

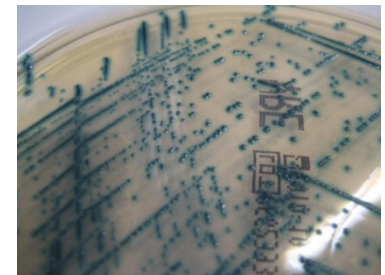
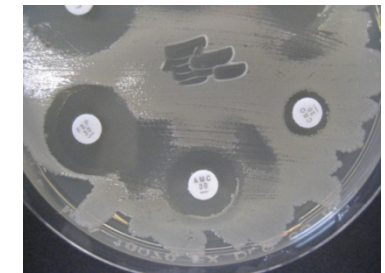
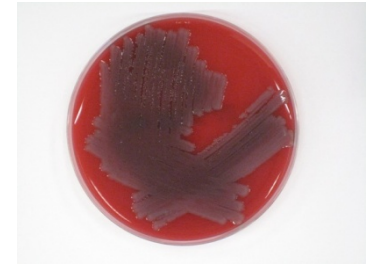
# **The Control of Multi-drug Resistant Organisms in HA Hospitals**

N C Tsang

7 April 2011

# Target MDRO

1. **MRSA** *Staphylococcus aureus* resistant to Methicillin/Oxacillin
2. **VRSA** *Staphylococcus aureus* resistant to Vancomycin
3. **VRE** Enterococci resistant to Vancomycin
4. **ESBL producing E coli/ Klebsiella** resistant to selected 3rd generation (Big Gun) cephalosporins
5. **CRE** Enterobacteriaceae resistant to Carapenems
6. **MDRA** *Acinetobacter* resistant to multiple antibiotics
7. **MRPA** *Pseudomonas aeruginosae* resistant to multiple antibiotics



# The “Find and Confine” Strategy

- a. active screening
- b. IT patient alert and tagging system
- c. Hand hygiene enforcement
- d. Contact precautions
- e. Safe Clean Program on environmental hygiene & equipment disinfection
- f. Care bundles on prevention of intravascular catheter-related infections

# MDRO discharge back to RCHE control

MRSA	VRSA	VRE	ESBL+NR	CRE PCR +ve	MDRA	MRPA
--	Yes	Yes	--	Yes	--	Yes
Specific program on ASC, Isolate & Decolonisation	Containment strategy	Prevent endemic in RCHE, spill over back to hospitals	Prevalence is high		Specific program targeted on high risk patient groups, e.g. ICU, Ventilated etc.,	

## Key / Quality Performance Indicator

- Administrative support and determination to change
- MRSA bacteremia as a quality marker for patient safety since 2008
- Launch of Pay for Performance Quality Incentive Program to drive the Service Improvement in 2010
- Data displayed at Management Information Portal (MIPo) for easy access of the senior staff

