Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

hpsc

Enhanced EARS-Net Surveillance

REPORT FOR 2013 DATA

Key Points

- **Enhanced data were collected on 1908 EARS-Net blood-culture isolates for 2013, from 11 laboratories**
- **Results for 2013 are broadly in line with data from previous years:**
  - **Reduction in the proportion of *S. aureus* BSI due to CVC as source seen in 2012 has reversed to 23% for MRSA and 20% for MSSA BSI**
  - **The most common primary sources of enterococcal BSI were CVC and intra-abdominal/GI tract infection**
  - **Majority of fluoroquinolone resistant *E. coli, K. pneumonia* and *P. aeruginosa* BSI were healthcare-associated in contrast to fluoroquinolone susceptible *E. coli*. The most common source of *E. coli* BSI was urinary tract infection with 5% being associated with the presence of a urinary catheter**
  - **Increase in potentially hospital-acquired PNSP BSI continues**
- **A new form of enhanced EARS-Net surveillance was piloted in 2013**

In this report

Abbreviations Used Here

BSI – Bloodstream Infections

CVC – Central Venous Catheter

EARS-Net – European Antimicrobial Resistance Surveillance Network

MRSA – Meticillin Resistant *Staphylococcus aureus*

MSSA – Meticillin Sensitive *Staphylococcus aureus*

PNSP – Penicillin Non-Susceptible *S. pneumoniae*

PSSP – Penicillin Susceptible *S. pneumoniae*

PVC – Peripheral Venous Catheter

VRE – Vancomycin Resistant Enterococci

VSE – Vancomycin Sensitive Enterococci

From the HPSC website click on "**Topics A-Z**", then on "**Enhanced Bacteraemia Surveillance**" for the appropriate page.

Also visit the HPSC website for information on Care Bundles, Hand Hygiene, Antibiotic Resistance and Antibiotic Consumption

On behalf of the Irish EARS-Net Steering Group with thanks to all the participating hospital-laboratories

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Introduction

The European Antimicrobial Resistance Surveillance Network (EARS-Net) collects information on antibiotic resistance of bacteria causing invasive infection. Since 2004, additional clinical information has been collected including risk factors and sources of infection and patient outcome. This report summarises information on patients with bloodstream infection (BSI) from 2006 to end of 2013.

Results

Data from 11 laboratories were available. Enhanced data records collected for 2013 (n = 1908) which represents 36.6% of all the isolates of the core EARS-Net dataset for the same time.

Table 1. Overview of data including organism, antibiotic resistance, age, gender and onset of bloodstream infection.

		Total for 2013	Percent female	Mean age in years	Detected <48 hours after admission	Detected >5 days after admission
Staphylococcus aureus	Meticillin Resistant (MRSA)	**97**	25%	69.0	59%	34%
	Meticillin Susceptible	**327**	37%	57.7	66%	23%
Streptococcus pneumoniae	Penicillin non-Susceptible	**21**	29%	59.3	67%	19%
	Penicillin Susceptible	**89**	52%	61.5	90%	4%
Enterococci	Vancomycin Resistant	**84**	45%	66.2	18%	76%
	Vancomycin Sensitive	**196**	40%	65.3	41%	47%
Escherichia coli	Fluoroquinolone Resistant	**234**	46%	72.1	73%	22%
	Fluoroquinolone Susceptible	**672**	56%	67.7	77%	16%
Klebsiella pneumoniae		**117**	37%	65.7	49%	41%
Pseudomonas aeruginosa		**71**	44%	67.5	54%	34%

Main findings for 2013

Please see Appendix 1 for a complete breakdown for all organisms.

