衞生防護中心
Centre for Health Protection

Managing MDRO Colonizers at Residential Care Homes for Elderly (RCHE)

Dr. Chen Hong

ICB/CHP

衞生署
Department of Health

Content

1. Disease Burden of Emerging MDROs
2. Residential Care Homes for Elderly (RCHE) in Hong Kong
3. Discharge of Carriers of emerging MDROs to RCHEs
4. MRSA colonization in RCHE

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1. **Disease Burden of Emerging MDROs**
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Disease Burden of Emerging MDROs

Laboratory surveillance on multi-antimicrobial resistant bacteria

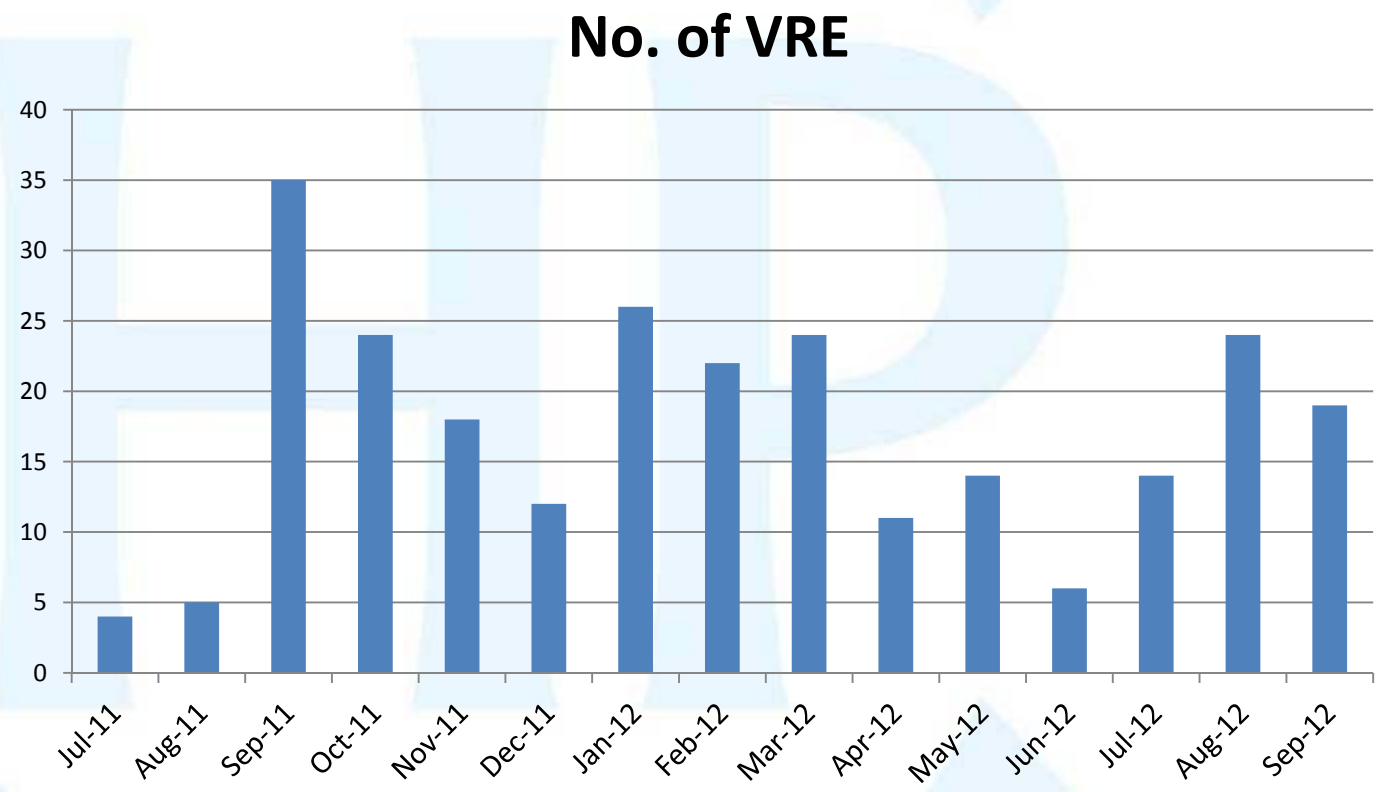
Results for specimens received up till September 2012:

Organism	Date of receipt of specimen / isolate				
	2009	2010	2011	2012 Jan-Aug	2012 Sep
Staphylococcus aureus with reduced susceptibility to glycopeptides:					
- Vancomycin-intermediate *Staphylococcus aureus* (VISA)	2	3	4	1	0
- Vancomycin-resistant *Staphylococcus aureus* (VRSA)	0	0	0	0	0
Vancomycin-resistant enterococcus (VRE)	1	24	110	141	19

http://www.chp.gov.hk/en/epidemiology/29/97/119/564.html

Laboratory surveillance on multi-antimicrobial resistant bacteria

Results for specimens received up till September 2012:



http://www.chp.gov.hk/en/epidemiology/29/97/119/564.html

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Find and Confine Strategy

	MRSA	ESBL+ve GNR	CRE (PCR+ve)	VRSA	VRE	MRPA	MDRA
Inform CICO	No	No	**Yes**	**Yes**	**Yes**	**Yes**	No
Send isolate to PHLSB	No	No	**Yes**	**Yes**	**Yes**	No	No
Contact tracing / screening	No	No	**Scope:** 1. Trace and screen adjacent patients or within the same ward/room / cubicle 2. Repeated screening is not recommended 3. No call back screening for already discharged non-RCHE contacts 4. Risk assessment for deciding extension the tracing procedures beyond the preset level, environmental or staff screening 5. Contact screening will be performed for discharged RCHE contacts.				No
Discharge back to RCHE	Allowed	Allowed	Prerequisites: 1. Two consecutive negative cultures at 48 hours apart from previous positive body sites 2. Inform ICB before discharge 3. Discharge with education pamphlet				Allowed

