Infection Control Guidelines and Programs for Residential Care Homes in Hong Kong

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Content

- Setting the standard
  - Code of practice (LORCHE)
  - Guidelines on prevention of communicable disease in RCHEs

- Support to RCHEs

- Infection Control Programs in RCHEs
Aging Population

More elders would require residential care services

Sources: Census and Statistics Department Website
RCHE in Hong Kong

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

2015- around 740 RCHEs providing ~ 73,000 places
Equivalent to 6.5 % of the elderly population aged 65 or above in Hong Kong
Setting the Standard
LORCHE (Licensing Office of Residential Care Homes for the Elderly)

• Residential Care Homes (Elderly Persons) Ordinance (Cap. 459)
  – All residential care homes for the elderly (RCHEs) must be licensed to legitimize their operations

• LORCHE is responsible for enforcing statutory provisions under the Ordinance applicable to subvented, contract, self-financing non-profit-making and private RCHEs
Code of Practice

• Code of Practice for Residential Care Homes (Elderly Persons)
  – Under section 22 of the Residential Care Homes (Elderly Persons) Ordinance
  – Chapter 12 Infection control
    • RCHEs should implement control of infectious diseases in accordance with the Guidelines on Prevention of Communicable Diseases in RCHE
Guidelines on Prevention of Communicable Diseases in RCHE

- To provide staff members with practical information on the preventive measures of communicable diseases in RCHE
- Latest revised in 2015
- Based on the previous versions published in 2004, 2007
- The guidelines has been updated with the latest information on multi-drug resistant organisms (MDROs)
Content of the Guidelines
Divided into six sections

1. Concepts on communicable diseases
2. Detection of communicable diseases in RCHEs
3. General advice on prevention of communicable diseases
4. Infection control measures in RCHEs
5. Outbreak of communicable disease
6. Role of RCHE staff
Editorial Board

• Centre for Health Protection, Department of Health
  – Central Health Education Unit
  – Infection Control Branch
  – Surveillance and Epidemiology Branch
• Elderly Health Service, Department of Health
• Community Geriatric Assessment Team, Hospital Authority
• Licensing Office of Residential Care Homes for the Elderly (LORCHE), Social Welfare Department
Dissemination

- Mailing to RCHEs under LORCHE and Nursing homes under Office for Registration of Healthcare Institutions (ORHI) of the Department of Health


- Workshops for staff of Elderly Health Service and Visiting Health Team

- Training sessions for RCHE staff held in annual training 2015
Support to RCHEs

1. RCHE Infection Control Officer Training (annually from April – July)
   - coordinated by ICB;
   - speakers from ICB, SEB, SWD LORCHE
   - trained more than 1800 RCHE staffs annually from 2010 to 2015

2. Ad-hoc trainings for different issues (e.g. infection control and isolation practice of multi-drug resistance organisms) in RCHEs

3. Annual Integrated Assessment (annually from July – November) by EHS to assess their health care knowledge and practice including infection control

4. KwT/TW District RCHE Steering Committee
   - To coordinate services provide to RCHEs from public bodies within district
   - To align healthcare services to meet the needs of RCHEs
   - Members include geriatricians from PMH and YCH, Psychogeriatrics team of KCH, CNS & CGAT of HA; EHS of the DH; ICB and SEB of CHP; and LORCHE of SWD.
Aim

• The program aims to understand and improve the current infection control practices in private RCHEs.
Objectives

– To explore the current infection control practices in private RCHEs in relation to recommendations
– To assist private RCHEs to implement structural infection control program
Target and Coverage

• Focus on the most private (resource limited and needy) homes
• RCHEs were selected by a composite score generated for each RCHE using the annual checklist 2012 by EHS
• 50 private RCHEs were recruited
Distribution of the recruited RCHEs

50 RCHEs were recruited
Location:
- 20 RCHEs in New Territories (NT)
- 18 RCHEs in Kowloon (KLN)
- 12 RCHEs in Hong Kong (HK)
Program Component

Training Materials

RAE 2013-2015

Out reach integrated Training

Onsite Assessment
Components of the Program

• RCHE staff education and training – six core areas in 4 sessions
  1. Basic infection control concepts
  2. Care of residents with MDROs
  3. Environmental hygiene
  4. Influenza vaccination promotion
  5. Hand hygiene
  6. Care of residents with medical devices
Components of the Program

- On-site observation and regular feedback on infection control practices
  - Environmental hygiene
  - Hand hygiene facilities and practices
  - Safe care practices
- Hotline & a designated nurse provides support and guidance to empower Infection Control Officer (ICO)
- Training resources (training kits)
- Other conventional educational materials (posters, pamphlets, DVD)
Assessment

1. Staff knowledge test
2. Environmental hygiene
3. Hand hygiene facilities and practices auditing
4. Safe care monitoring
Staff Knowledge Test
– Pre-and-post questionnaires

