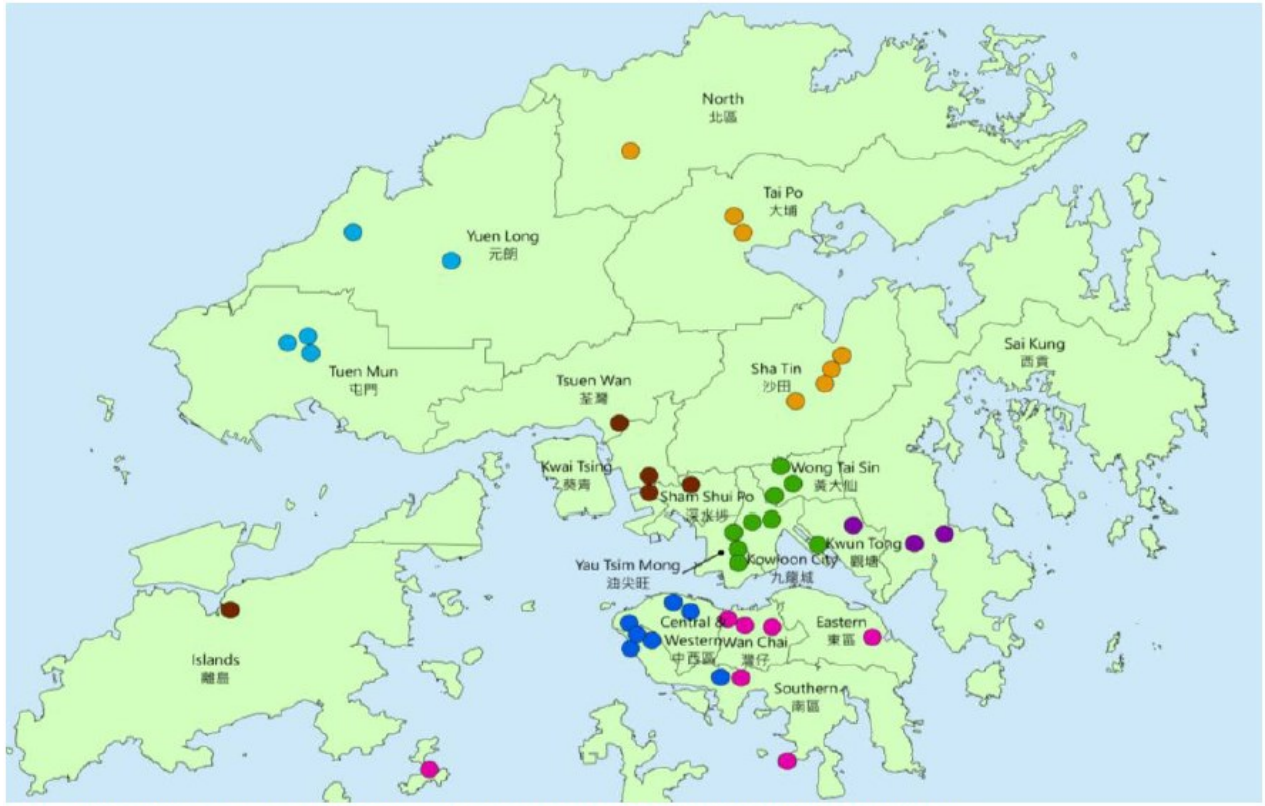
Outbreak Management – Operational Flow

Ms M Y KONG
(SNO, Chief Infection Control Officer Office)
18 February 2022

Hospital Authority Service Scope

- HA provides public healthcare services to the people of Hong Kong through the Head Office and seven hospital clusters.

  - 89,730 staff (as of 31 Dec 2021)
  - 43 hospitals and institutions
  - 49 Specialist Out-patient Clinics (SOPCs)
  - 73 General Out-patient Clinics (GOPCs)
  - 29,850 beds (as of 31 Mar 2021)