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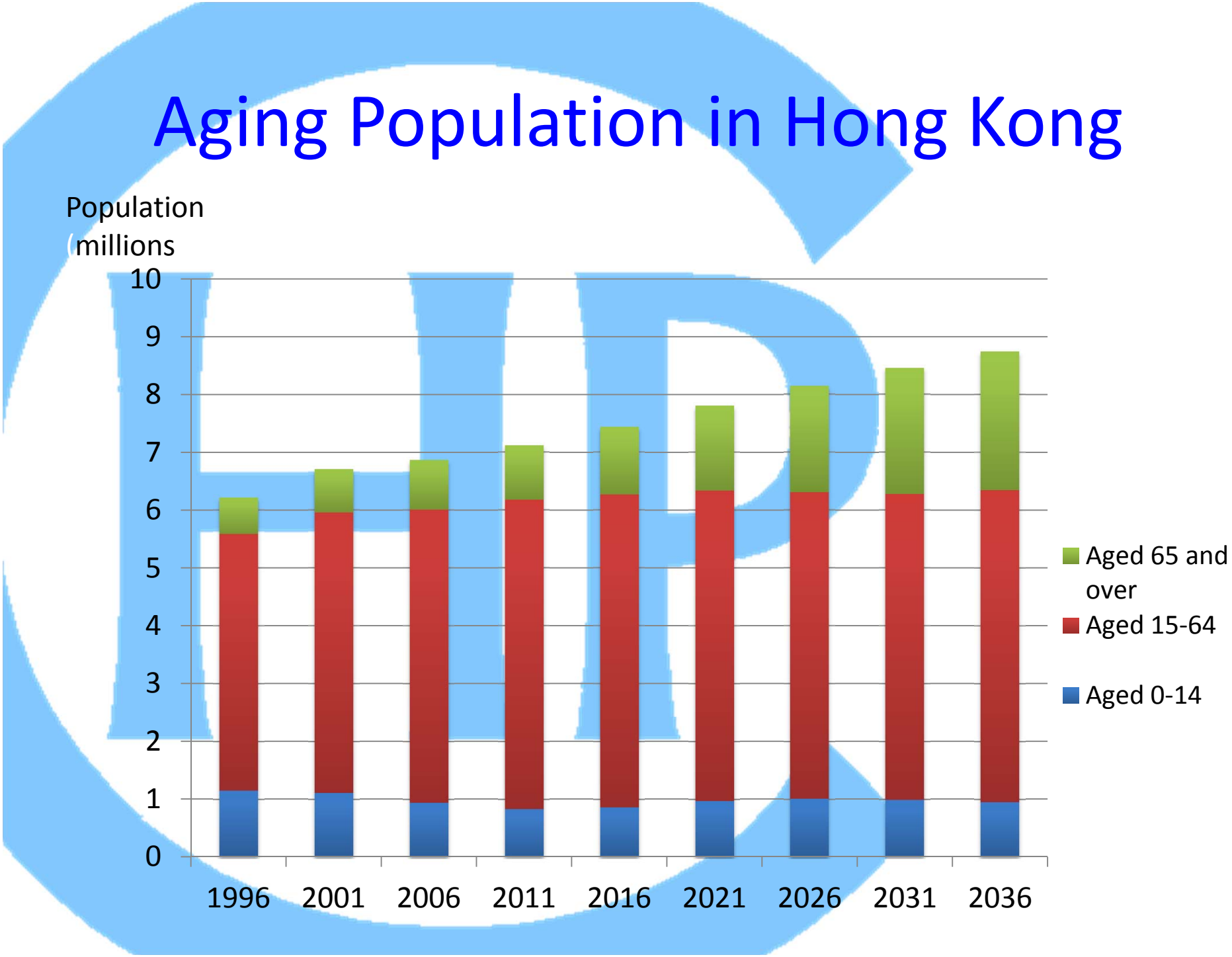
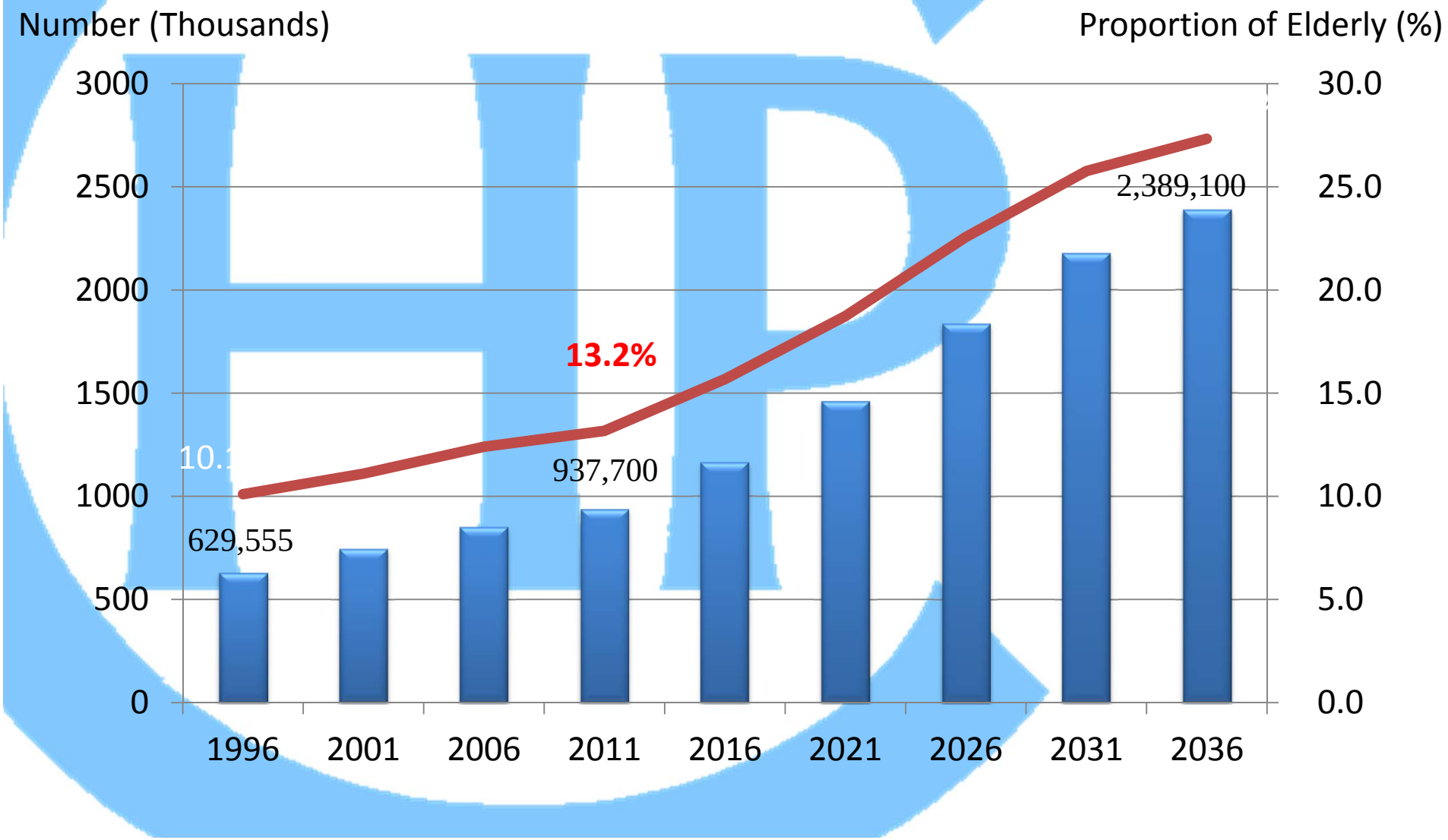
衛生署 Department of Health

