



衛生防護中心
Centre for Health Protection

Scientific Committee on Emerging and Zoonotic Diseases

Update of epidemiology of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection in Hong Kong

Purpose

This paper provides updates on the epidemiology of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection from January to October 2007.

Sources of Notification

2. From January to October 31, 2007, the Centre for Health Protection (CHP) recorded 143 cases of CA-MRSA infection. About two-thirds of cases (96/143, 67%) were notified by public hospitals and one-fourth (35/143, 24%) by private hospitals & private doctors. A small proportion of cases were notified by Public Health Laboratory Services Branch (PHLSB) of the CHP (6 %) and the General Out-patient Clinic (GOPC) (2%) (Table 1).

Demographic characteristics

3. Among 143 cases reported in 2007, 82 (57.3%) cases were male (Table 2). The median age was 33 years old (ranged from 3 months to 102 years old).

4. Eighty-six cases (60%) were Chinese, while 28 (19.6%) were Filipinos, followed by Caucasians and other Asians (Table 2).



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5. The most commonly reported occupation was student (18.9%, 27/143), followed by domestic helper (14.7%, 21/143). 90.5% (19/21) of domestic helpers were Filipino while only around two-thirds (67.9%, or 19/28) of Filipinos were domestic helpers. Two were health care workers (one was a nurse working in intensive care unit while the other was an outreach occupation therapist who need to pay regular visit to hostels for mentally retarded persons).

Clinical Presentation

6. 141 CA-MRSA cases (98.6%) presented with skin and soft tissue infection (SSTI), while two patients presented with lower respiratory tract infections. Two patients with initial presentation of SSTI later developed invasive CA-MRSA. All of them were recovered.

7. For the skin and soft tissue infections, nearly 30% of cases occurred on lower limbs (29.8%, 42/141), followed by buttocks, groin and perineum (22.7%, 32/141), upper limbs and axilla (18.4%, 26/141), head and neck (12.1%, 17/141), trunk and back (11.3%, 16/141). Eight cases (5.7%) had multiple areas involvement.

Hospitalization, treatment and outcome

8. 74.1% (106/143) cases required hospital treatment for CA-MRSA infection while 3 others were admitted for other reasons, including haemorrhoid, abnormal behaviour and left wrist injury (Table 4). The median duration of hospitalization was 4 days, ranged from 1 to 30 days. 112 (78.3%) CA-MRSA patients underwent surgical treatment. Over 90% (131) of patients were prescribed with antibiotics for treatment or prophylaxis.

Clustering

9. Four family clusters were identified in 2007, involving a total of 8 cases. The first family cluster was reported in January 2007 involving a pair of couple (M/35 and F/31). The second cluster involved a father-and-daughter pair. The 39-year-old father presented with right thigh abscess while his 3-year-old daughter developed folliculitis over the scalp three months later. The third cluster involved a sibling pair. The elder brother (M/12) presented with right shoulder abscess while his sister (F/3 months) developed carbuncle over the back of neck and right post-auricular region three months later. The fourth cluster was reported in October 2007 and affected a domestic helper and a 6-year-old girl. The maid developed left thigh skin abscess while the girl developed an intranasal boil. All cluster cases had recovered.

Possible risk factors reported

10. About 21.6% (25/116), 10.7% (13/122), 9.3% (8/86), 1.7% (1/58) 11.8%(15/127), and 11.4% (13/114) of cases gave a history of prior antibiotic use, visited massage, visited sauna / spa, visited gymnastic centres, hospitalization and engagement in contact sports in one year prior to symptoms onset, respectively (Table 5).

Laboratory findings

11. Among the 143 cases, 104 patients (72.7%) belonged to type IV and 39 patients (27.3%) were type V. Non-Chinese patients accounted for 48.1% (50/104 cases) of type IV cases, while 82.1% (32/39) of the type V cases were Chinese. All 143 cases were Panton-Valentine leukocidin (PVL) gene positive.

12. The antibiotic susceptibility pattern of our 143 CA-MRSA cases is shown in Table 6. All isolates were sensitive to vancomycin and the vast majority (>98%) tested was sensitive to co-trimoxazole and fusidic acid. From our data, only 5 isolates were tested for mupirocin and were sensitive to it.

