

A stylized, light-colored illustration of a plant with several leaves and a cluster of small, round buds or flowers, positioned on the left side of the slide against a dark brown background.

SURVEILLANCE OF MRSA BACTERAEMIA IN HONG KONG

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AC, IDCTC, HA/ ICB, CHP

9 May 2012

Scientific Seminar on Infection Control

Outline

- Background
- Burden and trend of MRSA bacteremia in Hong Kong
- Key performance and Quality performance indicators
- Management and Public scrutiny



HA currently manages 41 public hospitals and institutions, 49 Specialist Out-patient Clinics, and 74 General Out-patient Clinics. These are organised into seven hospital clusters according to their locations.

http://www.ha.org.hk/visitor/ha_visitor_index.asp?Content_ID=10036&Lang=ENG&Dimension=100&Parent_ID=10004

Hong Kong Island

Hong Kong East Cluster	Hong Kong West Cluster
<ul style="list-style-type: none"> Cheshire Home, Chung Hom Kok Pamela Youde Nethersole Eastern Hospital Ruttonjee Hospital St. John Hospital Tang Shiu Kin Hospital Tung Wah Eastern Hospital Wong Chuk Hang Hospital 	<ul style="list-style-type: none"> Grantham Hospital MacLehose Medical Rehabilitation Centre Queen Mary Hospital The Duchess of Kent Children's Hospital at Sandy Bay Tsan Yuk Hospital Tung Wah Group of Hospitals - Fung Yiu King Hospital Tung Wah Hospital

Kowloon

Kowloon Central Cluster	Kowloon East Cluster	Kowloon West Cluster
<ul style="list-style-type: none"> HK Red Cross Blood Transfusion Service Hong Kong Buddhist Hospital Hong Kong Eye Hospital Kowloon Hospital Queen Elizabeth Hospital Rehabaid Centre 	<ul style="list-style-type: none"> Haven of Hope Hospital Tseung Kwan O Hospital United Christian Hospital 	<ul style="list-style-type: none"> Caritas Medical Centre Kwai Chung Hospital Kwong Wah Hospital Our Lady of Maryknoll Hospital Princess Margaret Hospital TWGHs Wong Tai Sin Hospital Yan Chai Hospital

New Territories

New Territories East Cluster	New Territories West Cluster
<ul style="list-style-type: none"> Alice Ho Miu Ling Nethersole Hospital Bradbury Hospice Cheshire Home, Shatin North District Hospital Prince of Wales Hospital Shatin Hospital Tai Po Hospital 	<ul style="list-style-type: none"> Castle Peak Hospital Pok Oi Hospital Siu Lam Hospital Tuen Mun Hospital

MRSA Surveillance Program

- collaboration between Infection Control Branch (ICB), Centre For Health Protection (CHP) and Central Committee on Infectious Disease and Emergency Responses (CCIDER), Hospital Authority (HA)
- standardize MRSA surveillance definitions and methodologies among all hospitals
- HA-wide real-time web-based system
 - allow efficient information flow and data retrieval
- timeline of development



MRSA Surveillance Program

Outcome measures

- New cases (MRSA first isolated from a patient without any evidence of MRSA within the preceding 365 days)
- Total cases (MRSA isolated)
- Bacteremia (MRSA isolated from blood)
- Invasive infection (MRSA isolated from a normally sterile site)
- MRSA infection (MRSA with clinical signs or symptoms ~ classified by Infection Control Nurse)

- List of MRSA positive result
- Statistic Summary

Welcome, CORP \NDORSICT1 [Logout](#)

MRSA Surveillance System

[Switch to NDORS Management Report](#)

Download the [User Guide](#), [MRSA surveillance protocol](#)

Search by Lab Report Date

Search by HKID

Raw Data Download

Cluster/Hosp --- NTEC ---

Lab Report Date from 01/12/2005 to 17/12/2005

Ward Filter: **AHN - A1**

[Statistic Summary](#)

Corp. Record Type	Current Location				Statistic Summary			HKID	Specimen	Lab Result			MRSA Record					
	Hosp	Ward	Spec	Bed	Hosp	Ward	#New			#Old	#Patient	Report Date	Req Loc	Result	Create	Update / View	Seen	Print
New	AHN	A1	SUR	09						UU0504781	Wound Swab	07/12/2005	B3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Old											Exit Site Swab	13/12/2005	% REND		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Old											Exit Site Swab	06/12/2005	% REND		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Old	AHN	A1	SUR	10	SOPD97243025	0		PATIENT, 022120		UU0221208	Wound Swab	13/12/2005	% REND		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
New											Wound Swab	06/12/2005	% REND		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5 Lab Result(s) Found in AHN - A1

- List of inpatients with MRSA history

MRSA Surveillance System

[Switch to NDORS Management Report](#)

Download the [User Guide](#), [MRSA surveillance protocol](#)

Search by Lab Report Date

Search by HKID

Raw Data Download

Outstanding Report

Inpatients with MRSA history

Current Hosp

Remarks: Current location are retrieved as at Apr 30 2010 12:00AM

Current Location						HKID	Patient Name	Last MRSA Report Date
Hosp	Ward	Spec	Bed	Case No	Admission Date			
PYN	ABC	ORB	10	HN070549066	08/01/2007	A5723097	PATIENT, 183498	09/04/2010
VH	2B	MED	07	HN05000152W	01/06/2005	M3979615	WONG, MICKEY	07/04/2010

2 Active Patient(s) Found.

MRSA Surveillance Record Form - Last updated as at 21/07/2008 17:52

Patient Information

Case: **HN07011858S** HKID: **E2070077** Name: **PATIENT,ON** Sex: **M** Age: **60y**
 DOB: **17/07/1948** (Exact? **Y**) Ward: Bed: Specialty: Class: MRN:

Adm Date: OAH Name:

MRSA Isolation Lab Results HA Operation History HA Diagnosis Antibiotics Info

Lab	Lab no.	Report Date	Collection Date	Request Date	ReqHosp	Specimen	Investigation
PYN	07M4013174	19/08/2007	16/08/2007	16/08/2007	RH	Blood, Culture	Culture, Blood
PYN	07M2023451	29/08/2007	27/08/2007	27/08/2007	RH	Sputum	Culture, MRSA Screen
PYN	07M2022699	22/08/2007	20/08/2007	20/08/2007	RH	Sputum	Culture, MRSA Screen

Site Visit Info 1 Site Visit Info 2 Site Visit Info 3

Record Type:
 Corporate Definition **New Case**
 Hospital Definition New Case Old Case
 Source Loc:

Specimen: **Blood, Culture** **Body System *** LRI/PNU
Lab Report Date: **19/08/2007** **Lab No.:** **07M4013174**
Reference Date: **16/08/2007** **Request Loc:** **A9**
 Site (Wound only):
Status * Infection Colonization Contamination Undefined
 CA-MRSA

Case Definition: * Nosocomial Community Transferred from other HA hospital Non-HA hospital UNK

Medical devices on specimen collection date: * No device NA

Device	Insertion/on Date	Removal/off Date	Action
<input type="text"/>	<input type="text"/>	<input type="text"/>	

- Patient information from different systems
 - Data input form



MRSA Surveillance Record Form

Patient Information

Case: **HN07074275W** HKID: **UU0177241** Name: **PATIENT, 017724** Sex: **F** Age: **73y**
 DOB: **01/01/1934** (Exact? **Y**) Ward: Bed: Specialty: Class: MRN:

Adm Date: OAH Name:

MRSA Isolation Lab Results

HA Operation History

HA Diagnosis

Antibiotics Info

Lab	Lab no.	Report Date	Collection Date	Request Date	ReqHosp	Specimen	Investigation
QEH	07M0133427	24/07/2007	21/07/2007	21/07/2007	QEH	Blood, Culture	Culture, Blood
QEH	07M0431809	23/08/2007	-	20/08/2007	QEH	Combine Swab	Culture, MRSA Screen
QEH	07M0431809	23/08/2007	-	20/08/2007	QEH	Combine Swab	Culture, MRSA Screen

Site Visit Info 1

Site Visit Info 2

Site Visit Info 3

Underlying Diseases :