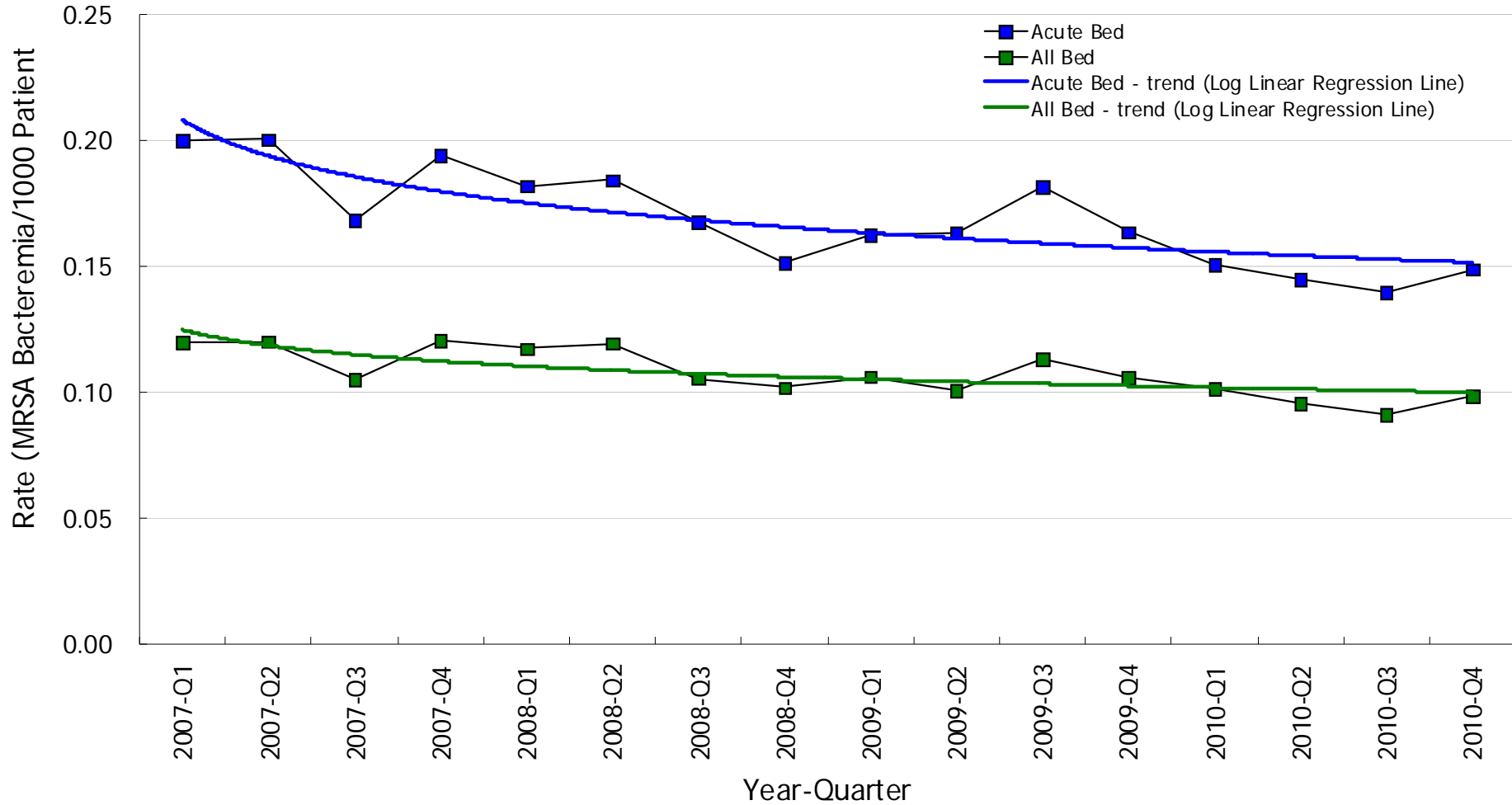
# Use of New Technologies

- Aim: to explore the use of novel disinfectant and its application in health care setting under Safe Clean Program for patient safety improvement
  1. Nanosphere encapsulation of disinfectants ( $\text{ClO}_2$ ) for surface spray It is a collaborative project with HKUST
  2. Hydrogen peroxide vaporization for equipment and terminal room decontamination

# Publicity and Education

- Patient education:
  1. E learning program (ID/IC Portal)
  2. Discharge pamphlet for MDRO patients while on discharge back to the community
- Public communications:
  1. Regular review of MDRO situation and control measures with the Media (Media Brief)
  2. Quarterly update on MRSA bacteremia figures on the Communicable Disease Watch at CHP website