1. ***S. aureus*** **(Appendix 1A)**
   - 69% MRSA and 63% MSSA bloodstream infection were classified as healthcare-associated
   - Between 2010 and 2012, there had been a reduction in the proportion of *S. aureus* bloodstream infection due to CVC as source, however, this trend has reversed in 2013:
     - MRSA 23% CVC, 3% PVC
     - MSSA 20% CVC, 8% PVC
   - The most common risk factors reported were recent surgery, malignancy and stay in an intensive care unit

2. **Enterococcal BSI (Appendix 1D)**
   - The majority of VRE (92%) and VSE (74%) bloodstream infection were healthcare-associated
   - The most common primary sources of enterococcal bloodstream infection were CVC and intra-abdominal/GI tract infection

3. **Pneumococcal BSI (Appendix 1B)**
   - There was a shift in the way *S. pneumoniae* BSI are acquired. For Penicillin Non-Susceptible *S. pneumoniae* (PNSP), the proportion of isolates that were detected within two days after admission decreased from 95% in 2011 to 95% in 2012 and 67% in 2013, and for Penicillin Susceptible *S. pneumoniae* (PSSP) this has decreased from 92% in 2011 to 77% in 2012 and 90% 2013.. The number of PNSP BSI isolates for which there is enhanced information is small, therefore, these results must be viewed with caution
   - Respiratory tract infection remains the most common source of pneumococcal bloodstream infection

   Further information on Invasive Pneumococcal Disease can be found on the HPSC website: http://www.hpsc.ie/hpsc/A-Z/VaccinePreventable/PneumococcalDisease/EpidemiologicalData/

4. ***E. coli*** **(Appendix 1C)**
   - The majority of fluoroquinolone resistant *E. coli,* bloodstream infection were healthcare-associated in contrast to 44% fluoroquinolone susceptible *E. coli.*
   - The most common source of *E. coli* bloodstream infection was urinary tract infection with 5% being associated with the presence of a urinary catheter.

5. ***K. pneumonia*** **&** ***P. aeruginosa*** **BSI (Appendix 1E)**
   - Similar findings in line with *E. coli* BSI, although respiratory tract was also indicated as source organ site.

   Further information on EARS-Net can be found on the HPSC website: http://www.hpsc.ie/hpsc/A-Z/MicrobiologyAntimicrobialResistance/EuropeanAntimicrobialResistanceSurveillanceSystemEARSS/

EARS-Net/Enhanced Bacteraemia Surveillance

DRAFT Printable Form

Circle items that apply

PART OF CORE DATA	Same as each EARSS-Net isolate	**EARS-Net Laboratory Code**	
		EARS-Net Hospital Code	
		Patient number	
		Specimen number	
		Organism code	sau | eco | efa | efm | kpn | pae | spn
		Date of admission (dd/mm/yyyy)	
LEVEL 1		**Probable contaminant**	Y | N | *(do not complete the rest of form if 'Y')*
		Healthcare-association	This Hosp | Other Hosp | Long Stay Facility | Community | Unknown |
	Device	**Device (catheter)-associated**	Y | N |
		Type of device	PVC | CVC | CVC-PICC | Dialysis Catheter | Urinary Catheter | Other |
	Implant	**Implant-associated**	Y | N |
		Type of implant (free text)	
	Procedure	**Procedure-associated**	Y | N |
		Name of procedure (free text)	
		Any additional information (free text)	
LEVEL 2		**Source organ site (one from list):**	Respiratory | Gastroinstestinal | Hepatobilliary | Bone and joint | Head and neck | Central nervous system | Urinary tract | Genital tract | Skin/Soft tissue – surgical wound | Skin/Soft tissue–other | Cardiovascular | Other | Unknown |
		Further information on source	
		Neutropaenia	Y | N |
		Acquired in critical care	Y | N |
		Outcome	Discharged | Died | Still in Hosp | Unknown |
		Date of discharge or death (dd/mm/yyyy)	
		Antibiotic exposure (free text list)	

Appendix 1A. Breakdown for **MRSA** – Meticillin Resistant *Staphylococcus aureus* and **MSSA** – Meticillin Sensitive *Staphylococcus aureus*