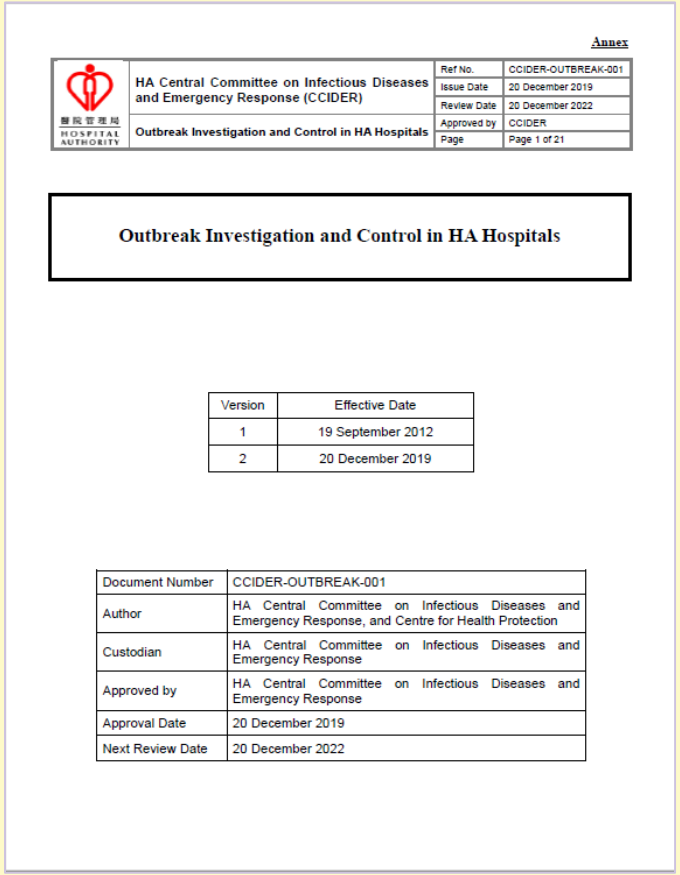
Note: Hospitals / institutions under the Hospital Authority management are represented by dot on the map.

Outbreak investigation and control in HA

- HA developed guideline on outbreak investigation and control in hospitals and clinics.

- Hospital Infection Control Teams (HICT) are required to report clustering or outbreak to both the Central Notification Office (CENO) of the Centre for Health (CHP) and the Chief Infection Control Officer (CICO) Office of HA.

- In case of a statutory notifiable infectious disease specified in the First Schedule to the Prevention and Control of Disease Ordinance (Cap 599), medical practitioners are required to report suspected or confirmed cases to CENO through Notifiable Diseases and Outbreak Reporting System (NDORS) for public health investigation.



Annex

HA Central Committee on Infectious Diseases and Emergency Response (CCIDER)	Ref No.	CCIDER-OUTBREAK-001
	Issue Date	20 December 2019
	Review Date	20 December 2022
Outbreak Investigation and Control in HA Hospitals	Approved by	CCIDER
	Page	Page 1 of 21

Outbreak Investigation and Control in HA Hospitals

Version	Effective Date
1	19 September 2012
2	20 December 2019

Document Number	CCIDER-OUTBREAK-001
Author	HA Central Committee on Infectious Diseases and Emergency Response, and Centre for Health Protection
Custodian	HA Central Committee on Infectious Diseases and Emergency Response
Approved by	HA Central Committee on Infectious Diseases and Emergency Response
Approval Date	20 December 2019
Next Review Date	20 December 2022