CA-MRSA colonization in patients and their contacts

13. During our epidemiological investigation of CA-MRSA infection, body swabs will be taken from patients (from nostrils, axilla and from groin, perineum or wounds if are present) for culture. Pre-decolonization swabs were taken from 81 out of 143 cases. 29 (35.8%) were found to have CA-MRSA carriage in the body swabs (mainly nasal and axillary swabs and a few throat swabs, groin and perineal swabs).

14. A total of 512 close contacts were identified for the 143 reported cases. Some 615 body swabs were collected for examination with 6.6% (21/319) of close contacts were found to be carrying the CA-MRSA asymptotically.

Centre for Health Protection

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Annex 1

Table 1: The source of notification of community-associated methicillin resistant *Staphylococcus aureus* cases from 2005 to Oct 2007

	2005	2006	2007 (Jan to Oct)
Laboratory	0	10 (31.3%)	9 (6.3%)
Public hospitals	7 (100%)	22 (68.7%)	96 (67.1%)
Private hospitals and private doctors	0	0	35 (24.5%)
General Out-patient clinics	0	0	3 (2.1%)
Total	7 (100%)	32 (100%)	143 (100%)

Table 2: Demographic information of community-associated methicillin resistant *Staphylococcus aureus* cases from 2005 to Oct 2007

	2005	2006	2007 (Jan to Oct)
Gender			
Male	3 (42.9%)	16 (50%)	82 (57.3%)
Female	4 (57.1%)	16 (50%)	61 (42.7%)
Age			
Median (years)	19	30.5	33
Range (years)	13 months – 33	12 days – 77	3 months - 102
Ethnicity			
Chinese	3 (42.8%)	26 (81.2%)	86 (60.1%)
Filipinos	2 (28.6%)	6 (18.8%)	28 (19.6%)
White, etc	0	0	15 (10.5%)
Other Asians	2 (28.6%)	0	8 (5.6%)
Others	0	0	1 (0.7%)
Unknown	0	0	5 (3.5%)
Total	7 (100%)	32 (100%)	143 (100%)

Table 3: Region of infection in community-associated methicillin resistant *Staphylococcus aureus* cases from January to October 2007[#]

Regions of involvement	Number of cases	Percentage
Lower limbs	42	29.8%
Buttocks	21	14.9%
Groin	6	4.3%
Perineum	5	3.5%
Upper limbs	18	12.8%
Axilla	8	5.6%
Head and neck	17	12.1%
Trunk including back	16	11.3%
Multiple regions involvement	8	5.7%
Number with skin and soft tissue infection	141	100%

[#]Excluded two cases who presented with haemopytosis and pneumonia

Table 4: Hospitalization Status of community-associated methicillin resistant *Staphylococcus aureus* cases from January to October 2007

	2005	2006	2007
Not admitted	0	7 (21.9%)	34 (23.8%)
Admitted for CA-MRSA infection	6 (85.7%)	25 (78.1%)	106 (74.1%)
Admitted for other reasons	1 (14.3%)	0	3 (2.1%)
Total	7 (100%)	32 (100%)	143 (100%)

Table 5: Risk factors within 1 year prior to onset in community-associated methicillin resistant *Staphylococcus aureus* cases from January to October 2007

	Number of patients
Prior antibiotic usage	25
Massage	13
sauna/ spa	8
gym	1
Hospitalization	15
Contact sport	13
Diabetes mellitus	6
Burn	6
Surgery	5
Nursing home stay	1
Intravenous drug user	1
HIV	1

Table 6. Antibiotic susceptibility pattern of the 143 community-associated methicillin resistant *Staphylococcus aureus* cases from January to October 2007

Antibiotic	Number of isolates sensitive / total number tested (%)
Vancomycin	143/143 (100%)
Erythromycin	86/140 (61.4%)
Clindamycin	96/129(74.4%)
Gentamicin	118/132 (89.4%)
Co-trimoxazole	85/86 (98.8%)
Fusidic acid	95/96(98.9%)
Mupirocin	5/5 (100%)
Methicillin	0/83 (0%)