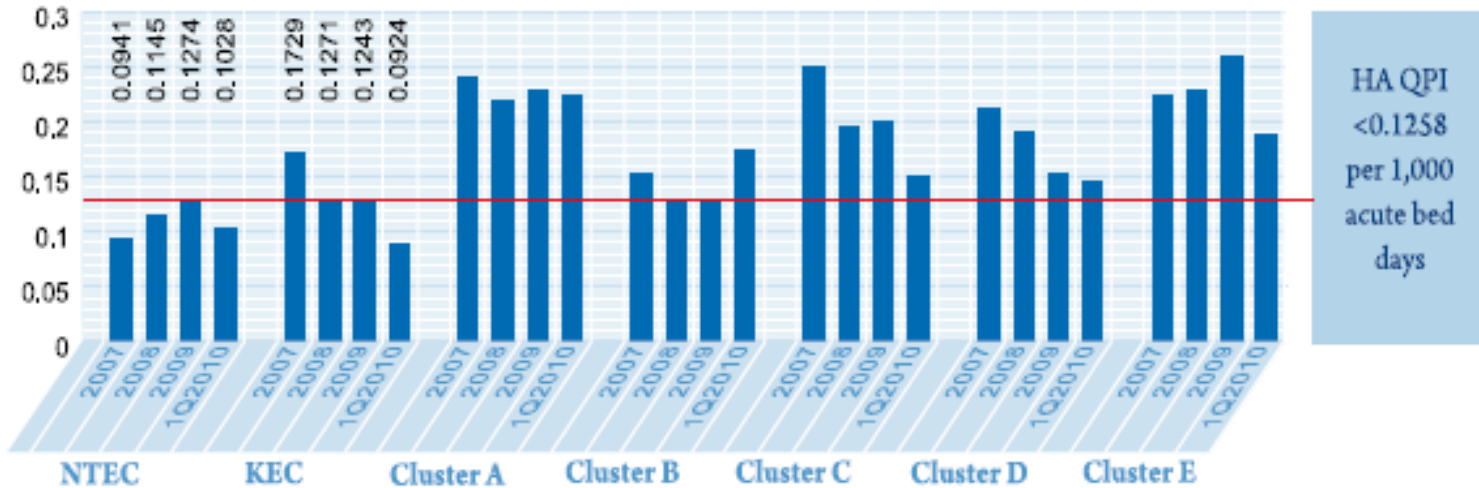
# MRSA Bacteremia/1000 Patient Days



Source: CICO Office



## MRSA Bacteraemia Rate Per 1,000 Acute Bed Days



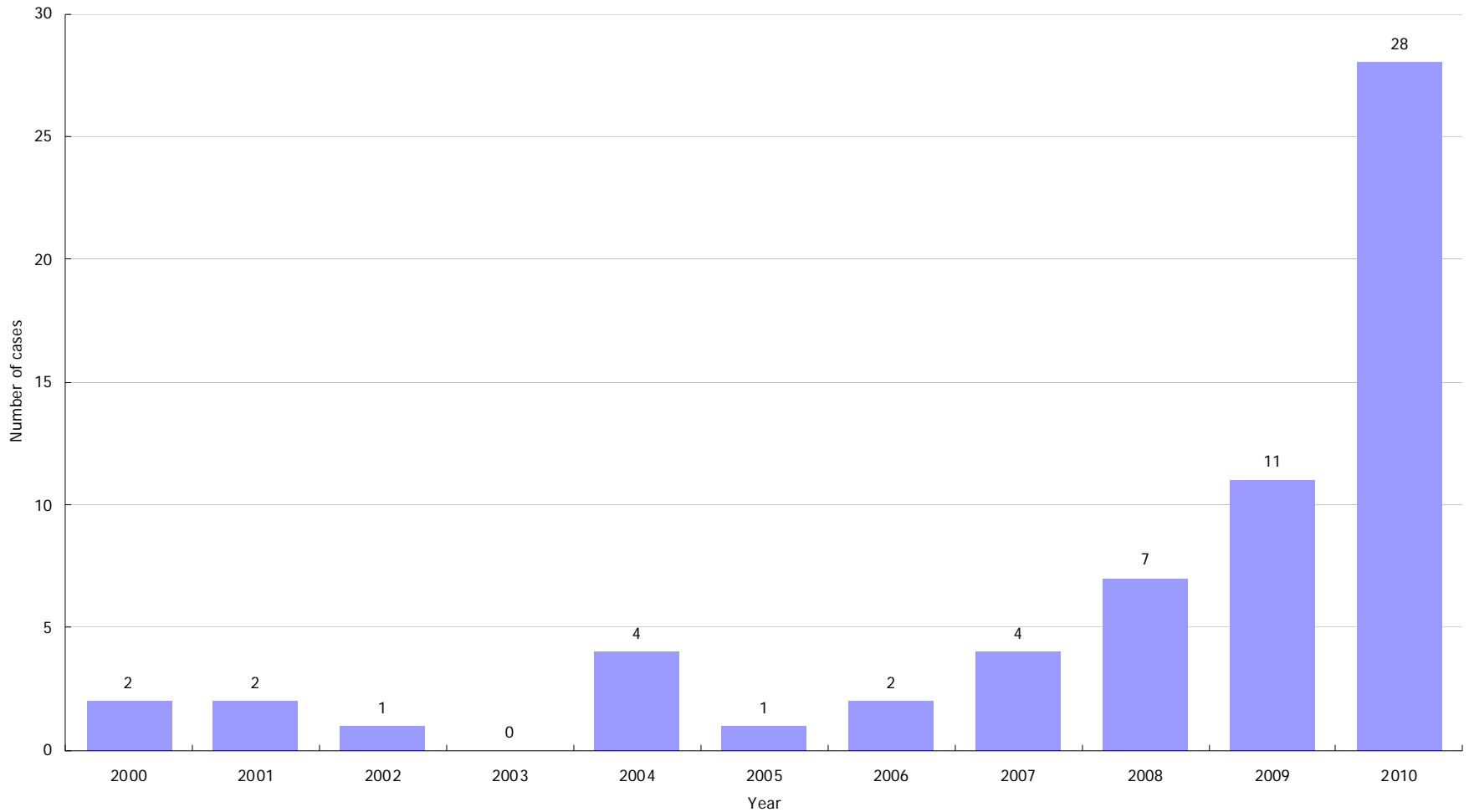
### Key Measures taken for MRSA :