Objectives of outbreak investigation and control

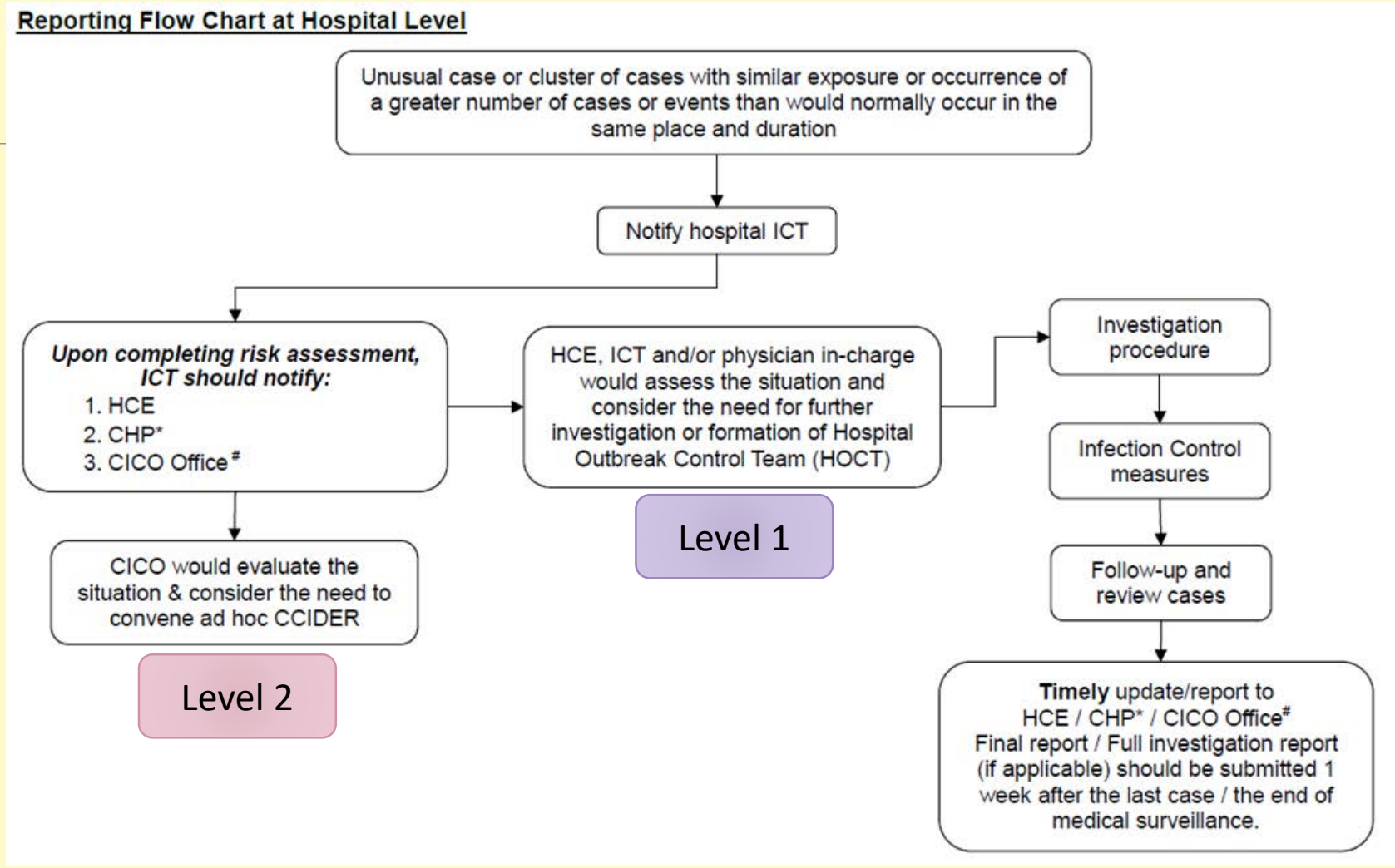
- Recognize and investigate an outbreak of infectious disease;
- Identify and, where possible, eliminate the source;
- Stop or limit further spread;
- Prevent recurrence;
- Ensure satisfactory communication among parties concerned;
- Disseminate lessons learnt.

Level 1 - When a cluster of cases is noted

- The decision to activate the hospital outbreak control plan and to convene an HOCT meeting will be made jointly by the Infection Control Officer, HCE and the physician in-charge.

Reference indicators for convening a HOCT meeting:

1) Cluster of infections which may incur immediate and/or continuing health hazard to the local population
2) Unusual cluster of health care workers infected
3) Considerable number of cases which exceeds the average level of occurrence in the ward/ unit
4) Cases occur in more than one wards/ units



Membership of Hospital Outbreak Control Team (HOCT)

- HCE or designate (chairperson)
- HICT
- Physician in-charge and/or Specialists from the relevant clinical specialty
- Representative from CHP
  - Communicable Disease Branch (CDB)
  - Infection Control Branch (ICB)
- A senior nursing staff member
- A senior administrative staff member
- Media relations persons

Co-opt representatives:

- Allied health services
- Domestic Services
- Catering Department
- Central Sterile Supplies Department
- Central Supplies
- Laundry
- Pharmacy
- Other government department or agencies as appropriate

Roles of CHP

Communicable Disease Branch (CDB)

1. To coordinate the overall epidemiological investigation, in collaboration with Hospital ICT
2. To conduct contact tracing and medical surveillance of visitors to patients / discharged patients / staff's relatives in the community.
3. To provide regular feedback to hospital ICT on the progress of contact tracing and medical surveillance
4. To prepare a situational report (sitrep) for all outbreaks to hospitals where necessary

Infection Control Branch (ICB)

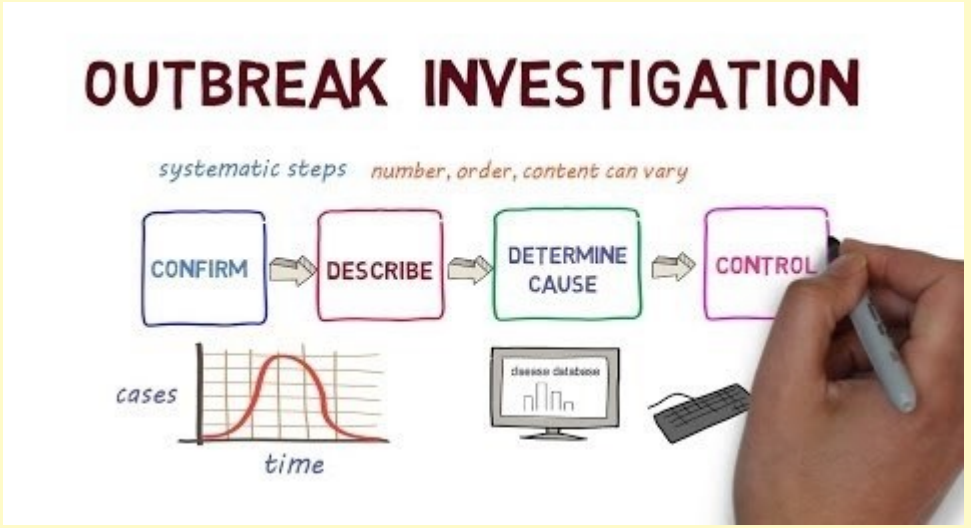
1. To discuss with HICT and / or HCE on all reported clustering of infectious diseases or unusual cases to decide whether there is an outbreak.
2. To participate in field visit to affected area jointly with the HICT
3. To review infection control measures in partnership with HICT and advice if deemed necessary
4. To participate as full member in HOCT meeting