		MRSA								MSSA							
		2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Demographic	Gender Female	39%	46%	44%	35%	35%	33%	32%	25%	36%	32%	37%	35%	35%	33%	35%	37%
	Mean age in years	68.2	65.8	68.5	68.5	66.4	67.1	69.0	69.0	54.9	55.5	55.8	60.4	57.6	57.7	58.9	57.7
Length of Stay	Less than or equal to 2 days	27%	31%	35%	45%	36%	51%	54%	59%	51%	48%	51%	56%	59%	56%	66%	66%
	Greater than 5 days	52%	48%	43%	46%	54%	37%	37%	34%	25%	25%	26%	29%	26%	26%	21%	23%
Association	Community	5%	7%	8%	11%	12%	19%	21%	19%	23%	18%	24%	24%	23%	22%	25%	24%
	HCA: not in reporting hospital	14%	19%	22%	23%	15%	19%	19%	21%	12%	23%	19%	21%	20%	16%	17%	17%
	HCA: in reporting hospital	74%	68%	67%	64%	72%	51%	51%	48%	58%	51%	51%	52%	54%	50%	47%	46%
	Unknown	7%	5%	3%	3%	1%	10%	9%	12%	7%	8%	6%	4%	2%	12%	12%	13%
Primary source	Central venous catheter	24%	27%	22%	18%	28%	23%	14%	23%	27%	21%	17%	21%	21%	19%	17%	20%
	Peripheral venous catheter	6%	4%	8%	9%	7%	3%	10%	3%	7%	8%	9%	7%	6%	7%	11%	8%
	Intra-abdominal / GI tract	2%	5%	1%	2%	1%	2%	0%	0%	1%	3%	1%	1%	2%	1%	1%	1%
	Respiratory tract	12%	13%	8%	11%	9%	9%	10%	10%	5%	6%	5%	5%	3%	3%	4%	4%
	Skin or Soft tissue	11%	11%	13%	14%	11%	13%	12%	23%	11%	18%	13%	14%	13%	11%	15%	19%
	Surgical wound	2%	3%	2%	3%	1%	1%	1%	5%	2%	3%	3%	4%	3%	3%	3%	3%
	Non-surgical wound	2%	3%	1%	3%	3%	2%	1%	3%	1%	0%	1%	0%	1%	1%	1%	3%
	Urinary tract without catheter	3%	4%	2%	2%	0%	1%	1%	3%	1%	2%	1%	1%	1%	2%	2%	2%
	Urinary catheter	4%	3%	4%	4%	2%	2%	1%	4%	1%	1%	0%	1%	1%	1%	1%	1%
	Other source	3%	2%	3%	3%	10%	5%	8%	3%	5%	2%	5%	7%	14%	7%	6%	7%
	Unknown	32%	26%	37%	34%	28%	40%	41%	23%	39%	36%	44%	40%	36%	46%	39%	34%
Risk factors	Diabetes	8%	7%	7%	8%	9%	11%	5%	11%	7%	3%	6%	7%	8%	6%	9%	6%
	Haemodialysis	9%	9%	11%	13%	11%	8%	3%	3%	16%	4%	5%	9%	14%	12%	8%	8%
	Stay in intensive care unit	13%	10%	9%	10%	11%	10%	10%	15%	8%	8%	8%	4%	9%	8%	7%	5%
	Immunosupression	14%	7%	9%	10%	10%	10%	4%	7%	16%	13%	14%	11%	12%	10%	9%	11%
	Malignancy	16%	25%	25%	17%	21%	14%	9%	13%	15%	21%	19%	18%	17%	15%	17%	16%
	Recent surgery	15%	18%	13%	12%	17%	16%	21%	19%	7%	10%	8%	8%	10%	8%	10%	9%
	Other	21%	26%	18%	25%	28%	14%	12%	10%	19%	22%	18%	19%	17%	18%	17%	15%
Clinical feature	Abscess	1%	3%	2%	1%	4%	5%	3%	5%	3%	1%	6%	4%	6%	4%	5%	6%
	Endocarditis	2%	1%	2%	6%	5%	2%	4%	2%	5%	4%	3%	4%	8%	5%	6%	4%
	Meningitis	0%	1%	1%	0%	0%	0%	0%	0%	1%	0%	1%	0%	1%	0%	0%	0%
	Neutropaenia	0%	2%	1%	1%	0%	0%	0%	1%	0%	0%	2%	2%	1%	0%	1%	2%
	Osteomyelitis	1%	3%	2%	1%	2%	6%	0%	6%	3%	4%	4%	3%	3%	2%	3%	2%
	Septic Arthritis	0%	1%	1%	1%	1%	2%	4%	1%	0%	2%	3%	3%	2%	3%	3%	3%
	Other	1%	9%	11%	11%	13%	10%	8%	11%	1%	6%	9%	11%	13%	12%	15%	10%
Total		**285**	**190**	**180**	**195**	**175**	**109**	**78**	**97**	**347**	**264**	**299**	**470**	**495**	**312**	**260**	**327**