- Active rapid screening for high risk groups
- On site IC advices
- Close trend monitoring and communications with stakeholders on the findings
- RCA for every MRSA bacteremia cases
- Dedicated use of non critical equipment



# VRE situation during 2000 to 2010

Number of VRE cases in HA (by headcount)

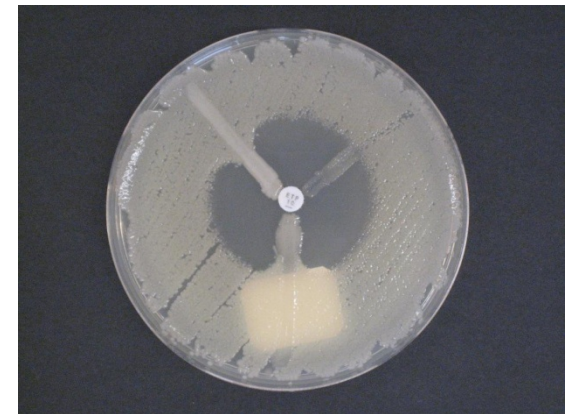


# VRE Clusters

Period	Hosp	S/A	DOA	Detected on	I/C	RCHE	Site
2009	QMH	M/ 77Y	4/3/2009	25/3/2009	C	No	CSU
		M/ 75Y	3/3/2009	30/3/2009	C	No	Rectal swab
		F/ 62Y	8/3/2009	30/3/2009	C	No	Rectal swab
		M/ 89Y	16/3/2009	3/4/2009	C	No	Stool
2010	OLMH	F/ 82Y	16/9/2010	23/10/2010	I	No	CSU
		F/ 88Y	29/10/2010	3/11/2010	C	Yes	Rectal swab
		F/ 85Y	8/11/2010	8/11/2010	C	Yes	Rectal swab
	TMH	F/ 85Y	21/11/2010	26/11/2010	C	No	CSU
		F/ 94Y	13/11/2010	30/11/2010	C	Yes	Rectal swab
		F/ 97Y	21/11/2010	30/11/2010	C	Yes	Rectal swab
		F/ 81Y	1/11/2010	1/12/2010	C	Yes	Rectal swab
1Q11	CMC	M/ 75Y	20/2/2011	20/2/2011/ 25/2/2011	C	No	Blood / Rectal swab
		M/ 86Y	31/1/2011	20/2/2011	C	Yes	CSU
		M/ 88Y	11/2/2011	25/2/2011	C	No	Rectal swab
		M/ 70Y	17/2/2011	26/2/2011	C	No	Rectal swab
		M/ 80Y	21/1/2011	26/2/2011	C	No	Rectal swab