<table>
<thead>
<tr>
<th>問題</th>
<th>是</th>
<th>否</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 傳染病輸傳播媒介，需要有哪些原因、傳染病、宿主和媒介途徑。</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. 病原體傳播途徑包括空氣、飛沫及接觸傳播。</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. 輸血護士是有效防止呼吸道感染傳播的防護措施。</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. 525%家用漂白水是院會日常的消毒劑。</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. 接觸血液的血液、體液、分泌物、排泄物、傷口和黏膜，應採取標準防護措施。</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. 接觸可能由直接接觸患者的創面或間接接觸受污染的物品傳播。</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. 一般廁所和醫療廁所不用分開處理。</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. 所有創傷必須置於利器盒內。</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. 處理用後儀器及物品的原則，應先清潔後消毒。</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. 院的個人物品如指甲剪、髪刷，可共同使用。</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Staff Knowledge Test Result - by Individual RCHE

Pre-score 85.1
Post-score 91.7

Before intervention | After intervention
Staff Knowledge Test Result – by Staff Rank

<table>
<thead>
<tr>
<th></th>
<th>Before intervention</th>
<th>After intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>nurse</td>
<td>87.8</td>
<td>94.2</td>
</tr>
<tr>
<td>HW</td>
<td>87.2</td>
<td>94.4</td>
</tr>
<tr>
<td>PCW</td>
<td>83.6</td>
<td>90.8</td>
</tr>
<tr>
<td>cleaner</td>
<td>85.9</td>
<td>88.8</td>
</tr>
<tr>
<td>others</td>
<td>82.1</td>
<td>89.4</td>
</tr>
</tbody>
</table>
Staff Knowledge Test Result – by Training Module

<table>
<thead>
<tr>
<th>Training Module</th>
<th>Mean Score Before Intervention</th>
<th>Mean Score After Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Infection Control</td>
<td>91.0</td>
<td>96.3</td>
</tr>
<tr>
<td>Environmental Hygiene</td>
<td>70.4</td>
<td>81.6</td>
</tr>
<tr>
<td>Hand Hygiene</td>
<td>92.3</td>
<td>94.8</td>
</tr>
<tr>
<td>Care of Residents with Medical Devices</td>
<td>94.5</td>
<td>96.2</td>
</tr>
<tr>
<td>Care of Residents with MDROs</td>
<td>74.4</td>
<td>87.0</td>
</tr>
<tr>
<td>Influenza Vaccination Promotion</td>
<td>92.0</td>
<td>97.1</td>
</tr>
</tbody>
</table>

Legend: **Before intervention** | **After intervention**
Environmental Hygiene

For example:

- Dilution of bleach
- Disinfection of cleansing tools
- Outbreak management
- Kitchen and toilet environment
Environmental Hygiene Auditing - by Individual RCHE

Pre-score: 82.2
Post-score: 95.4

EICM
Hand Hygiene Facilities and Practice

For example:
- Hand washing facility
- Installation of alcohol based hand rub
- Five moments of hand hygiene
- In-house hand hygiene assessment
Hand Hygiene Facilities and Practice Auditing - by Individual RCHE

Pre-score 51.8

Post-score 77.2

Before intervention

After intervention
Safe Care

- Handling and disposal of used / contaminated sharps
- Handling of nasogastric tube / PEG tube feeding utensils
- Handling of urethral catheterization drainage system
Safe Care
- Handling and disposal of used/contaminated sharps

Pre-score 74.5
Post-score 89.5
Safe Care
- Handling of nasogastric tube/PEG tube feeding utensils

Pre-score 71.9
Post-score 95.8
Safe Care
- Handling of urethral catheterization drainage system

Pre-score 89
Post-score 96.9

Before intervention
After intervention
Impacts on RCHEs as commented by RCHE staff during the visits

• Knowledge
  – On-site visit with flexible schedule and time
    ➔ facilitate staff of different levels to attend
  – Interactive educational talks with games
    ➔ Attractive
    ➔ Easier to comprehend
  – Training kit – clear, comprehensive and simple
    ➔ reference
    ➔ facilitate continuous staff training
    ➔ train newly recruited staff (train the trainer)
Impacts on RCHEs as commented by ICB colleagues

• **Attitude**
  - Habit to use alcohol handrub
  - RCHE staff starts to take the initiative to call for help or ask questions with regards to IC related issues.
  - RCHE staff gained confident in performing IC measures.
  - ICB has established a good rapport with RCHE staff and thereby they are willing to review their real situation to us and follow the advices on improving their IC measures and practices given by us.
Impacts on RCHEs as commented by RCHE staff and ICB colleagues

• Practice
  – Posters and gimmicks – have served as a reminder and increased alertness among the RCHE staff, so that they are able to apply the knowledge into daily routine practices.
  – Interactive games – provided opportunities for RCHE staff to practice their IC procedures (e.g. donning and doffing of PPE). Their misconceptions/lapse in IC practices/mistakes made can be pointed out and corrected by our nurses.
  – Provision of ABHR – built up the habit of using ABHR ➔ increase HH compliance
  – Self assessments – ICO started to assess RCHE’s environmental hygiene and staffs’ HH techniques regularly
Conclusion