Appendix 1B. Breakdown for **PNSP** – Penicillin non-Susceptible *Streptococcus pneumoniae* and **PSSP** – Penicillin Susceptible *Streptococcus pneumoniae*

		PNSP								PSSP							
		2006	2007	2008	2009	2010	2011	2012	2013	2006	2007	2008	2009	2010	2011	2012	2013
Demographic	Gender Female	74%	48%	44%	48%	44%	33%	39%	29%	40%	43%	41%	43%	48%	40%	41%	52%
	Mean age in years	48.3	53.7	44.5	61.5	65.6	68.6	57.8	59.3	50.4	54.8	52.3	57.1	58.6	60.1	63.5	61.5
Length of Stay	Less than or equal to 2 days	52%	68%	69%	68%	91%	95%	65%	67%	74%	63%	70%	65%	89%	92%	77%	90%
	Greater than 5 days	10%	4%	8%	8%	6%	0%	26%	19%	9%	11%	4%	12%	8%	5%	8%	4%
Association	Community	42%	48%	56%	32%	56%	29%	32%	43%	56%	46%	46%	45%	58%	55%	50%	48%
	HCA: not in reporting hospital	10%	24%	17%	32%	24%	29%	13%	24%	15%	20%	23%	23%	18%	13%	13%	20%
	HCA: in reporting hospital	10%	4%	11%	8%	6%	5%	32%	19%	12%	13%	7%	13%	9%	7%	11%	10%
	Unknown	39%	24%	17%	28%	15%	38%	23%	14%	17%	21%	23%	20%	15%	25%	27%	21%
Primary source	Central venous catheter	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%	0%
	Peripheral venous catheter	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%
	Intra-abdominal / GI tract	0%	0%	6%	0%	3%	5%	0%	5%	1%	1%	0%	2%	1%	2%	0%	0%
	Respiratory tract	48%	60%	50%	64%	62%	38%	65%	67%	65%	66%	61%	64%	59%	62%	57%	67%
	Skin or Soft tissue	0%	4%	0%	0%	0%	5%	0%	5%	1%	0%	1%	1%	1%	1%	2%	0%
	Surgical wound	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%
	Non-surgical wound	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Urinary tract without catheter	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	1%
	Urinary catheter	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Other source	6%	0%	0%	0%	9%	5%	3%	0%	1%	2%	2%	1%	11%	0%	2%	1%
	Unknown	45%	36%	44%	36%	26%	48%	32%	24%	32%	31%	36%	32%	28%	34%	40%	30%
Risk factors	Diabetes	0%	0%	0%	0%	0%	5%	0%	5%	1%	3%	1%	2%	2%	0%	3%	2%
	Haemodialysis	0%	0%	0%	0%	0%	5%	3%	0%	3%	2%	0%	1%	1%	0%	1%	2%
	Stay in intensive care unit	0%	4%	3%	0%	3%	10%	0%	5%	3%	2%	1%	4%	3%	6%	6%	4%
	Immunosupression	3%	16%	8%	8%	9%	10%	23%	5%	10%	13%	9%	12%	11%	13%	12%	10%
	Malignancy	6%	20%	11%	20%	15%	24%	29%	29%	8%	9%	13%	18%	12%	12%	14%	10%
	Recent surgery	0%	0%	0%	0%	0%	0%	10%	0%	1%	0%	1%	2%	1%	0%	1%	2%
	Other	13%	12%	14%	4%	9%	5%	16%	5%	18%	13%	20%	9%	15%	9%	14%	3%
Clinical feature	Abscess	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	2%	1%	1%	1%	1%
	Endocarditis	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	1%
	Meningitis	0%	0%	8%	0%	3%	10%	6%	0%	3%	3%	3%	4%	5%	2%	3%	2%
	Neutropaenia	0%	4%	6%	0%	0%	0%	3%	0%	0%	3%	2%	0%	1%	1%	2%	0%
	Osteomyelitis	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%	1%	1%	0%
	Septic Arthritis	0%	0%	0%	0%	0%	5%	0%	0%	0%	2%	0%	0%	1%	0%	1%	0%
	Other	0%	16%	0%	40%	12%	19%	29%	10%	0%	8%	11%	17%	19%	21%	14%	18%
Total		**31**	**25**	**36**	**25**	**34**	**21**	**31**	**21**	**156**	**114**	**142**	**120**	**138**	**107**	**111**	**89**

