia – Type



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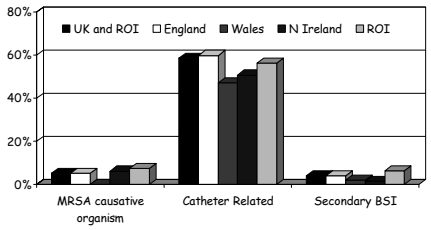
UTI



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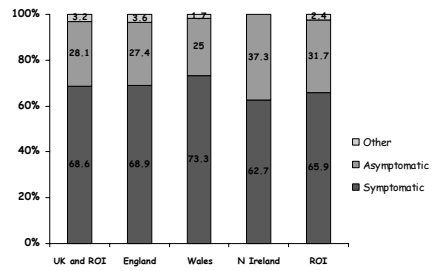
UTI – Type



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SSI

	UK and ROI	England	Wales	N Ireland	ROI
Prevalence rate, i.e. SSI per 100 patients surveyed	1.2 %	1.3 %	1.2 %	0.8 %	1.1 %
SSI rate, i.e. patients who had surgery and developed an SSI	4.2%	4.2%	5.0%	3.1%	4.3%

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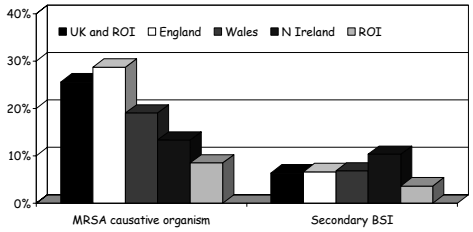
SSI



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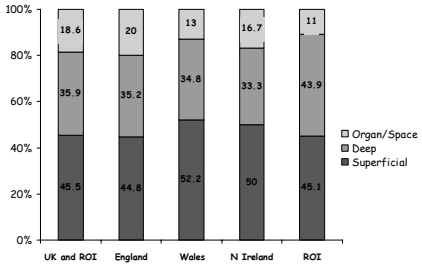
SSI – Infection type



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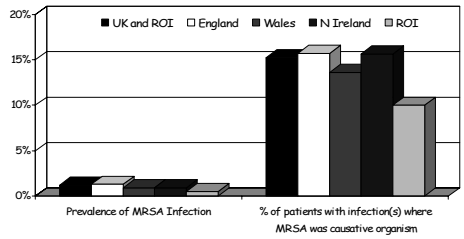
MRSA



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Percentage of HCAIs MRSA Causative Organism (1)

HCAI Site (Number)	UK and ROI	England	Wales	N Ireland	ROI
Primary Bloodstream Infection	22.3 % (96/430)	22.9 % (82/358)	18.2 % (4/22)	35.7% (5/14)	13.9 % (5/36)
Pneumonia	7.6 % (65/853)	7.7 % (55/711)	3.0 % (1/33)	11.1 % (5/45)	6.3 % (4/64)
LRTI	17.9 % (69/385)	16.2 % (50/308)	20.0 % (11/55)	33.3 % (3/9)	38.5 % (5/13)
UTI	5.1 % (60/1167)	5.2 % (50/969)	0.0 % (0/50)	6.1 % (4/66)	7.3 % (6/82)

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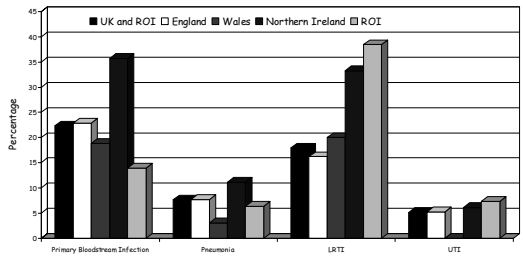
Percentage of HCAIs MRSA Causative Organism (1)



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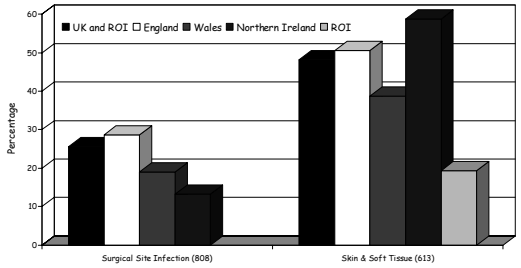
Percentage of HCAIs MRSA Causative Organism (2)



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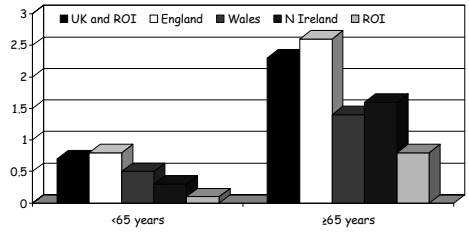
Prevalence of *C difficile* by Age



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Feedback

- Secure web-based data analysis and presentation tool
- Developed by WHAIP team in Cardiff

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Future

- Individual hospital data available on line January 2007 at hospital and trust level
- Hospitals can make use of local data to target interventions appropriately
- Reports to each DH
- UK wide main publication and supplementary publications

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The Next Few Teleclasses

January 18 ***Personal Hygiene Measures to Prevent Influenza Transmission***
… with Dr. Elaine Larson, Columbia University
Sponsored by Deb Canada www.debcanada.com

January 25 ***Twenty First Century Plagues***
… with Prof. Robert Pratt, Thames Valley University

February 8 ***Influenza – Of Poultry, Pets and People***
… with Dr. Corrie Brown, University of Georgia

February 15 ***Fresh Produce and Human Pathogenicity***
… with Prof. Keith Warriner, Guelph University

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