# CRE Findings on NDM-1

Period	S/A	Hosp.	Site	I/C	Travel	Outcome
2009	M/ 66Y	OPD	MSU	I	Unknown	Alive
2010	F/ 54Y	PMH	Rectal swab	C	India (Hospitalized with OT done )	DAMA
1Q11	No reported case					
2Q11						

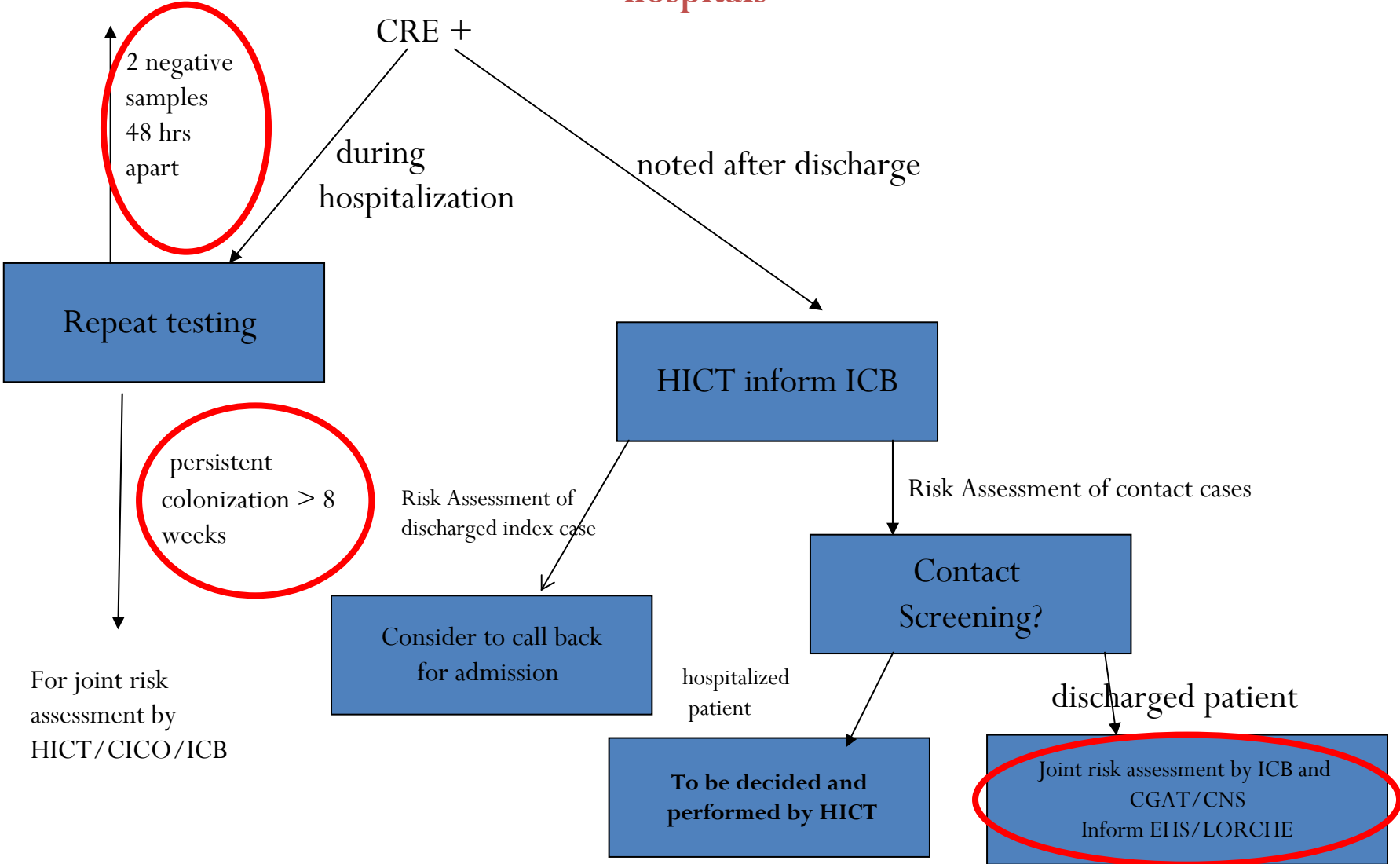


## Consensus measures on CRE infected patients

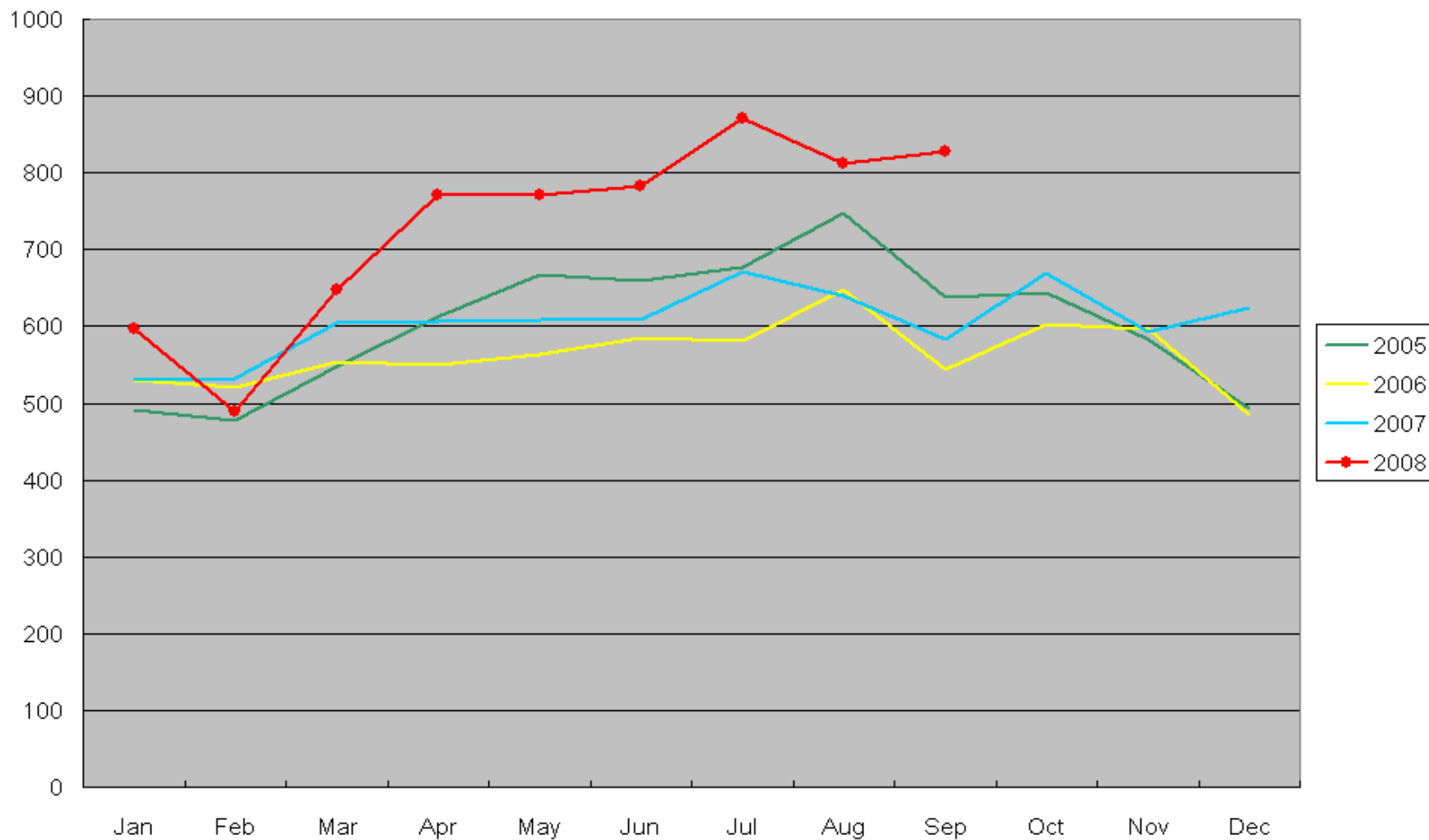
	Case – (CRE)	Case + (PCR-)	Case + (PCR+)
Active surveillance culture (ASC)	Patients hospitalized in other cities in the past 6 months;		
Inform CICO & ICB	No	No	<b>Yes</b>
Send isolate to PHLSB	No	<b>Yes</b>	<b>Yes</b>
Contacts screening	No	No	<ol style="list-style-type: none"> <li>1. Same cubicle for 2 or more days;</li> <li>2. Discharged home (No action);</li> <li>3. Discharged to OAH (inform ICB*);</li> <li>4. OAH resident (call back)</li> <li>5. NDM-1: more extensive</li> </ol>
Discharge back to RCHE	allowed	allowed	<p><b>Criteria based:</b></p> <ol style="list-style-type: none"> <li>1. Two consecutive negative cultures, taken 48 hrs apart</li> <li>2. Prior notice to ICB</li> <li>3. Education sheet</li> </ol>