Appendix 1C. Breakdown for **FQREC** – Fluoroquinolone Resistant *Escherichia coli* and **FQSEC** – Fluoroquinolone Sensitive *Escherichia coli*

		FQREC								FQSEC							
		2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Demographic	Gender Female	48%	39%	43%	48%	50%	41%	42%	46%	58%	60%	58%	58%	58%	59%	58%	56%
	Mean age in years	69.2	69.2	70.0	71.0	70.3	71.8	71.5	72.1	62.2	66.8	64.7	67.1	67.4	66.3	68.6	67.7
Length of Stay	Less than or equal to 2 days	38%	37%	38%	55%	60%	63%	59%	73%	49%	49%	52%	54%	69%	69%	68%	77%
	Greater than 5 days	40%	34%	34%	20%	31%	30%	28%	22%	24%	17%	19%	21%	23%	21%	16%	16%
Association	Community	15%	11%	15%	23%	18%	18%	17%	20%	33%	28%	31%	32%	38%	38%	38%	38%
	HCA: not in reporting hospital	18%	20%	20%	29%	28%	17%	23%	25%	11%	18%	20%	19%	20%	15%	18%	20%
	HCA: in reporting hospital	48%	50%	44%	37%	42%	49%	39%	30%	34%	27%	28%	31%	32%	30%	25%	25%
	Unknown	19%	19%	21%	12%	12%	16%	21%	25%	22%	27%	21%	19%	10%	17%	19%	18%
Primary source	Central venous catheter	8%	9%	4%	3%	2%	2%	2%	1%	6%	4%	3%	4%	2%	2%	2%	1%
	Peripheral venous catheter	1%	0%	1%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
	Intra-abdominal / GI tract	15%	16%	16%	22%	15%	19%	17%	17%	12%	16%	16%	20%	18%	18%	17%	18%
	Respiratory tract	4%	2%	2%	3%	4%	3%	2%	2%	2%	2%	1%	4%	3%	2%	2%	1%
	Skin or Soft tissue	0%	1%	1%	1%	2%	1%	1%	0%	0%	1%	1%	0%	1%	0%	0%	1%
	Surgical wound	1%	0%	1%	1%	1%	0%	3%	0%	0%	0%	1%	0%	1%	0%	0%	0%
	Non-surgical wound	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Urinary tract without catheter	31%	21%	24%	28%	28%	22%	23%	28%	35%	30%	32%	32%	30%	34%	36%	43%
	Urinary catheter	11%	13%	9%	9%	8%	20%	9%	6%	3%	5%	4%	5%	5%	5%	3%	5%
	Other source	0%	2%	2%	0%	8%	0%	0%	2%	2%	1%	2%	1%	12%	1%	1%	1%
	Unknown	31%	36%	41%	31%	30%	33%	44%	42%	38%	40%	40%	34%	29%	37%	37%	30%
Risk factors	Diabetes	1%	2%	6%	4%	3%	3%	3%	2%	3%	4%	4%	3%	4%	3%	4%	2%
	Haemodialysis	3%	2%	1%	3%	3%	1%	1%	2%	2%	1%	1%	1%	1%	1%	1%	1%
	Stay in intensive care unit	7%	8%	4%	6%	6%	3%	5%	3%	6%	3%	4%	2%	5%	4%	3%	4%
	Immunosupression	20%	14%	7%	12%	16%	7%	11%	11%	14%	7%	9%	10%	13%	14%	12%	8%
	Malignancy	19%	29%	26%	29%	29%	17%	21%	18%	14%	19%	20%	22%	21%	19%	16%	13%
	Recent surgery	9%	12%	10%	14%	14%	10%	8%	7%	9%	7%	7%	6%	8%	7%	3%	5%
	Other	13%	27%	19%	17%	16%	18%	12%	17%	14%	17%	12%	12%	16%	12%	12%	11%
Clinical feature	Abscess	1%	1%	2%	1%	3%	1%	0%	1%	0%	0%	1%	1%	2%	1%	1%	1%
	Endocarditis	1%	0%	1%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
	Meningitis	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%
	Neutropaenia	0%	2%	3%	1%	1%	1%	2%	1%	0%	3%	3%	3%	3%	3%	3%	2%
	Osteomyelitis	1%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%
	Septic Arthritis	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Other	0%	9%	8%	10%	11%	12%	11%	12%	1%	4%	7%	10%	13%	13%	15%	11%
Total		**167**	**161**	**180**	**230**	**274**	**203**	**237**	**234**	**519**	**473**	**594**	**652**	**865**	**668**	**661**	**672**