Aging Population in Hong Kong



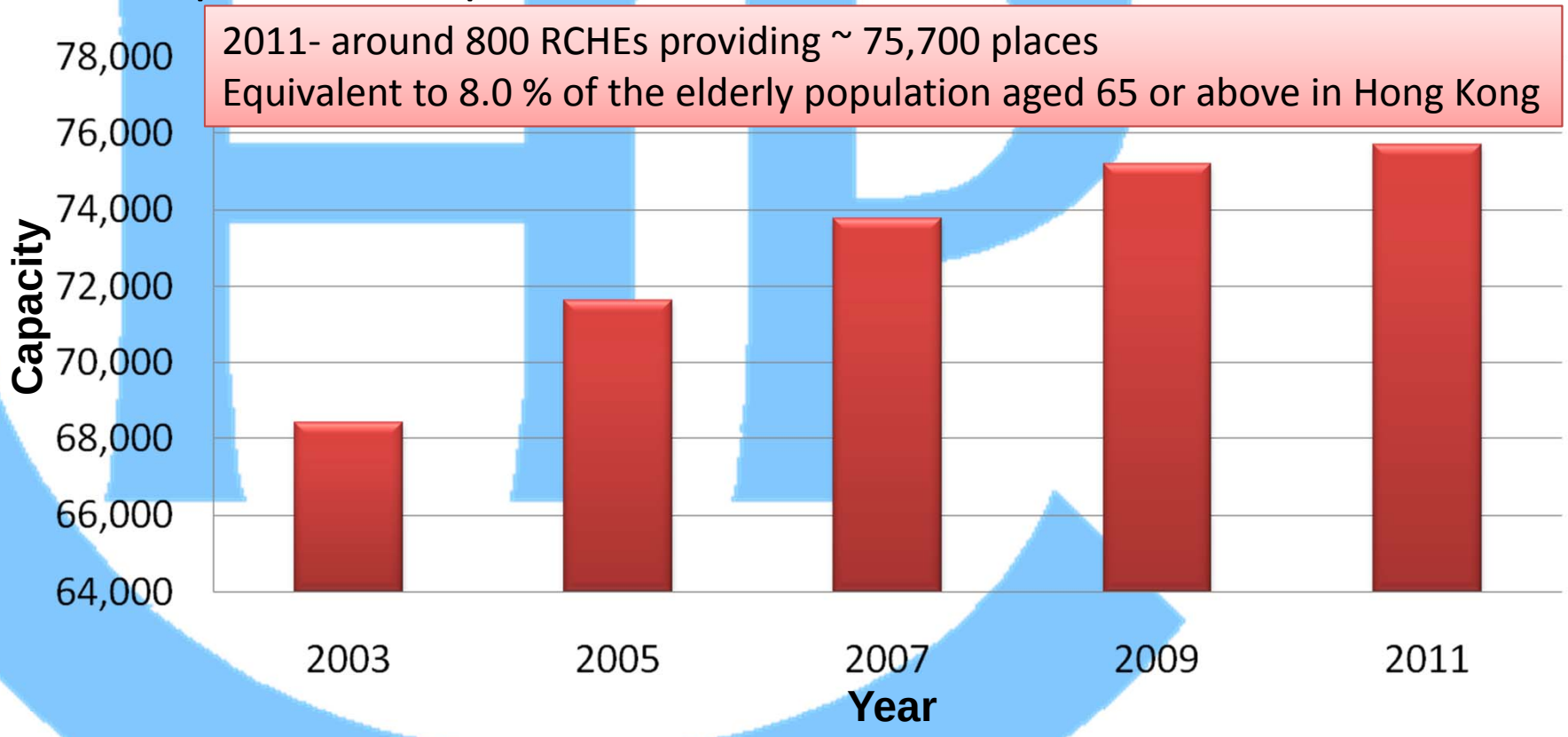
Number and Proportion of Elderly (1996 to 2036)



RCHE

- Increasing demand for RCHE service in Hong Kong
- With aging population, more people may require temporary or permanent placement in RCHEs.

2011- around 800 RCHEs providing ~ 75,700 places
Equivalent to 8.0 % of the elderly population aged 65 or above in Hong Kong



Total Capacity as of 31 March of the year, data from Social Welfare Department

RCHE

- RCHE is a heterogeneous group of institutions
- Types of Residential Care Homes
  - Varying types of residential care homes are set up to meet different care needs of elders

- Nature of RCHE – private (profit making) and non-private (subvented/ contract / self financing)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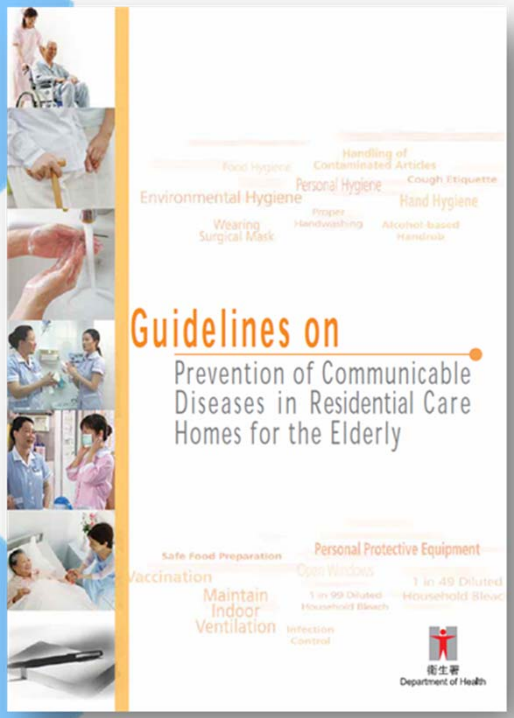
Infection Control In RCHEs

1. Infection control guidelines
2. Infection control officer
3. Isolation area
4. Infection control training



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Discharge of MDRO Carriers to RCHEs

	MRSA	ESBL+ve GNR	CRE (PCR+ve)	VRSA	VRE	MRPA	MDRA
Inform CICO	No	No	**Yes**	**Yes**	**Yes**	**Yes**	No
Send isolate to PHLSB	No	No	**Yes**	**Yes**	**Yes**	No	No
Contact tracing / screening	No	No	**Scope:** 1. Trace and screen adjacent patients or within the same ward/room / cubicle 2. Repeated screening is not recommended 3. No call back screening for already discharged non-RCHE contacts 4. Risk assessment for deciding extension the tracing procedures beyond the preset level, environmental or staff screening 5. Contact screening will be performed for discharged RCHE contacts.				No
Discharge back to RCHE	Allowed	Allowed	Prerequisites: 1. Two consecutive negative cultures at 48 hours apart from previous positive body sites 2. Inform ICB before discharge 3. Discharge with education pamphlet				Allowed

Three Scenarios

Close collaboration between infection control personnel, geriatricians and RCHE staff for

1. Discharge planning of carriers
2. Hospital contact RCHE screening
3. RCHE contact screening

1. Discharge Planning

- HICT inform different parties (CICO, ICB, CGAT/CNS*)
- Joint assessment team
  - CICO, CGAT / CNS* (if no CGAT) and ICB
- Risk Assessment
  - The resident (Form I: input by HICT)
  - The RCHE: environment, infection control practice (Form III: by joint assessment team)
- Assistance
  - Infection control advice / education
  - Financial support for purchase of PPE

Infection Control Advice and Education

General Infection Control Advice

1. Good personal hygiene
2. Keep hands clean
3. Avoid sharing personal items
4. Avoid direct contact with intact skin or body secretion by bare hands
5. Wear appropriate PPE
6. Clean and cover skin lesions
7. Maintain environmental cleanliness
8. Prompt medical consultation if there is s/s of infection
9. Cautious use of antimicrobials

Infection Control Advice and Education

Modified Contact Precaution

1. Single room or cohort residents with the same MDRO in a room or physically separated by partitioned barriers
2. Post appropriate signage to remind the staff
3. Personal Protective Equipment (Gown and Gloves)
4. Environmental decontamination (1 in 99 diluted household bleach) pay special attention to frequently touched areas such as door knobs, beside tables or beside rails

Infection Control Advice and Education

Modified Contact Precaution

5. Dedicate the specific use of non-critical items, such as wheelchairs, BP cuffs. Otherwise they must be disinfected thoroughly after each use.
6. Protecting other vulnerable non-MDRO residents: residents with indwelling catheters, skin lesions, pre-existing wounds or those currently on antibiotic treatment, should not be assigned to live with confirmed MDRO residents in the same room

Infection Control Advice and Education

- Discharge information

Staff training and education

Joint risk assessment

- On-site assessment
- IC advice and recommendations
- Staff training and education
- Q & A
- Information and promotional materials

Joint risk assessment

衛生防護中心 Centre for Health Protection

Specific Multiple-Drugs Resistant Organisms (MDRO) Report Form

醫院管理局 HOSPITAL AUTHORITY

Form III: Risk Assessment of RCHEs (by Joint Assessment Team)

Name of Resident:

Name of RCHE: (LORCHE code) **Phone no.:**

RCHE Address:

Assessment date: - - (yyyy-mm-dd)

Before Hospitalization

Resident living condition in RCHE

- ☐ Single room
- ☐ Share room with partition, type of partition
- ☐ Share room without partition

Remarks:

Contact with other residents

- ☐ Normal socialization with other residents
- ☐ Share room with residents with no risk factors
- ☐ Share room with residents with risk factors, pleas

Resources and Support

- Resources for PPE, Alcohol Handrub, Designated equipments
  - One off allowance for designated equipments ($900)
  - Monthly allowance for IC consumables ($5,750)

2. Hospital Contact RCHE Screening

- HICT inform CGAT/CNS*
- CGAT/CNS*
  - Take the screening swab and send the swab to corresponding hospital
  - Advice RCHE to enhance infection control practice while waiting for the results
- HICT will inform the result to CGAT/CNS* when available
- CGAT / CNS* will inform RCHE accordingly
  - If negative, case close
  - If positive, joint visit for RCHE contact screening / infection control education

VRE 9/282 (3.19%)

Workflow of Contact Screening of RCHE patient

Contact screening of patient already discharged back to RCHE when a special MDRO confirmed in hospital (12th March 2012)

Contact tracing
- A MDRO new case identified in hospital
- A patient contact discharged to RCHE

ICT
- ICT inform contact person of hospital CGAT/ CNS (for RCHE without CGAT coverage) of a discharged patient contact in RCHE

CGAT/ CNS
- CGAT/ CNS (for RCHE without CGAT coverage) collects specimen for screening

ICT
- ICT traces the culture results and inform CGAT/ CNS (for RCHE without CGAT coverage) and ICB of positive cases

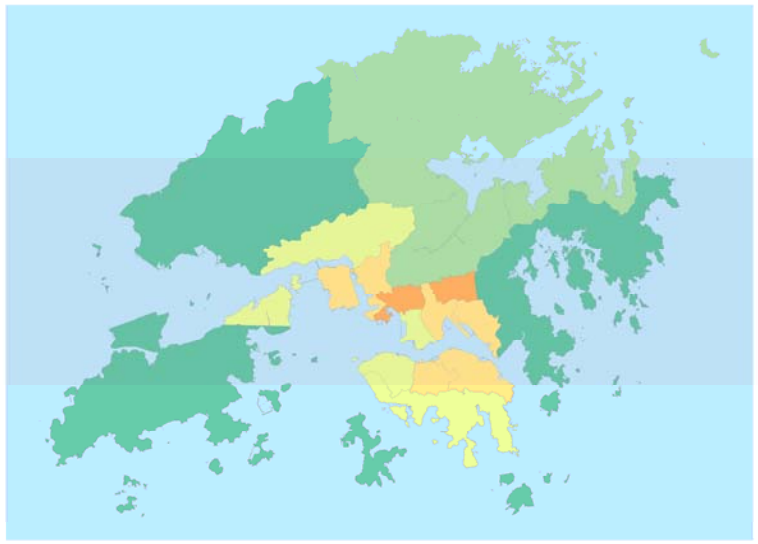
CGAT + ICB
- CGAT/ CNS (for RCHE without CGAT coverage) and ICB perform risk assessment and infection control advice/ monitoring in RCHE

MDRO: Multiple-drugs resistant organism which includes CRE, VISA, VRSA, VRE and MRPA
RCHE: Residential Care Home for Elderly
ICT: Infection Control Team
CGAT: Community Geriatric Assessment Team
CNS: Community Nursing Service

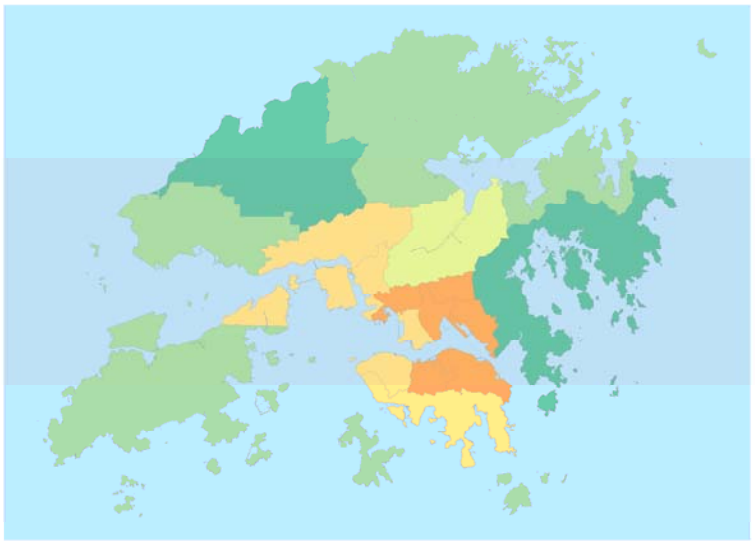
3. RCHE Contact Screening

- Scenarios
  - Positive with hospital admission screening
  - Hospital contact screened after discharge back to RCHE and turned to be positive
- Joint assessment (CICO/ CGAT/CNS*)
  - Risk factors of the colonizer
  - Risk factors of residents staying in the same cubicle
  - Environment of the RCHE
  - Infection control practice of the RCHE staff
- To determine the scope of screening of RCHE contact
- IC advice / training to RCHE

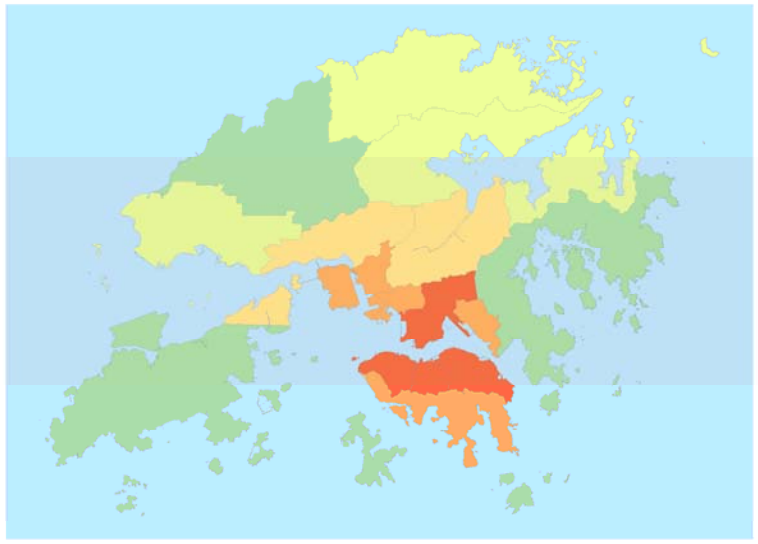
32 cases from 12 RCHE screened: all negative



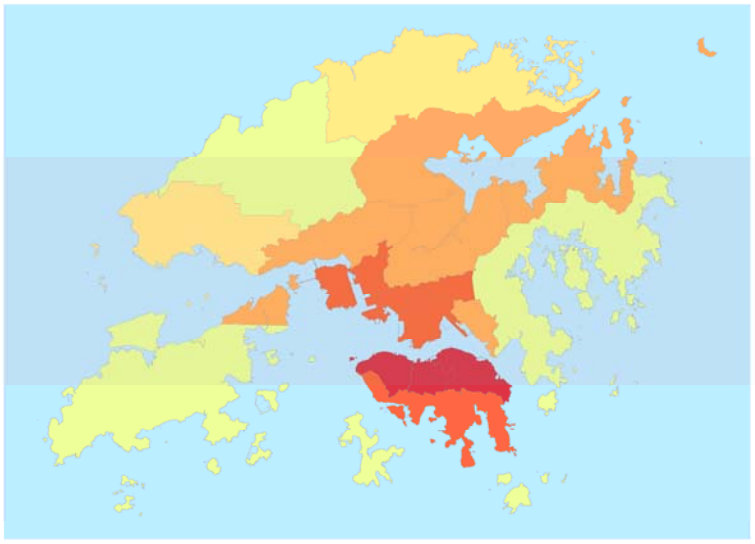
65歲或以上人口
百分比（**2010**年）
<=10%
<=12%
<=14%
<=16%
<=18%