\* ICB will liaise with CGAT, Hospital ICT and CICO office to visit the RCHE for a risk assessment. Screening swab may be taken (rectal swab for CRE) after the risk assessment.

**Possible scenarios of CRE+ cases from RCHE detected in HA hospitals**



# Number of Acinetobacter isolates 2005-Sep 2008



# MDRO situations in HA hospitals 2009 - 2010

Incidence	MRSA	VRSA	VRE	ESBL+NR	CRE/ CRE PCR +ve	MDRA	CRPA/ MRPA
<b>2009</b>	44.5%  0.17 /1000 acute bed days	No	0.2%  Sporadic outbreaks in hospitals	20-25%	0.05 to 0.07% / NA	2.6%	0.1%
<b>2010</b>	43%  0.15 / 1000 acute bed days	No	0.4%  ( 3 outbreaks involved 28 patients)	20-25%	0.19% / 13 cases	2.1%	0.1%
<b>Trend</b>	<b>Decreasing</b> <b>(12% ↓ cf</b> <b>2009; 21% ↓</b> <b>cf 2007)</b>	- -	<b>Slightly</b> <b>increasing</b>	<b>stable</b>	<b>Low but</b> <b>increasing</b>	<b>Slightly</b> <b>decreasing</b>	<b>stable</b>



## Hand Hygiene compliance in 2010

Staff group	Total no		% compliance
	Complied	Observed	
Nurse	13579	19056	71.3%
Doctor	2322	4378	53.0%
HCA & supporting	6248	9127	68.5%
Others	2328	3399	68.5%
<b>Total</b>	<b>24477</b>	<b>35690</b>	<b>68.8%*</b>

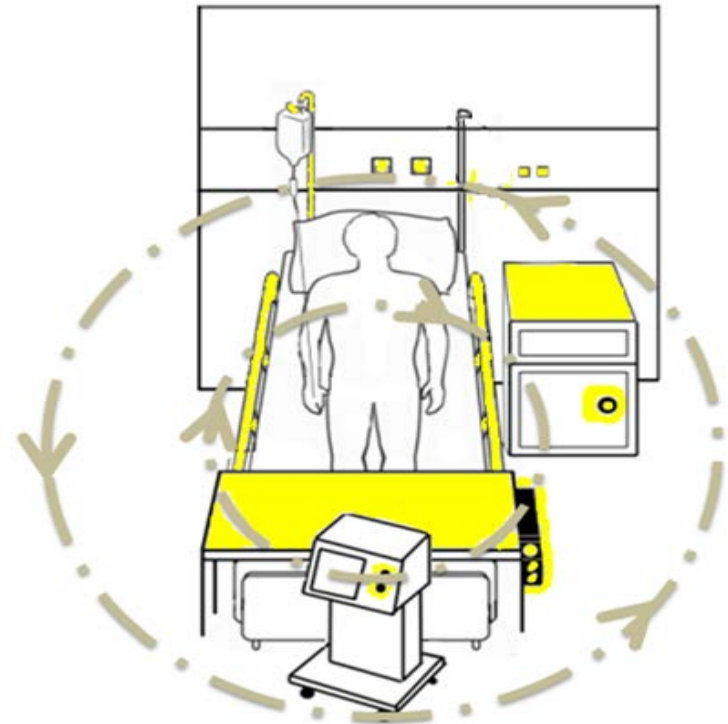
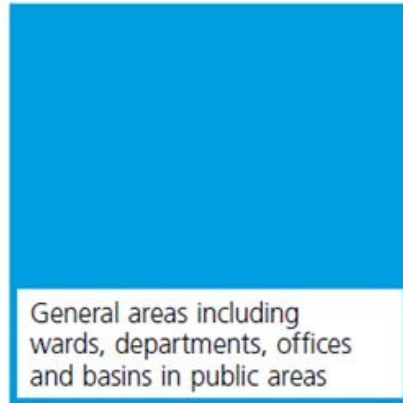
# HA Hand Hygiene Program 2011-12