Appendix 1D. Breakdown for **VRE** – Vancomycin Resistant Enterococci and **VSE** – Vancomycin Sensitive Enterococci

		VRE								VSE							
		2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Demographic	Gender Female	23%	41%	48%	34%	45%	49%	40%	45%	42%	45%	42%	44%	43%	38%	39%	40%
	Mean age in years	62.9	59.6	64.8	62.6	59.5	61.2	66.6	66.2	61.6	64.0	63.5	65.4	62.8	65.9	66.2	65.3
Length of Stay	Less than or equal to 2 days	18%	9%	5%	10%	8%	16%	18%	18%	29%	23%	25%	31%	33%	39%	33%	41%
	Greater than 5 days	75%	76%	76%	77%	87%	73%	70%	76%	48%	46%	48%	45%	55%	54%	52%	47%
Association	Community	5%	0%	2%	1%	2%	10%	8%	4%	14%	9%	9%	15%	12%	16%	11%	14%
	HCA: not in reporting hospital	11%	4%	6%	9%	5%	8%	4%	6%	9%	12%	15%	15%	12%	13%	13%	16%
	HCA: in reporting hospital	80%	89%	85%	83%	92%	81%	82%	86%	65%	61%	64%	56%	70%	63%	63%	58%
	Unknown	5%	7%	8%	6%	1%	2%	6%	5%	12%	18%	13%	13%	7%	9%	13%	12%
Primary source	Central venous catheter	32%	35%	21%	29%	19%	13%	23%	19%	24%	13%	13%	10%	13%	15%	13%	11%
	Peripheral venous catheter	2%	0%	2%	1%	0%	0%	0%	0%	0%	1%	0%	2%	0%	0%	0%	0%
	Intra-abdominal / GI tract	7%	13%	26%	27%	30%	33%	30%	31%	19%	25%	23%	28%	25%	24%	19%	21%
	Respiratory tract	5%	2%	3%	1%	2%	0%	0%	1%	3%	3%	1%	1%	2%	1%	1%	2%
	Skin or Soft tissue	2%	2%	3%	1%	2%	2%	0%	2%	3%	0%	4%	2%	1%	2%	2%	2%
	Surgical wound	0%	0%	0%	0%	1%	0%	1%	1%	2%	1%	1%	0%	1%	1%	0%	1%
	Non-surgical wound	2%	0%	0%	0%	1%	0%	0%	1%	1%	1%	0%	0%	0%	0%	1%	1%
	Urinary tract without catheter	2%	2%	2%	3%	2%	3%	4%	4%	7%	4%	8%	6%	4%	5%	6%	7%