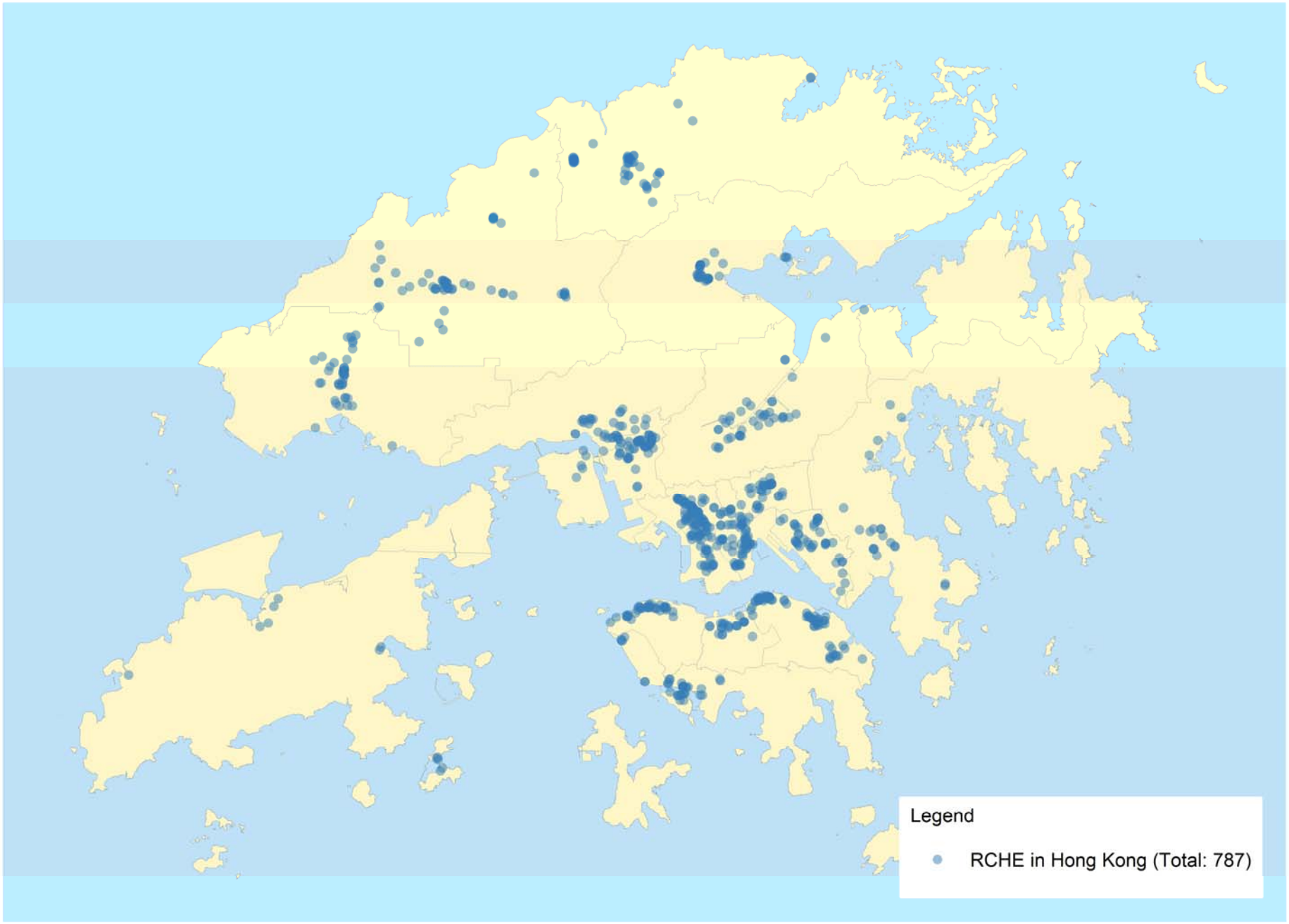
65歲或以上人口
百分比（**2013**年）
<=10%
<=12%
<=14%
<=16%
<=18%