• All of the RCHEs welcomed the program
• The tailor-made training and recommendations are useful on the promotion of infection control
• Overall improvement documented in various assessments including Hand Hygiene and Environmental Hygiene
Prevalence Survey of MDROs in RCHEs in KCC

Conducted in Oct to Dec 2015
Surveyed 1099 Residents from 20 RCHEs

<table>
<thead>
<tr>
<th>MRSA prevalence</th>
<th>MDRA prevalence</th>
<th>CRE prevalence</th>
<th>VRE prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>29.4% (24.2 - 35.3)</td>
<td>0.6% (0.1 - 3.8)</td>
<td>0.0% (0.0 - 0.0)</td>
<td>0.0% (0.0 - 0.0)</td>
</tr>
</tbody>
</table>
Prevalence Survey of Common Communicable Diseases in RCHEs

- Point prevalence survey from Feb to May 2014
- Surveyed 3857 residents from 46 RCHEs
- The overall prevalence of infections was 2.7% (95% CI 2.1%- 3.4%)
- The most common infections:
  - Respiratory Tract Infection 1.33% (95%CI 0.93-1.89)
  - Skin and soft tissue infection 0.70%  (95% CI 0.47-1.04)
  - Urinary tract infection 0.53% (95% CI 0.32-0.86)

<table>
<thead>
<tr>
<th></th>
<th>All RCHE</th>
<th>Private RCHE</th>
<th>Non-private RCHE</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any antimicrobials</td>
<td>81 (2.12%)</td>
<td>53 (2.02%)</td>
<td>28 (2.35%)</td>
<td>1.000</td>
</tr>
<tr>
<td>Augmentin</td>
<td>30 (0.78%)</td>
<td>18 (0.69%)</td>
<td>12 (1.01%)</td>
<td>1.000</td>
</tr>
<tr>
<td>Levofloxacin</td>
<td>14 (0.38%)</td>
<td>11 (0.43%)</td>
<td>3 (0.26%)</td>
<td>1.000</td>
</tr>
<tr>
<td>Cefuroxime</td>
<td>7 (0.20%)</td>
<td>7 (0.28%)</td>
<td>0 (0.00%)</td>
<td>0.444</td>
</tr>
<tr>
<td>Other antimicrobials</td>
<td>34 (0.86%)</td>
<td>20 (0.74%)</td>
<td>14 (1.15%)</td>
<td>1.000</td>
</tr>
</tbody>
</table>
Discharge of Carriers with Emerging MDROs to RHCEs

- “Find and confine” strategy adopted by HA since end of 2010 for emerging MDRO (VRE, CRE (PCR +ve), VISA/VRSA and MDPA)
- Direct discharge of VRE from hospital to trained RCHE starting Nov 2013
- Surging number of CRE carriers to be discharged to RCHEs in 2015
Laboratory surveillance on multi-antimicrobial resistant bacteria (2009 - Nov 2015)

### Vancomycin-resistant enterococcus

<table>
<thead>
<tr>
<th>Year</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015 Jan - Nov</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistant</td>
<td>1</td>
<td>30</td>
<td>122</td>
<td>258</td>
<td>2387</td>
<td>1665</td>
<td>426</td>
</tr>
</tbody>
</table>

### Enterobacteriaceae with reduced susceptibility to carbapenems mediated by various molecular classes of carbapenemases

<table>
<thead>
<tr>
<th>Year</th>
<th>Class</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>KPC</td>
<td>IMI</td>
</tr>
<tr>
<td>2011</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>2012</td>
<td>11</td>
<td>34</td>
</tr>
<tr>
<td>2013</td>
<td>9</td>
<td>32</td>
</tr>
<tr>
<td>2014</td>
<td>38</td>
<td>50</td>
</tr>
<tr>
<td>2015 Jan - Nov</td>
<td>16</td>
<td>83</td>
</tr>
</tbody>
</table>

Source: CHP/Statistics on laboratory surveillance
### Number of Carriers Discharged to RCHE (2014)

<table>
<thead>
<tr>
<th>Cluster</th>
<th>Year 2014</th>
<th>VRE</th>
<th>CRE</th>
<th>CRE &amp; VRE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
<td>Q4</td>
</tr>
<tr>
<td>KCC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KWC</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>KEC</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>NTEC</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>NTWC</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>HKEC</td>
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<td></td>
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</tr>
<tr>
<td>HKWC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

One MRPA case of HKWC discharged to HKWC in 2014 Q4
## Number of Carriers Discharged to RCHE (2015)

<table>
<thead>
<tr>
<th>Cluster</th>
<th>VRE</th>
<th>CRE</th>
<th>CRE &amp; VRE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td>Year 2015</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KCC</td>
<td>18</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>KWC</td>
<td>5</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>KEC</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>NTEC</td>
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<td>1</td>
<td>1</td>
</tr>
<tr>
<td>NTWC</td>
<td>8</td>
<td>11</td>
<td>14</td>
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<tr>
<td>HKEC</td>
<td>5</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>HKWC</td>
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<td>1</td>
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</tr>
<tr>
<td>Subtotal</td>
<td>33</td>
<td>30</td>
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Acknowledgment