	Urinary catheter	0%	2%	0%	1%	0%	0%	1%	2%	2%	6%	5%	3%	5%	3%	8%	4%
	Other source	5%	0%	0%	0%	0%	0%	0%	0%	2%	2%	2%	3%	2%	1%	3%	3%
	Unknown	43%	43%	44%	36%	42%	49%	40%	38%	37%	45%	43%	44%	46%	49%	47%	51%
Risk factors	Diabetes	0%	0%	5%	0%	5%	0%	3%	2%	5%	1%	3%	6%	3%	5%	5%	3%
	Haemodialysis	7%	9%	2%	9%	6%	0%	4%	4%	7%	5%	2%	4%	4%	3%	2%	2%
	Stay in intensive care unit	39%	30%	14%	27%	25%	17%	17%	20%	25%	19%	16%	13%	15%	14%	9%	15%
	Immunosupression	27%	30%	21%	30%	24%	24%	36%	20%	12%	16%	12%	12%	14%	18%	14%	10%
	Malignancy	11%	33%	42%	49%	49%	37%	36%	31%	20%	29%	26%	33%	28%	23%	26%	16%
	Recent surgery	11%	15%	20%	21%	27%	11%	23%	26%	24%	18%	15%	15%	20%	13%	16%	11%
	Other	18%	24%	18%	13%	14%	22%	17%	14%	22%	11%	21%	18%	18%	10%	12%	19%
Clinical feature	Abscess	0%	2%	5%	4%	6%	3%	1%	2%	1%	3%	4%	1%	3%	2%	3%	1%
	Endocarditis	5%	4%	3%	0%	1%	0%	1%	2%	2%	2%	4%	5%	3%	3%	2%	3%
	Meningitis	0%	0%	0%	0%	1%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Neutropaenia	0%	9%	12%	8%	7%	8%	9%	1%	2%	2%	4%	2%	1%	3%	3%	4%
	Osteomyelitis	0%	0%	3%	0%	0%	0%	1%	0%	1%	0%	1%	0%	0%	2%	0%	0%
	Septic Arthritis	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	1%	0%	0%
	Other	0%	2%	6%	9%	7%	8%	8%	4%	1%	4%	8%	9%	11%	9%	13%	9%
Total		**44**	**46**	**66**	**77**	**84**	**63**	**77**	**84**	**181**	**184**	**227**	**218**	**246**	**199**	**195**	**196**

Appendix 1E. Breakdown for **KPN** – *Klebsiella pneumonia* and **PAE** – *Pseudomonas aeruginosa*