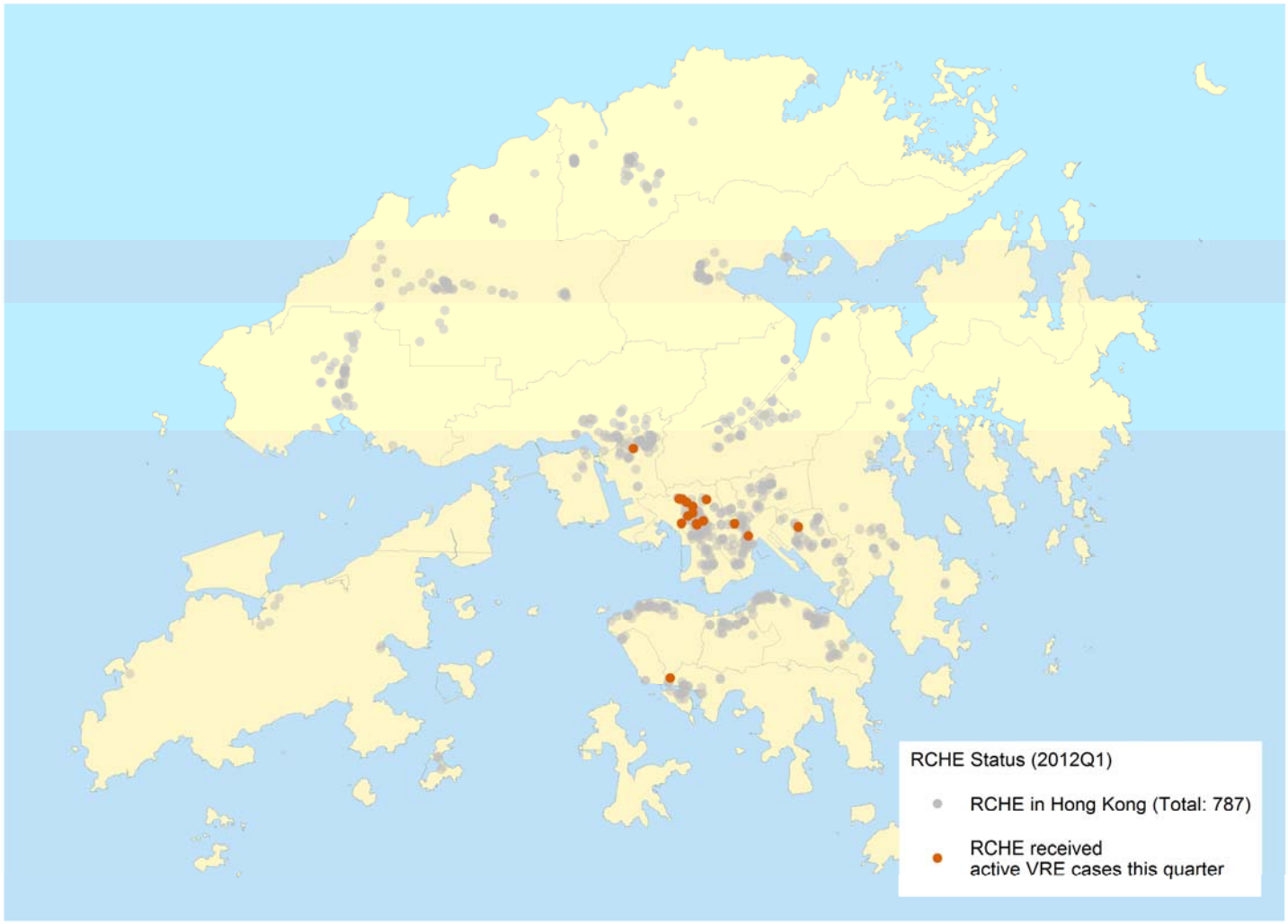


65歲或以上人口
百分比（**2016**年）
<=12%
<=14%
<=16%
<=18%
<=20%

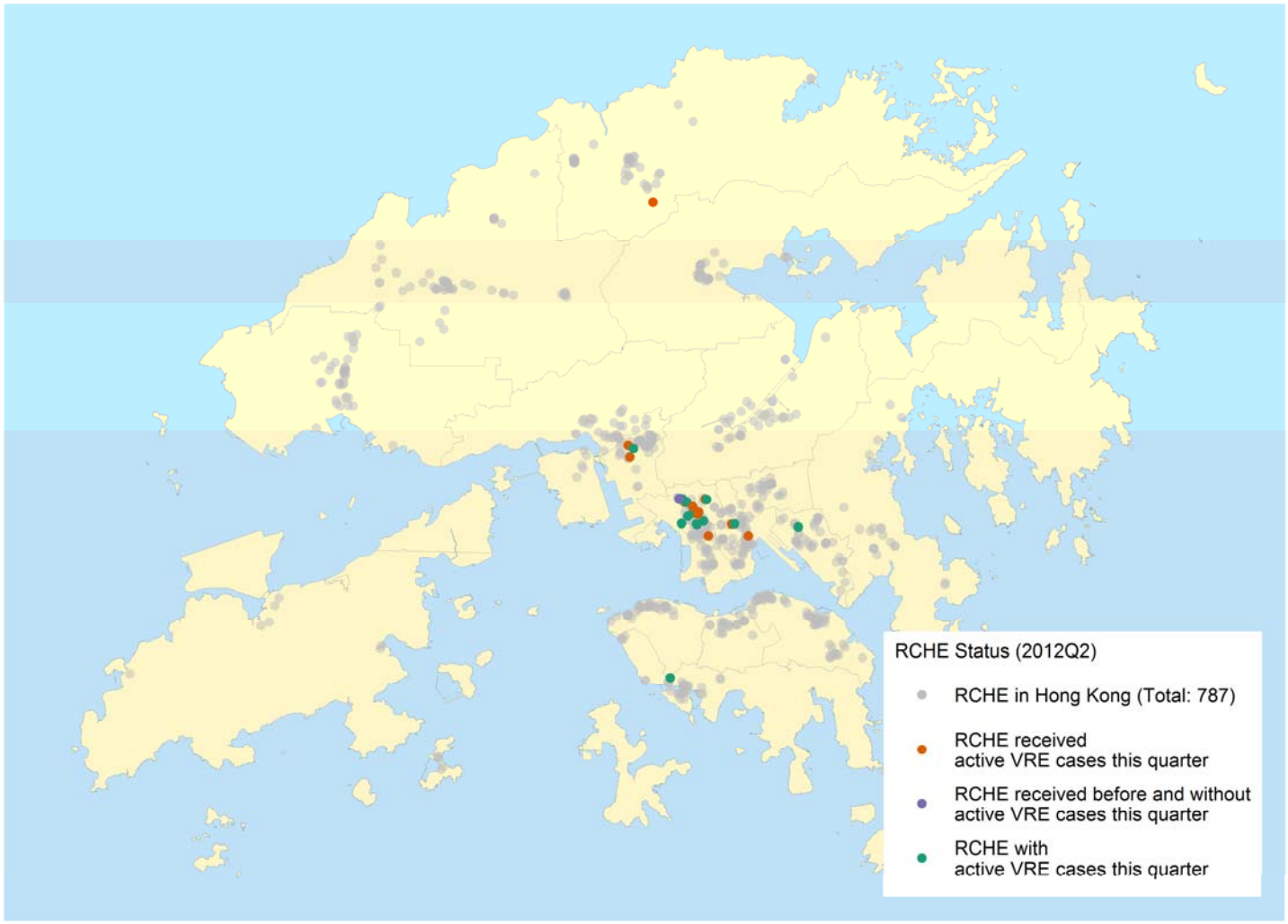


65歲或以上人口
百分比（**2019**年）
<=14%
<=16%
<=18%
<=20%
>20%


Legend
RCHE in Hong Kong (Total: 787)



Year/ Quarter	Active VRE case from previous quarter	New VRE case	VRE case under surveillance	No. of RCHE with active VRE case during the quarter	VRE case turned negative	VRE case pass away
2012Q1	NA	18	18	16	0	0
2012Q2	18	11	29	25	3	3
2012Q3	23	8	31	30	14	3



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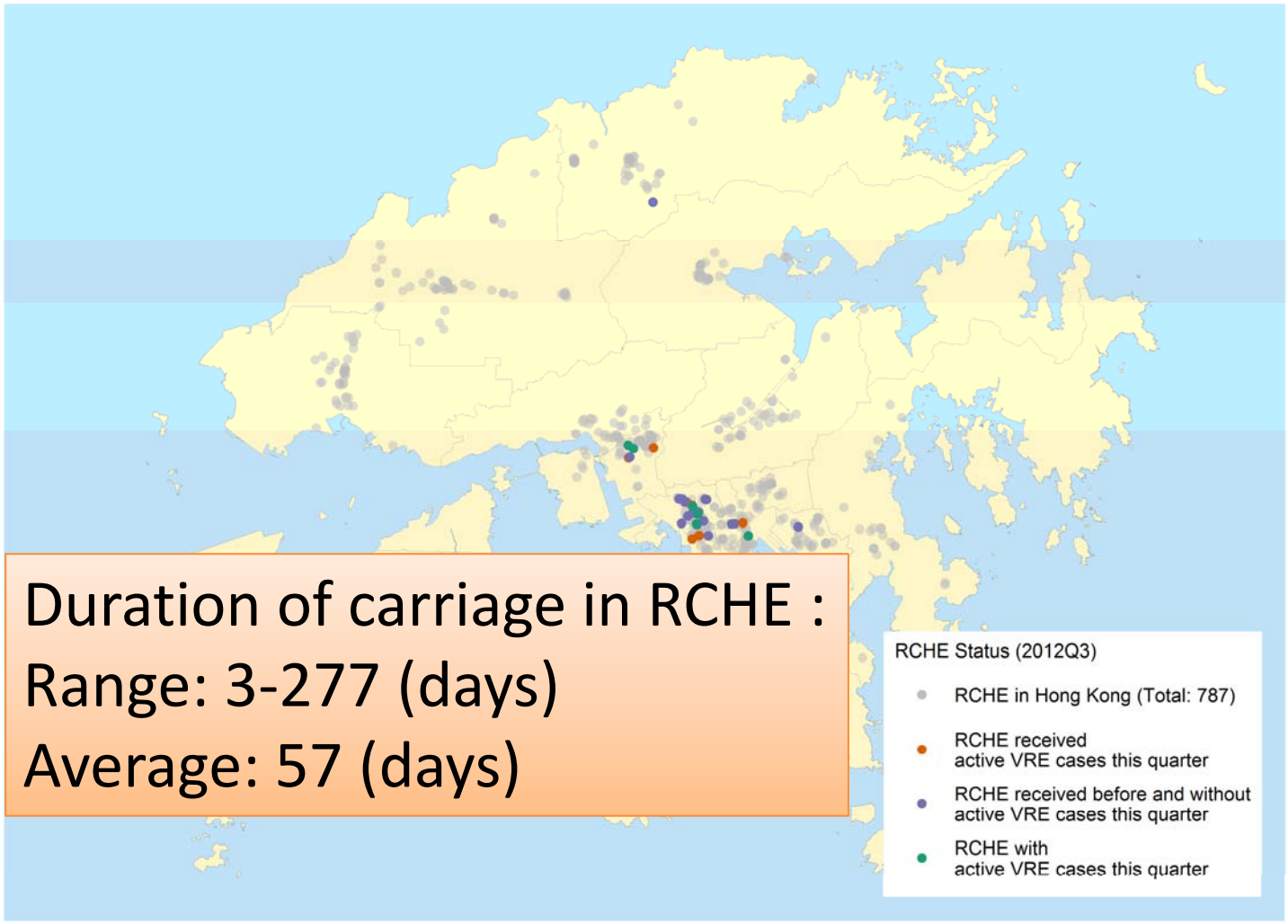