- Target: 70% compliance (moment 1 & 5)
- Assessment tools: WHO HH tool kit
- Methodology: central team, cross audit
- Drive change initiatives:
  - behavior/habit development
  - Clinical/professional leaders – role model
  - Awareness Campaign

# MDRO in the Environment

	MRSA	VRE
Floors	55%	--
Bedsheets	53%	40%
Patient gown	51%	--
Over bed Table	40%	20%
Bed rail	29%	28%
Blood Pressure cuff	--	14%
<b>Survival</b>	<b>Up to 7 months</b>	<b>Up to 4 months</b>

# Color Coding Scheme & Cleansing Protocol



# Daily 2% Chlorhexidine (CHG) Bath

- Objective
  1. To minimize skin shedding of MRSA and bacterial load through 2% CHG bath daily, and prevent the blood stream infection (BSI) and MRSA bacteremia rate
- Risk assessment is needed



**HP** 香港衞生防護中心  
Centre for Health Protection  
衞生防護中心  
衞生防護處

**User guide to patient for using Microshield 2 (2% Chlorhexidine Gluconate)**

**How to use?**

1. Wet the body
2. Apply Microshield 2 all over body, pay particular attention to the **red** areas
3. Rinse it off
4. Dry with a clean and dry towel

**What is 2% Chlorhexidine Gluconate (CHG)?**

- CHG is a water soluble antiseptic preparation with broad activity against bacteria.

**What is the benefit of using 2% CHG?**

- Effective against healthcare-associated infections with multidrug resistance bacteria.

**Apply Microshield 2 all over the body, pay particular attention to the **red** areas**

**Shaded areas with higher density of bacterial count. These areas include underarm and groin.**

**Wet the body**

**Rinse it off**

**Dry with a clean and dry towel**

**Cautions**

- \*Keep out of children
- \*Do not apply CHG above neck areas, including eyes, ears, mouth, nose, face and hair
- \*Report immediately to doctor/ nurse if the below situation occurs
  - \*Any discomfort or allergic reactions found e.g. rash, itchiness
  - \*Accidentally splash to eye(s), (immediately rinse with water)
  - \*Ingestion of the agent

## Utilization of big gun antibiotics

Specialty: All specialties in terms of DDD per acute 1,000 BDO

Hospital	2004	2005	2006	2007	2008	2009
All Acute hospitals	40.24	39.22	37.8	38.31	36.82	43.21
	19.2-65.7	19.9-60.9	16.5-61.7	18.1-56.4	15.7-62.4	18.0-77.1

- Cefepime, Ceftazidime, Meropenem, Tazocin, Sulperazon, Tienam, Ertapenem, Vancomycin, [Linezolid](#)

# Gaps and Way forward

- Ownership, leadership, and budget
- real time e-surveillance, monitoring and trend analysis
- survival of MDRO in healthcare environment
- IV catheter as portal of entry for MDRO blood stream infection
- Sustainability of labor-dependent Antibiotic Stewardship program
- MDRO patients from Residential Care Home for the Elderly (RCHE)
- bed- occupancy rate; bed spacing; and nurse-to-patient ratio

**Thank You**