		KPN								PAE							
		2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Demographic	Gender Female	37%	36%	39%	41%	48%	39%	47%	37%	47%	46%	30%	40%	38%	36%	47%	44%
	Mean age in years	58.3	65.8	63.1	63.9	62.1	64.0	64.1	65.7	66.2	66.8	68.3	66.2	67.7	69.8	68.9	67.5
Length of Stay	Less than or equal to 2 days	28%	39%	35%	49%	45%	42%	44%	49%	32%	25%	34%	34%	48%	54%	53%	54%
	Greater than 5 days	48%	35%	44%	34%	43%	45%	42%	41%	40%	42%	43%	41%	44%	35%	33%	34%
Association	Community	16%	12%	18%	25%	18%	15%	20%	15%	9%	14%	8%	9%	13%	16%	19%	21%
	HCA: not in reporting hospital	12%	26%	18%	16%	15%	10%	14%	18%	17%	12%	22%	22%	21%	14%	21%	17%
	HCA: in reporting hospital	58%	47%	53%	44%	56%	57%	52%	56%	53%	51%	56%	53%	61%	48%	44%	46%
	Unknown	14%	15%	11%	14%	11%	18%	14%	10%	21%	23%	15%	16%	5%	22%	16%	15%
Primary source	Central venous catheter	16%	12%	12%	17%	9%	8%	14%	9%	11%	7%	6%	14%	14%	4%	12%	7%
	Peripheral venous catheter	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%
	Intra-abdominal / GI tract	18%	24%	26%	29%	20%	25%	21%	26%	4%	7%	11%	17%	7%	12%	5%	10%
	Respiratory tract	11%	10%	9%	10%	5%	7%	6%	6%	11%	10%	13%	11%	9%	4%	18%	6%
	Skin or Soft tissue	0%	3%	0%	1%	1%	1%	0%	0%	6%	3%	3%	2%	5%	7%	4%	6%
	Surgical wound	5%	0%	1%	1%	2%	0%	1%	0%	0%	3%	3%	1%	0%	4%	0%	0%
	Non-surgical wound	0%	0%	0%	0%	1%	0%	0%	0%	6%	1%	0%	1%	1%	0%	0%	0%
	Urinary tract without catheter	10%	8%	13%	12%	9%	12%	14%	13%	11%	9%	3%	8%	13%	6%	7%	15%
	Urinary catheter	1%	5%	4%	1%	7%	9%	6%	11%	2%	9%	19%	3%	11%	9%	4%	4%
	Other source	0%	2%	2%	0%	1%	1%	1%	1%	0%	3%	0%	1%	2%	1%	1%	1%
	Unknown	40%	36%	32%	29%	43%	39%	38%	34%	49%	48%	42%	40%	38%	52%	48%	51%
Risk factors	Diabetes	1%	4%	4%	6%	3%	4%	4%	4%	2%	6%	4%	5%	7%	1%	0%	3%
	Haemodialysis	2%	1%	1%	1%	3%	0%	0%	3%	0%	0%	0%	3%	1%	3%	3%	3%
	Stay in intensive care unit	11%	11%	4%	6%	11%	7%	11%	9%	11%	12%	14%	9%	10%	6%	16%	14%
	Immunosupression	20%	21%	17%	12%	24%	27%	23%	16%	34%	16%	20%	21%	30%	7%	29%	13%
	Malignancy	18%	36%	38%	44%	43%	34%	35%	31%	19%	38%	37%	37%	45%	28%	29%	15%
	Recent surgery	14%	13%	14%	11%	9%	12%	11%	7%	11%	12%	13%	16%	14%	12%	11%	14%
	Other	23%	17%	14%	14%	14%	11%	12%	8%	6%	19%	9%	14%	18%	7%	22%	17%
Clinical feature	Abscess	0%	3%	1%	1%	2%	1%	0%	2%	0%	1%	1%	2%	0%	3%	1%	1%
	Endocarditis	0%	0%	2%	0%	0%	1%	0%	0%	0%	0%	0%	1%	1%	1%	0%	1%
	Meningitis	0%	0%	0%	0%	0%	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%
	Neutropaenia	0%	5%	4%	2%	5%	4%	5%	4%	0%	9%	11%	5%	3%	3%	11%	3%
	Osteomyelitis	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	1%	0%	0%	0%	0%	0%
	Septic Arthritis	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Other	0%	5%	11%	9%	10%	8%	14%	10%	0%	6%	3%	8%	6%	13%	12%	11%
Total		**83**	**92**	**114**	**140**	**148**	**137**	**133**	**117**	**47**	**69**	**79**	**99**	**94**	**69**	**73**	**71**