None of the following diseases

- | | |
|--|--|
| <input type="checkbox"/> Cancer | <input type="checkbox"/> Hepatic disease |
| <input type="checkbox"/> Cardiovascular diseases | <input type="checkbox"/> Chronic skin lesion |
| <input type="checkbox"/> Chronic lung diseases | <input type="checkbox"/> Renal failure |
| <input type="checkbox"/> DM | <input type="checkbox"/> Immunodeficiency |

Procedure within this admission :

- None of the following procedures
- Endoscopic retrograde cholangiopancreatography (ERCP)
- Endoscopy (including Bronchoscopy, Colonoscopy, Esophagogastroduodenoscopy)
- Pericardiocentesis
- Hemodialysis (HD)
- Thoracocentesis

Risk Factors :

None of the following risk factors

- | | |
|--|---|
| <input type="checkbox"/> ICU care | <input type="checkbox"/> Skin lesions during site visit |
| <input type="checkbox"/> IVDA | <input type="checkbox"/> Within the same cubicle with a MRSA case |
| <input type="checkbox"/> OT in the previous 1 year | |
| <input type="checkbox"/> Previous admission in past 12 months | |
| <input type="checkbox"/> Use of antibiotics in the previous 3 months | |



MRSA Surveillance Record Form

Patient Information

Case: **HN07074275W** HKID: **UU0177241** Name: **PATIENT, 017724** Sex: **F** Age: **73y**

DOB: **01/01/1934** (Exact? **Y**) Ward: Bed: Specialty: Class: MRN:

Adm Date: OAH Name:

MRSA Isolation Lab Results			HA Operation History		HA Diagnosis		Antibiotics Info i	
Lab	Lab no.	Report Date	Collection Date	Request Date	ReqHosp	Specimen	Investigation	
QEH	07M0133427	24/07/2007	21/07/2007	21/07/2007	QEH	Blood, Culture	Culture, Blood	
QEH	07M0431809	23/08/2007	-	20/08/2007	QEH	Combine Swab	Culture, MRSA Screen	
QEH	07M0431809	23/08/2007	-	20/08/2007	QEH	Combine Swab	Culture, MRSA Screen	