Duration of carriage in RCHE :
Range: 3-277 (days)
Average: 57 (days)

Year/ Quarter	Active VRE case from previous quarter	New VRE case	VRE case under surveillance	No. of RCHE with active VRE case during the quarter	VRE case turned negative	VRE case pass away
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MRSA

- More than 40% of SA identified in public hospitals in Hong Kong are MRSA
  - 79% aged 65 or above (over 50% are RCHE residents, whom only contribute to around 20% of hospital admissions in this age group)

MRSA in RCHE

- Local study in RCHEs in 2005
- 1,563 residents from 487 RCHEs
- MRSA prevalence 5.1% (95% C.I. 4.1-6.3)

Ho PL, Lai EL, Chow KH, Chow LS, Yuen KY, Yung RW. Molecular epidemiology of methicillin-resistant Staphylococcus aureus in residential care homes for the elderly in Hong Kong. *Diagn Microbiol Infect Dis. Jun 2008;61(2):135-142.*

MRSA in RCHE

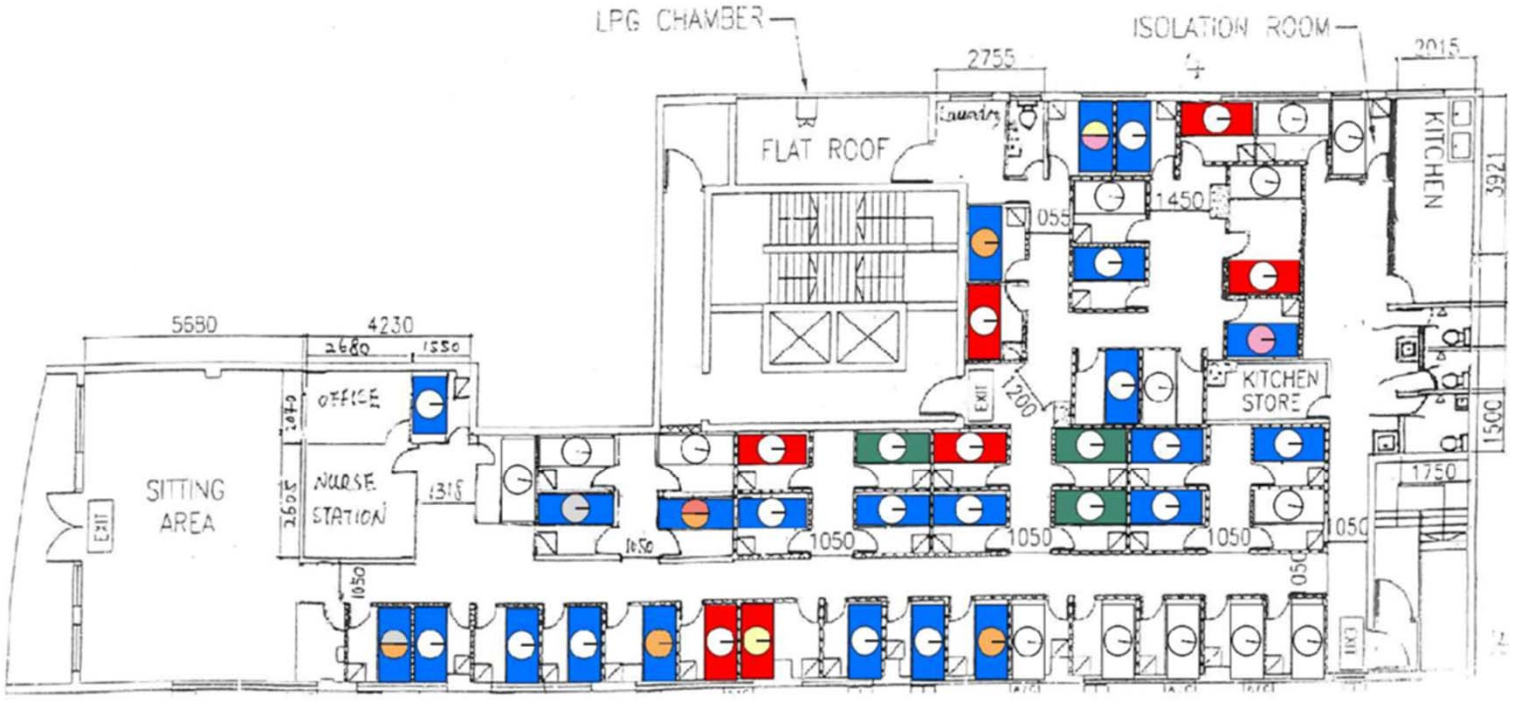
- Recent study in 2011
- 2,278 residents from 32 RCHEs were screened
  - Overall prevalence of MRSA was 18.6%
  - Independent risk factors identified were
    - Male
    - Presence of indwelling medical devices
    - Presence of multiple co-morbidities
    - Increased functional impairment
    - Increased length of hospitalization in past one year
    - History of antibiotic usage in the past one year
    - RCHE – home type

MRSA in RCHE

Variable	n	OR (95% CI)	p-value
Female	1,420	1 (NA-NA)	NA
Male	856	1.381 (1.087-1.755)	0.008
Age <85	969	1 (NA-NA)	NA
Age >=85	1,307	1.119 (0.881-1.422)	0.355
Barthel Index Decrease: 0	250	1 (NA-NA)	NA
Barthel Index Decrease: <35	682	1.366 (0.776-2.407)	0.280
Barthel Index Decrease: 35-90	632	2.797 (1.618-4.834)	<0.005
Barthel Index Decrease: >90	712	3.619 (2.094-6.255)	<0.005
Comorbidity: Charlson Index: 0	388	1 (NA-NA)	NA
Comorbidity: Charlson Index: 1	705	1.182 (0.792-1.763)	0.413
Comorbidity: Charlson Index: 2	617	1.375 (0.922-2.051)	0.118
Comorbidity: Charlson Index: >2	566	1.782 (1.198-2.652)	<0.005
Device Absent	2,009	1 (NA-NA)	NA
Device Present	267	1.411 (1.033-1.927)	0.031
Hospital Length of Stay: None	995	1 (NA-NA)	NA
Hospital Length of Stay: <2 Days	378	1.110 (0.773-1.593)	0.573
Hospital Length of Stay: 2-14 Days	478	1.671 (1.212-2.303)	<0.005
Hospital Length of Stay: >14 Days	425	2.268 (1.641-3.134)	<0.005
Antibiotics Use in Last 90 Days: NO	1,918	1 (NA-NA)	NA
Antibiotics Use in Last 90 Days: YES	358	1.670 (1.245-2.240)	<0.005
Home Type (Non-private Home)	723	1 (NA-NA)	NA
Home Type (Private Home)	1,553	1.364 (0.979-1.899)	0.066