Site Visit Info 1 Site Visit Info 2 **Site Visit Info 3**

Decolonization therapy related to this episode: * Yes No NA

Chlorhexidine disinfectant soap

Systemic antibiotics

Topical mupirocin

Other topical medications

Eradication **i** Yes No Unknown

Infection control measures during site visit: * NA

Physical Isolation Yes No

Single room Cohorting Corner bed

Signage at bedside

Signage on Kardex

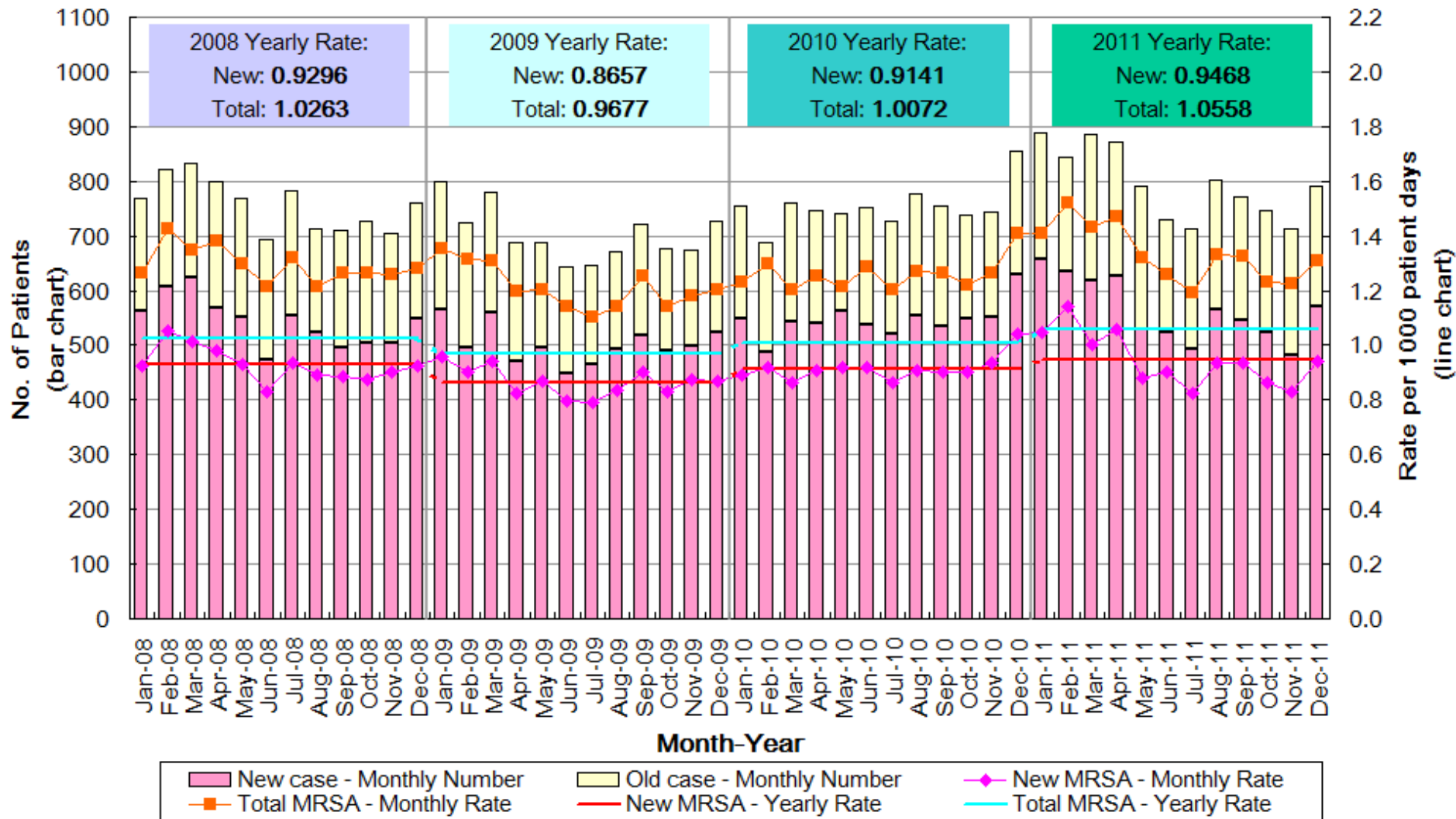
Alcoholic handrub available at bedside

Dedicating use of non-critical items

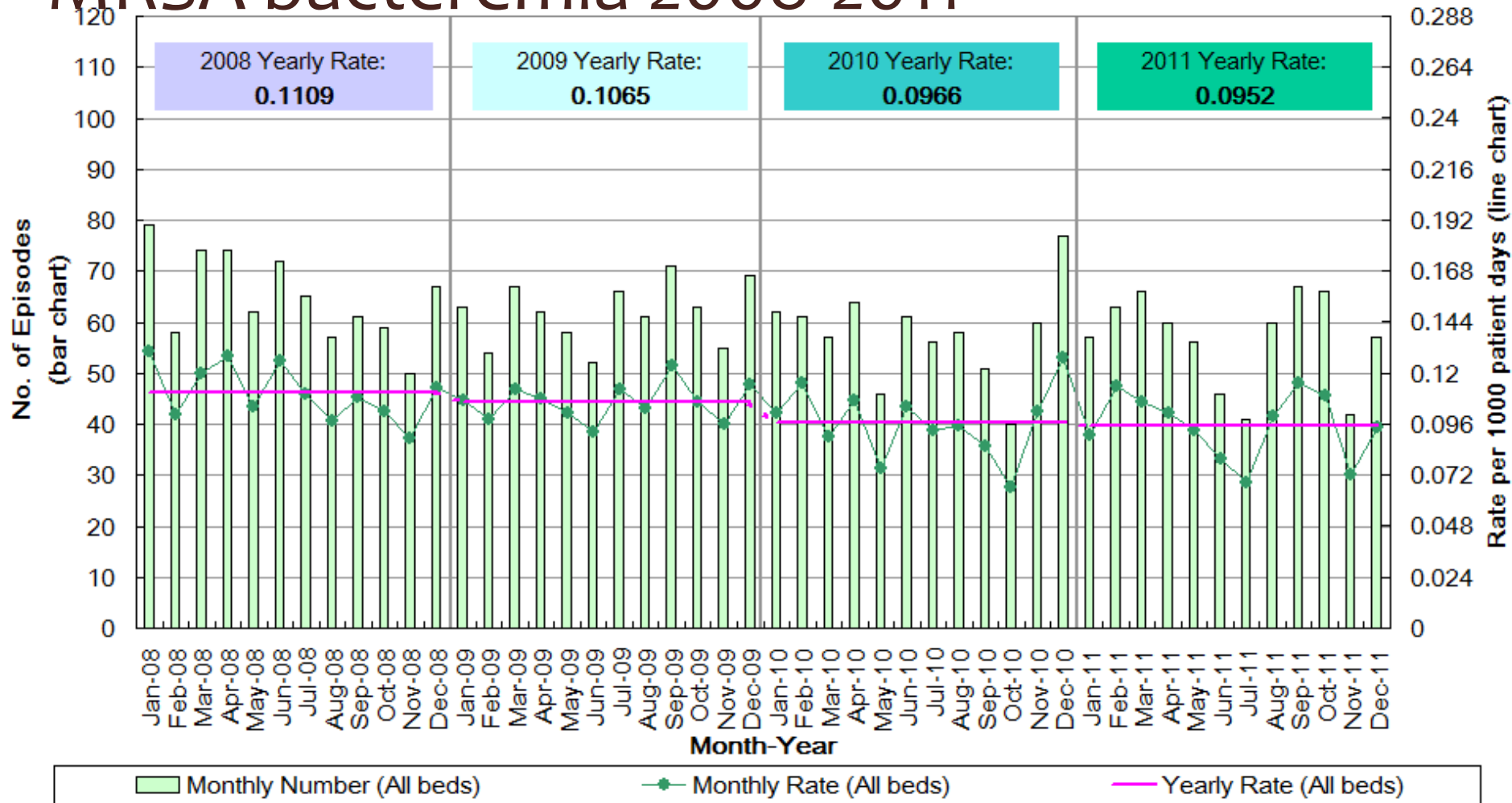
WHAT IS THE MRSA BURDEN IN OUR HEALTH-CARE SETTINGS ?



Total MRSA cases 2008-2011



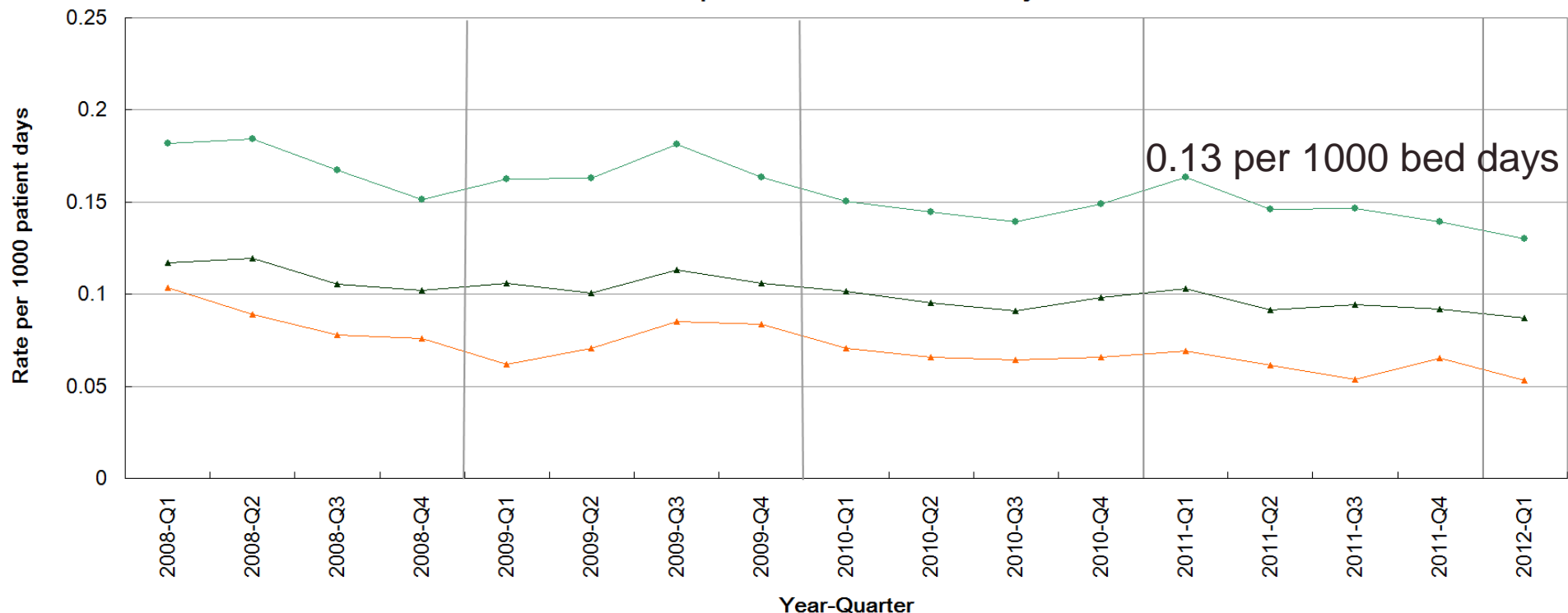
MRSA bacteremia 2008-2011



1. **9%** of MRSA patients are complicated by bacteremia yearly
2. MRSA bacteremia rate is **0.0952** per 1000 patient bed-days in 2011

MRSA bacteremia for different subgroups

MRSA bacteremia episodes/ 1000 Patient Days, 2008 Q1 - 2012 Q1



Quarterly Rate (Acute beds)

Quarterly Rate (All beds)

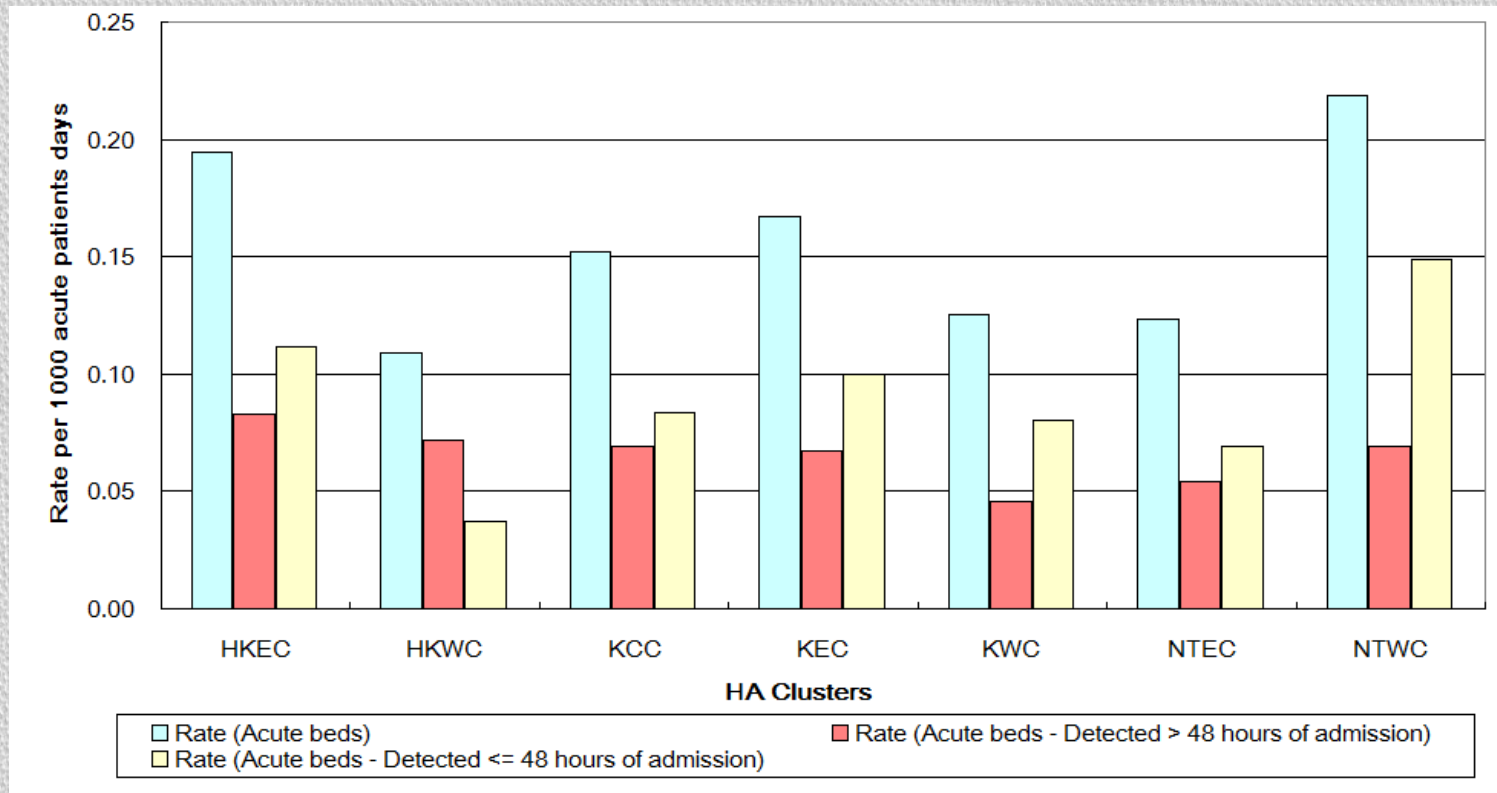
Quarterly Rate (Acute beds - detected after 48 hours of admission)