MRSA in RCHE

- RCHE floor plan

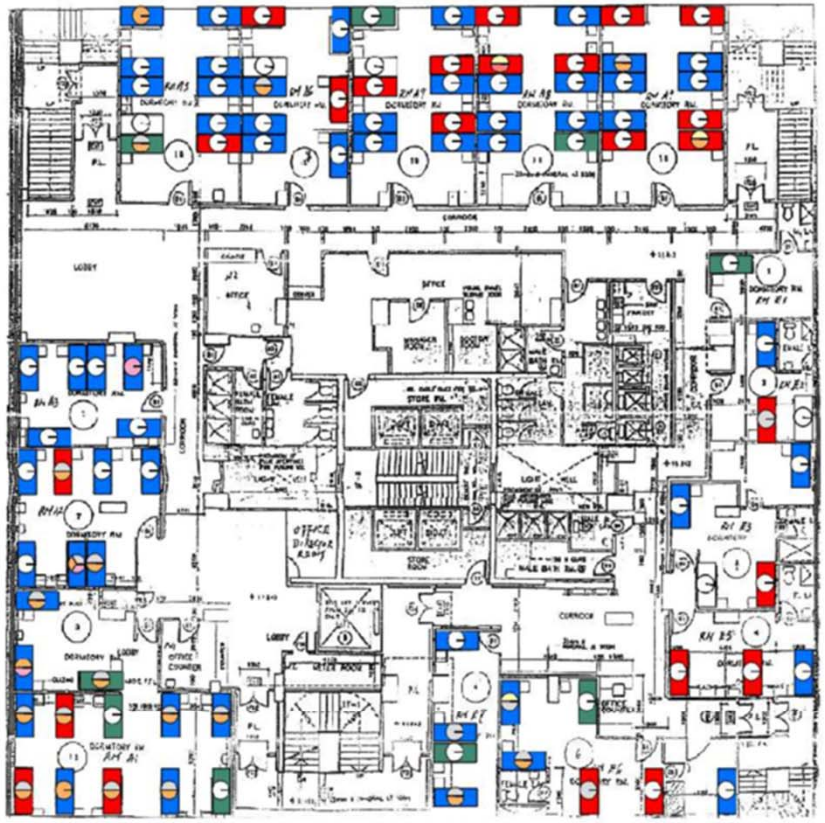


Occupied 33 out of 47 beds
Total number of resident with swab taken: 30
% of resident with +ve MRSA: 23.33% (7/30)

- Foley
- Ryles Tube
- PEG Tube
- PD
- Wound
- Bedbound
- Oxygen Therapy
- Colostomy
- Tracheostomy
- No Device/Wound
- Positive MRSA
- Negative MRSA
- Occupied Bed
- Empty Bed

MRSA in RCHE

- RCHE floor plan



Occupied 175 out of 194 beds
Total number of resident with swab taken: 139
% of resident with +ve MRSA: 28.78% (40/139)

Foley
Ryles Tube
PEG Tube
PD
Wound

Bedbound
Oxygen Therapy
Colostomy
Tracheostomy
No Device/Wound

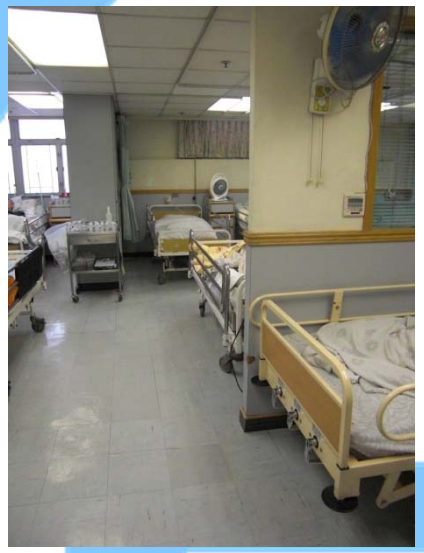
Positive MRSA
Negative MRSA
Occupied Bed
Empty Bed

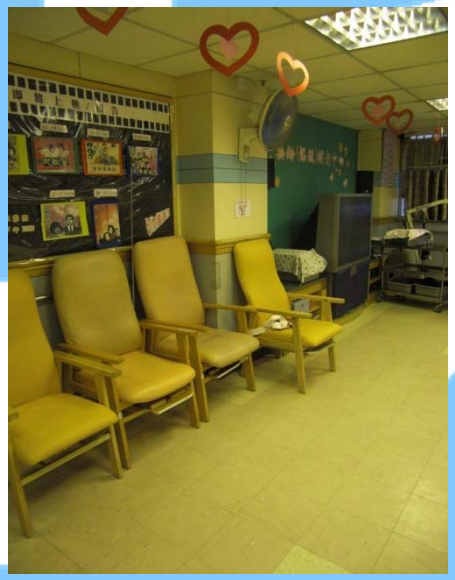
MRSA in RCHE

- Environmental sampling

Area	No. of samples positive for MRSA	No. of samples taken	Proportion of positive samples
Resident immediate area	12	56	21.4%
Common area	1	32	3.1%
Staff area (treatment room / office)	1	32	3.1%

MRSA in RCHE

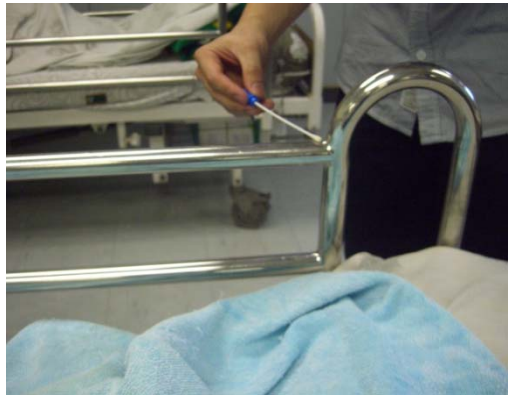


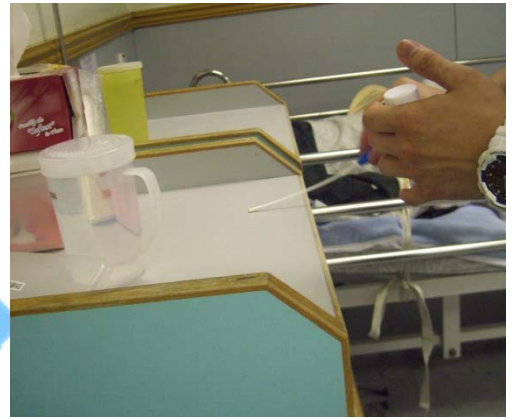


MRSA in RCHE

- Environmental sampling
  (Individual objects in resident immediate area)

Object	No. of samples positive for MRSA	No. of samples taken	Proportion of positive samples
Bed crank	1	8	12.5%
Bed side rail	7	28	25.0%
Door knob	0	2	0.0%
Locker handle	2	8	25.0%
Locker top	2	8	25.0%
Water tap	0	2	0.0%





Acknowledgement

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Thanks