NHS acute trusts 0.039 per 1000 bed days.
2010/2011 financial year

Gp 1 vs non-Gp 1 MRSA bacteremia

RR: 5.91 (95% exact CI 4.52, 7.86) (p<0.001)

Bacteremia in acute beds detected after 48 hours of admission by Cluster in 2011



Hospitalization in the preceding one year: 66%

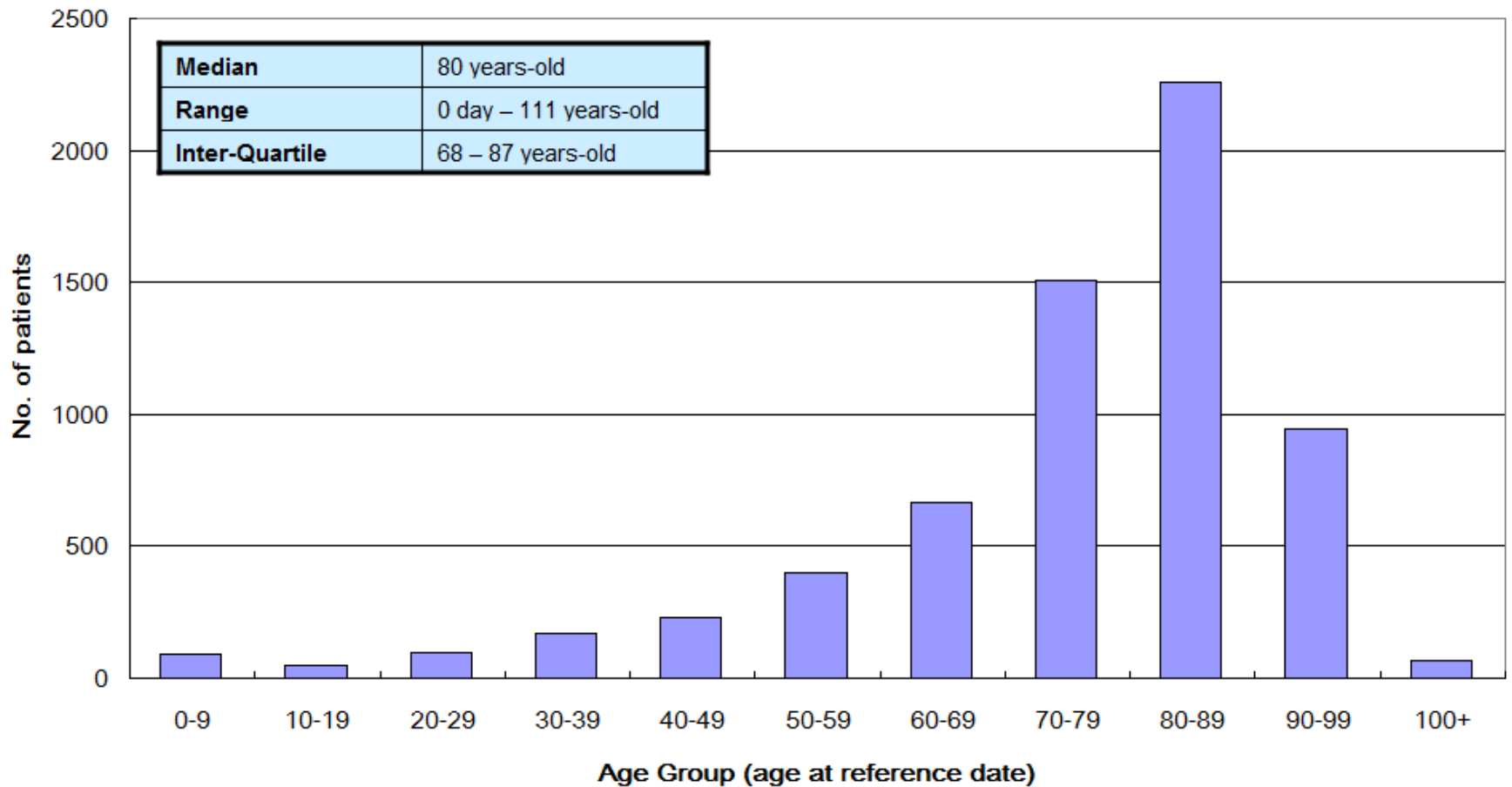
MRSA surveillance Program: 2008-2011

Year	2008	2009	2010	2011	Change (11 vs 08)
No of MRSA cases	7197	6735	7227	7551	↑ 4.9%
MRSA rate*	1.026	0.968	1.007	1.056	↑ 2.9%
MRSA infection rate*	0.57	0.532	0.529	0.578	↑ 1.8%
No. of MRSA bacteremia episodes	778	741	693	681	↓ 12.5%
MRSA bacteremia rate*	0.111	0.107	0.097	0.095	↓ 14.2%
No. of MRSA bacteremia episodes for Acute beds	703	676	599	611	↓ 13.1%
MRSA bacteremia rate for Acute beds*	0.171	0.168	0.146	0.149	↓ 13.0%
No. of MRSA invasive infections	916	851	822	797	↓ 13.0%
Rate of MRSA invasive infection*	0.131	0.122	0.115	0.111	↓ 14.7%

* Rate per 1000 patient bed days

Demographics of New MRSA cases

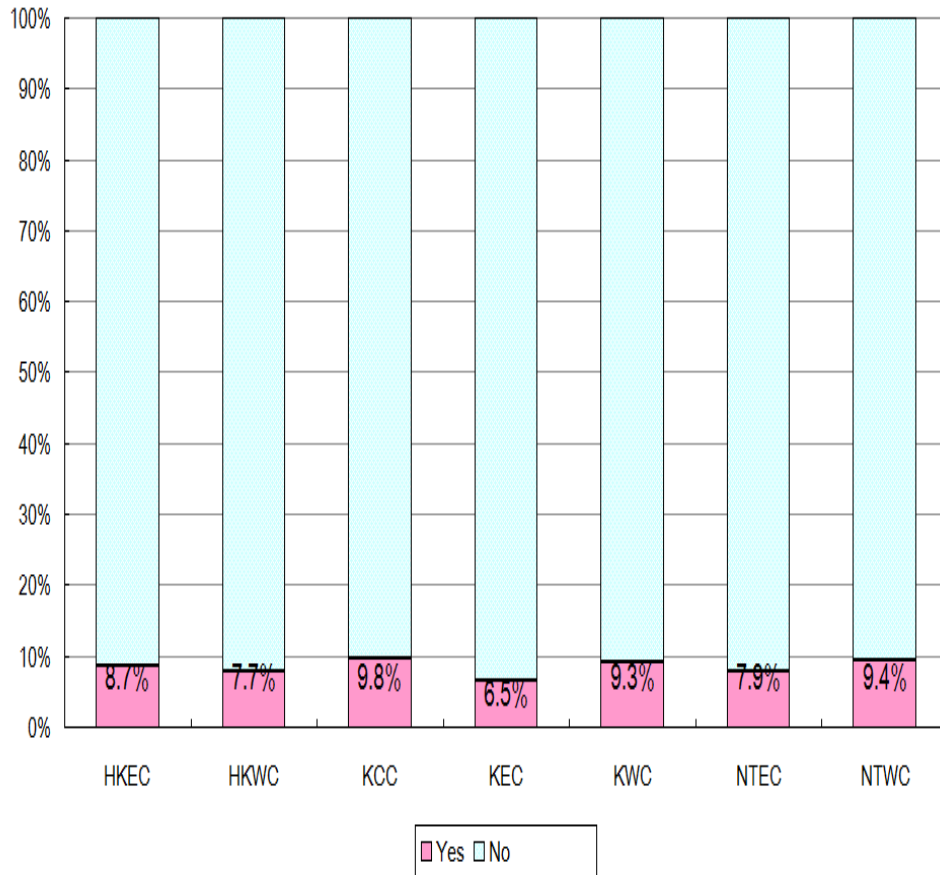
Age Distribution for new MRSA cases



79% of MRSA patients are ≥ 65 years old

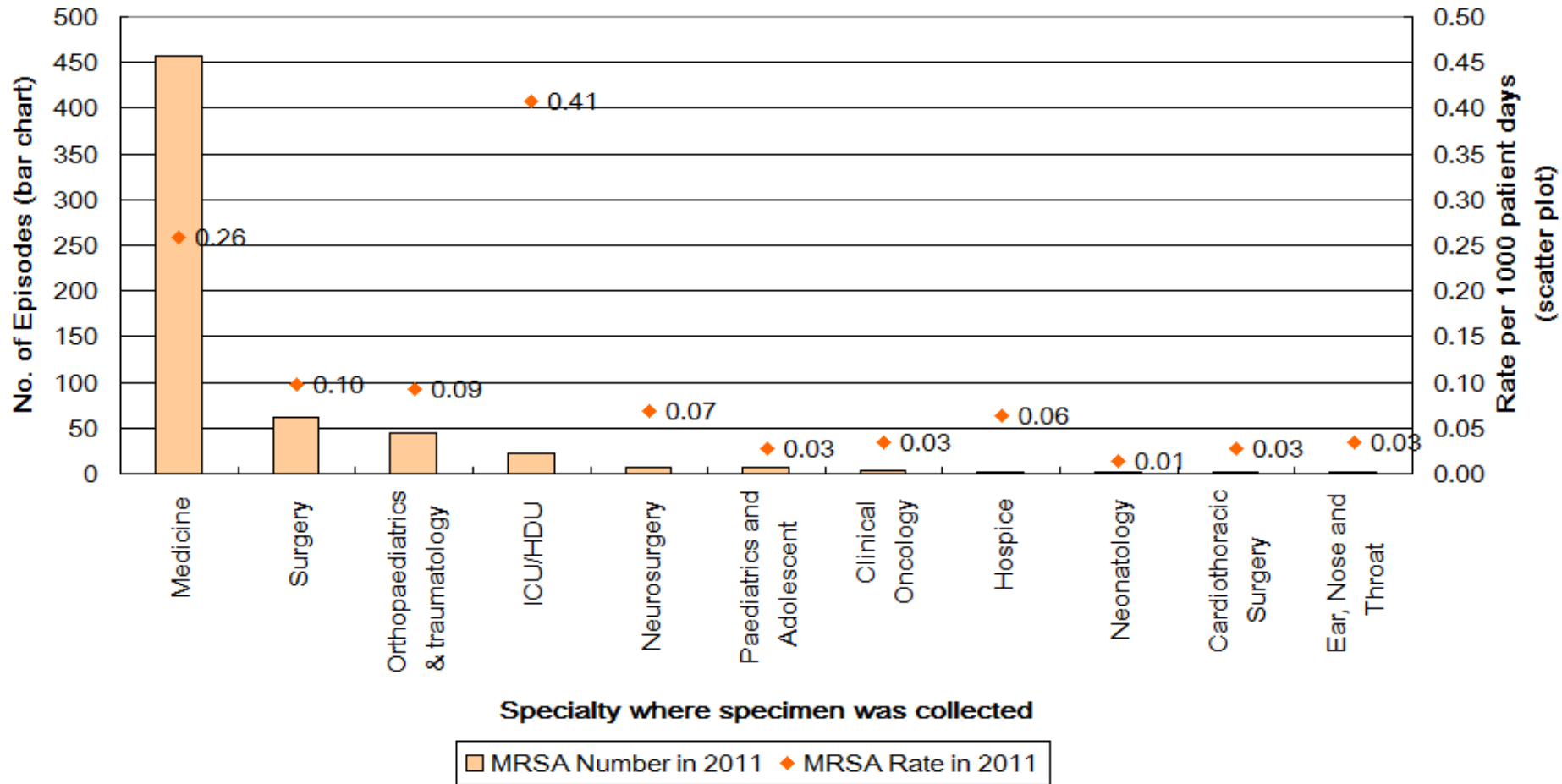
Residential care home for the elderly

Proportion of RCHE admissions during 2011



- Among patients who aged ≥ 65 , 19.6% are from RCHE
- Yet they contribute 53% of MRSA cases in this group

MRSA bacteremia in acute beds by specialty in 2011



Specialty where specimen was collected	Relative risk when compared with ... (95% exact CI; p-value [§])			
	Medicine <i>0.20 / 1000 bd</i>	Surgery <i>0.09 / 1000 bd</i>	Orthopaedics & traumatology <i>0.08 / 1000 bd</i>	Neuro-surgery <i>0.06 / 1000 bd</i>
ICU/HDU <i>0.41 / 1000 bd</i>	2.02 (1.27, 3.06; <0.001)	4.52 (2.67, 7.40; <0.001)	5.43 (3.16, 9.07; <0.001)	6.31 (2.62, 17.41; <0.001)

Role of Physical Isolation

- Only 35% of MRSA cases are physically isolated (single room or cohorting)
- ? Corner beds as a way of physical isolation



Projects of ICB/CICO

By active screening

- Admission screening of all medical patients: Prevalence of MRSA is 14.29% (1095/7661 CI 13.51-15.08%)
- Overall prevalence of MRSA among RCHE residents in Kwai Tsing District is 18.7% (426/2278 2011 data); Kowloon central 21% (590/2872 2010 data)

By clinical specimens

- 2% of Medical patients are MRSA positive (4279/234237)
- 7.4% (3164/42973) of RCHE residents are MRSA positive

- Quality Improvement Program - Environmental cleanliness (cleansing manual, dedicated equipment, colour coding)
- ICU MRSA surveillance

USING MRSA BACTEREMIA AS PERFORMANCE INDICATORS

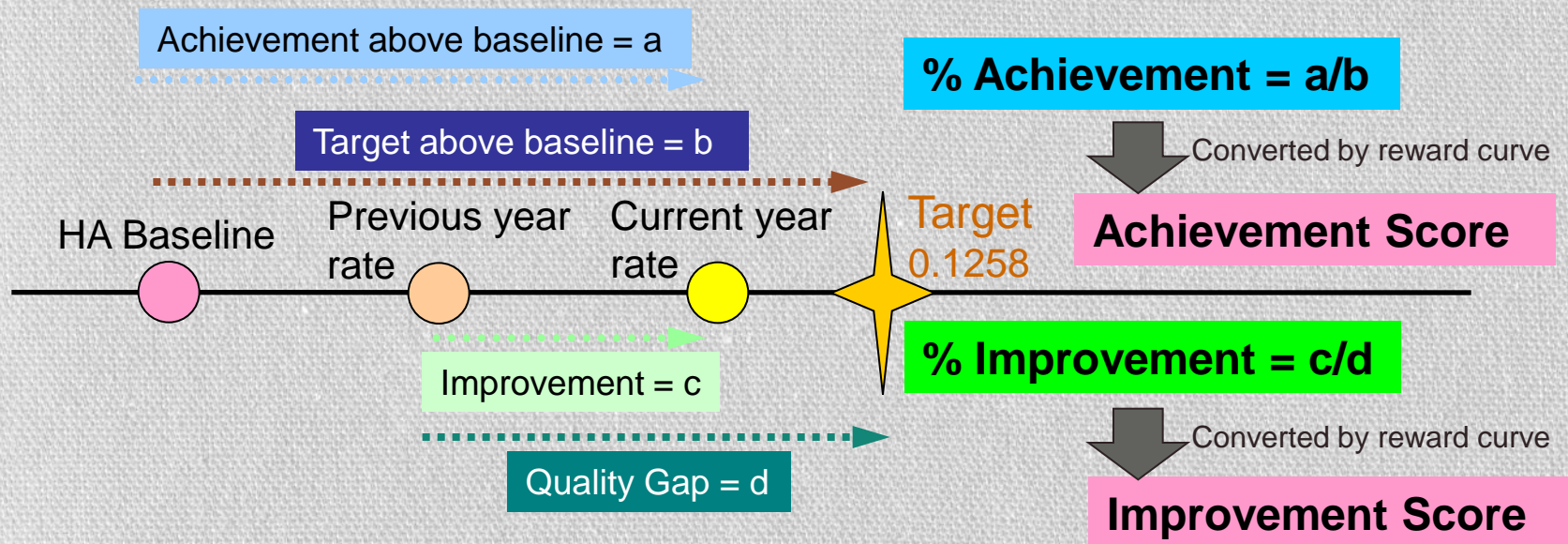


Performance Indicator

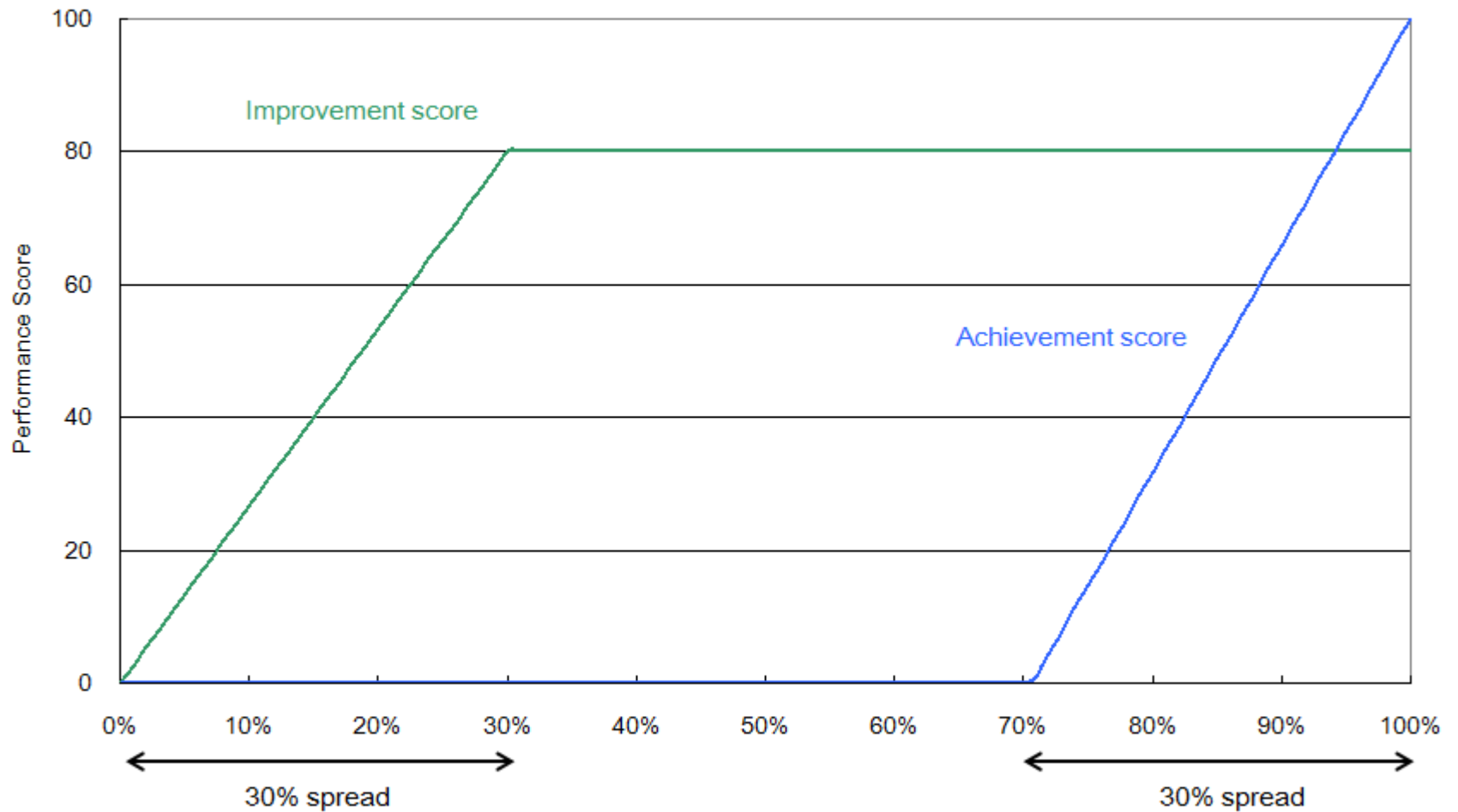
- Key Performance Indicator (KPI)
 - Management tool to track performance
- Quality Performance Indicator (QPI)
 - Pay for Performance (cluster based)
 - Reward for Achievers – who do well in the current year against the quality benchmark
 - Incentive for Improvers – who improve against own performance of the previous year

Mechanism of “Pay for Performance”

- QPI: MRSA Bacteremia in Acute Beds per 1000 acute patient days
- Target: 0.1258 per 1000 acute patient days (lower quartile of cluster rate in 2008)



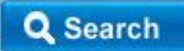
Reward Curve



Final Score = the highest value of Achievement or Improvement score

A stylized, monochromatic illustration of a plant with several large, pointed leaves and a cluster of small, round buds or flowers, rendered in a dark brown color against a lighter brown background on the left side of the slide.

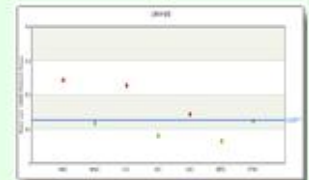
MANAGEMENT AND PUBLIC SCRUTINY



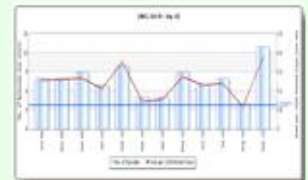
Report Catalog

- [▶ Adult Acute Stroke](#)
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- [▶ **MRSA Bacteremia in Acute Beds**](#)
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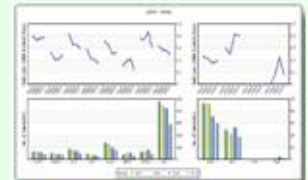
MRSA Bacteremia in Acute Beds



Cluster Performance



Trend Monitoring



Specific Time Frame Performance

Logon Information

LAN ID:

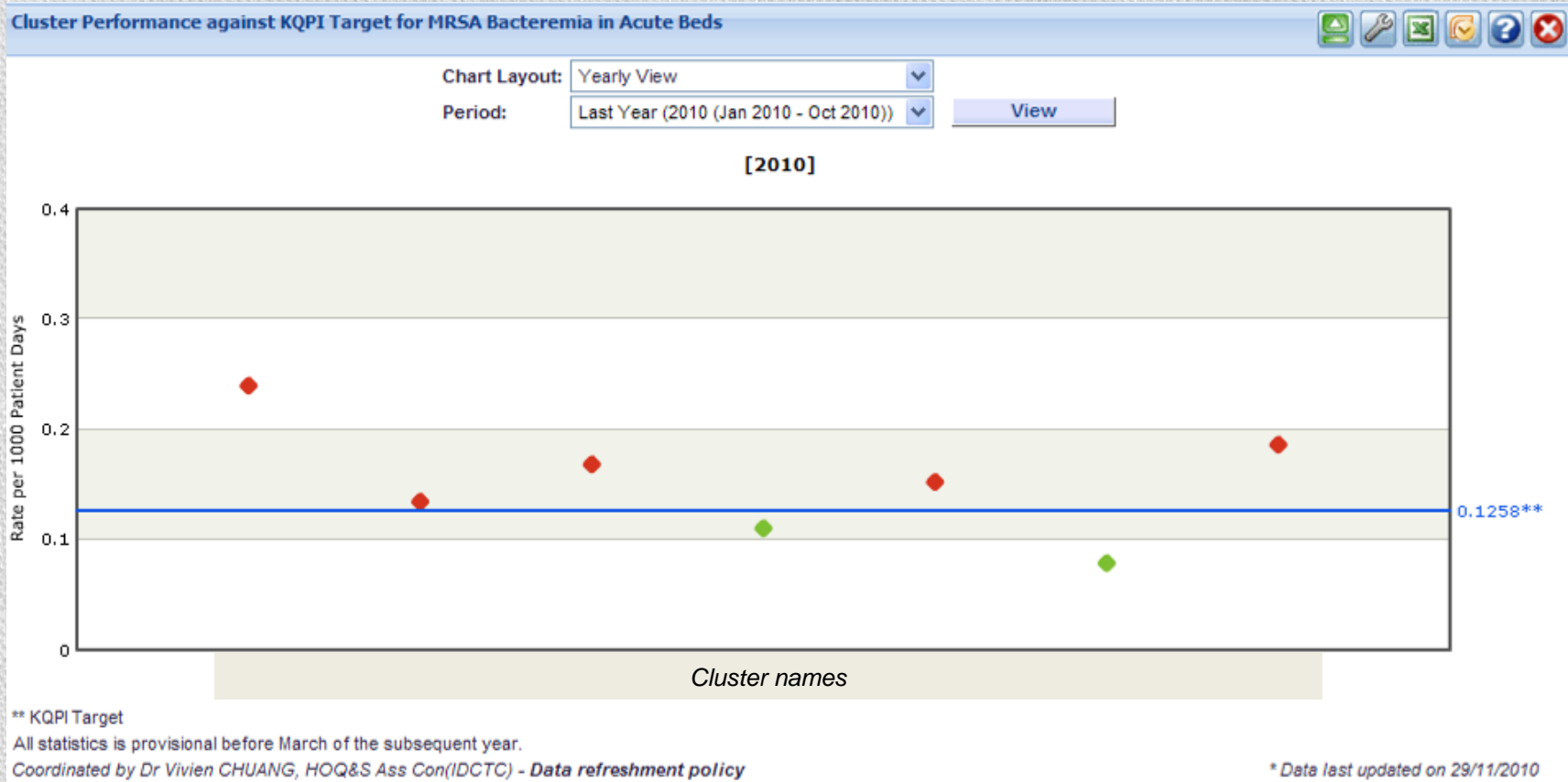
Password:



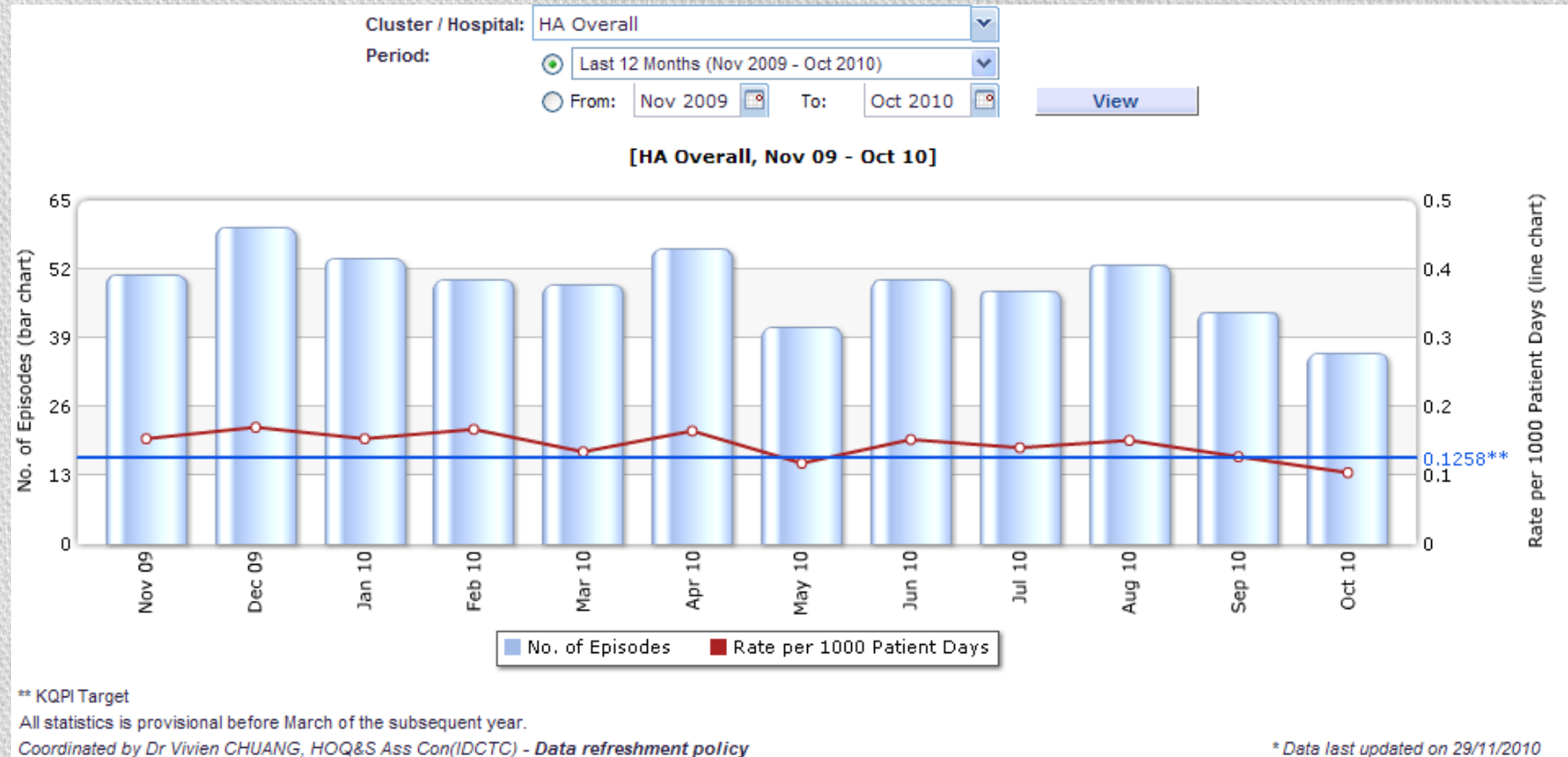
Most Popular Reports

- Trend of A&E First Attendances, Admissions and Bed Occupancy Rate
- Rate of Day Surgery plus Same Day Surgery (Cluster View)
- Rate of Day Surgery plus Same Day Surgery (Specialty View)

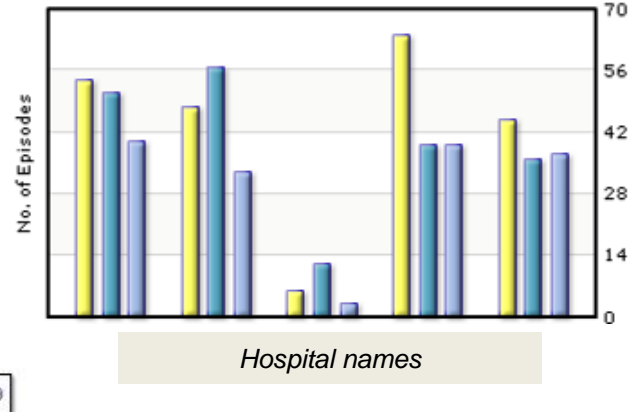
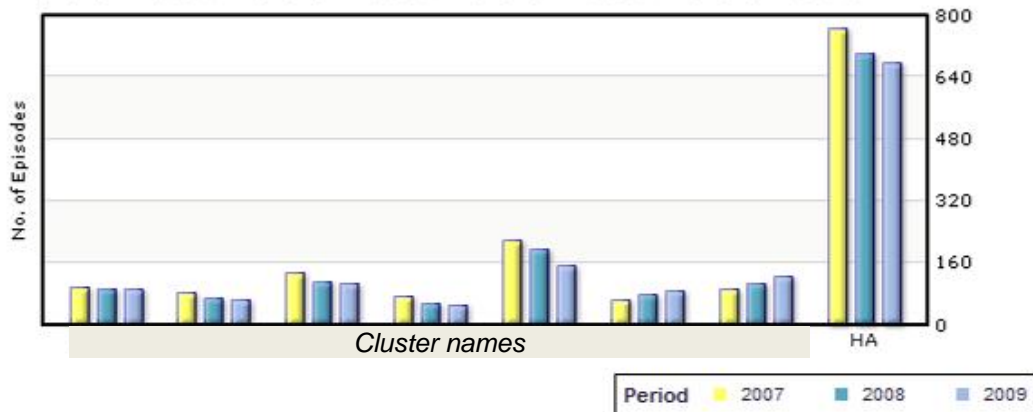
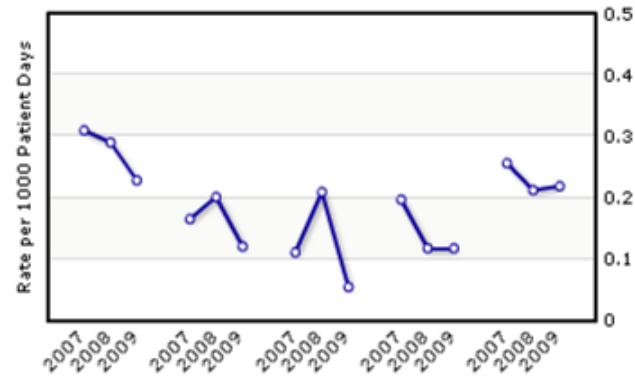
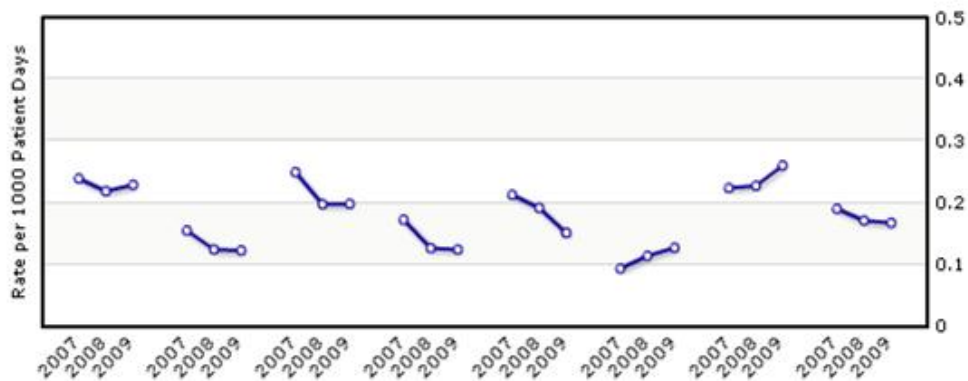
Cluster Performance against KQPI Target for MRSA Bacteremia in Acute Beds



Trend Monitoring of MRSA Bacteremia in Acute Beds at Corporate, Individual Cluster, and Individual Hospital Level



Performance on MRSA Bacteremia in Acute Beds among Clusters and Corresponding Hospitals within a Specific Time Frame



All statistics is provisional before March of the subsequent year.

Coordinated by Dr Vivien CHUANG, HQ&S Ass Con(DCTC) - Data refreshment policy

* Data last updated on 26/10/2010



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Patients

Healthcare Professionals



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Community Partnership

Corporate News

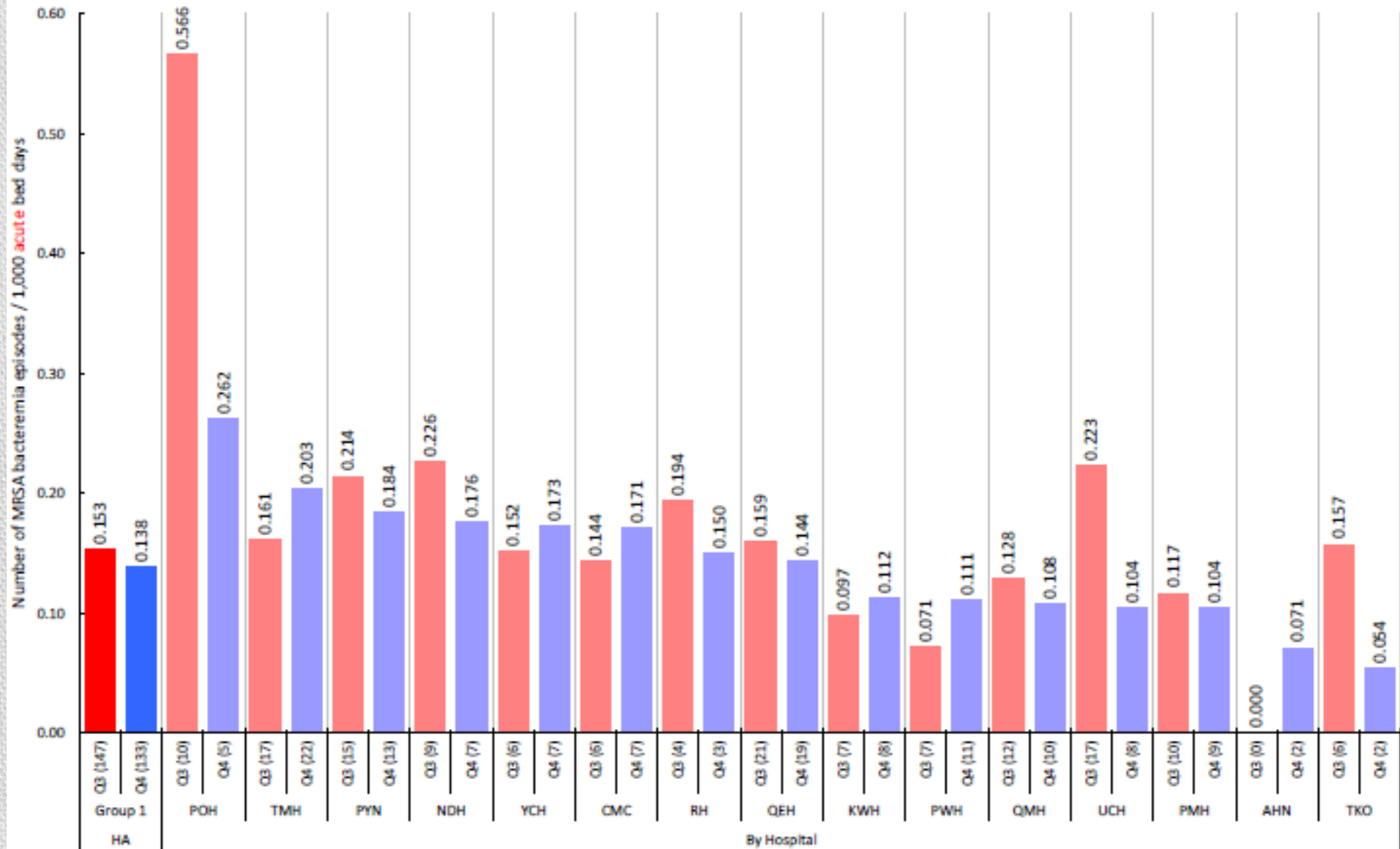
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Hospital Infection Statistics

Hospital Infection Statistics

- [MRSA Bacteremia in HA Hospitals 2010](#)
1st Issue (17th May 2011)

MRSA bacteremia in HA group 1 hospitals (acute) - 2011 Q3 & Q4



Data source: MRSA Surveillance System (CDARS)

Hospitals - Quarter (Number of MRSA bacteremia episodes)



THANK YOU