Terms of Reference of HOCT

1. To review evidence and confirm if there is an outbreak based on the case definition established
2. To develop a strategy to deal with the outbreak and to allocate individual responsibilities for implementing actions
3. To investigate the outbreak and identify the nature, vehicle and source of infection by employing microbiological and epidemiological experts
4. To decide control measures including appropriate isolation of patients/contacts and closure of premises and to monitor their effectiveness in dealing with the cause of the outbreak and in preventing further spread. Practicality, sustainability and service implications should be considered when the infection control measures are recommended.
5. To give support and advice on the nursing and medical care of patients involved and to provide clear guidelines for patients, relatives, visitors, staff and hospital departments where appropriate
6. To assess the need for additional resources from senior management and/or cluster
7. To coordinate with HAHO News Section and Communication Group for Infectious Disease Outbreak for communication to staff and external parties
8. To prevent further cases elsewhere by communicating findings and update to chairperson of CCIDER
9. To consider potential staff training needs arising from the outbreak
10. To identify opportunities for updating knowledge about disease control in collaboration with HAHO
11. To evaluate lessons learnt
12. To declare the conclusion of the outbreak and to prepare a final report to be submitted to HCE, CICO Office and CHP

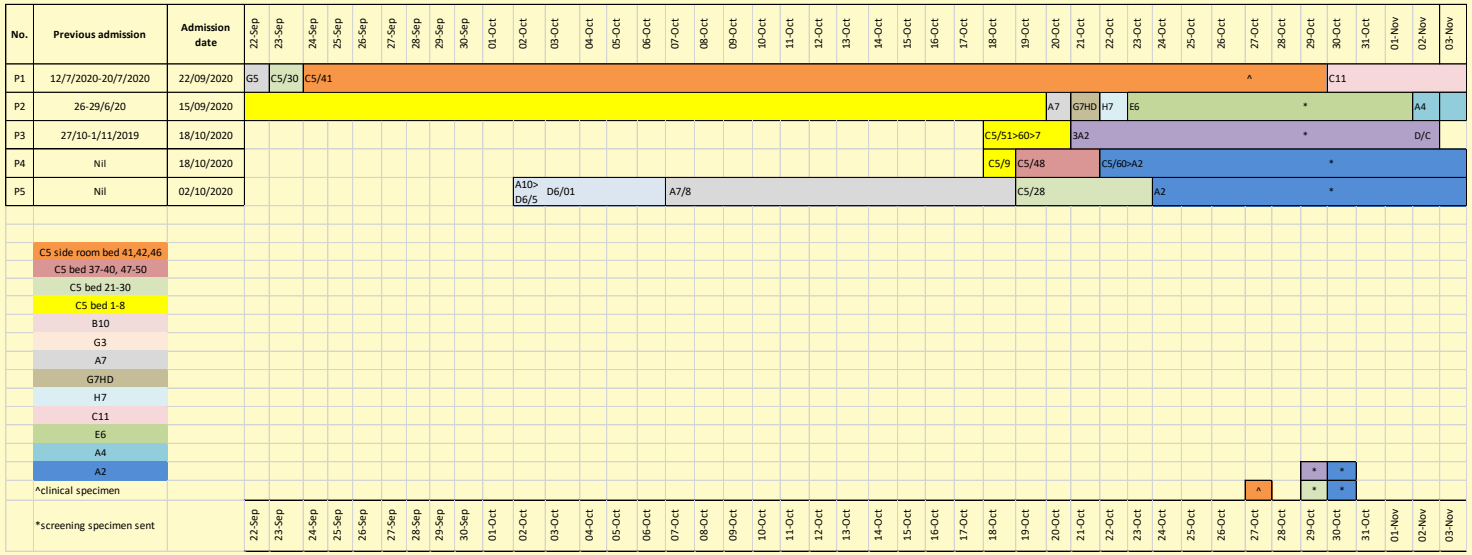
10 Steps of Outbreak Investigation

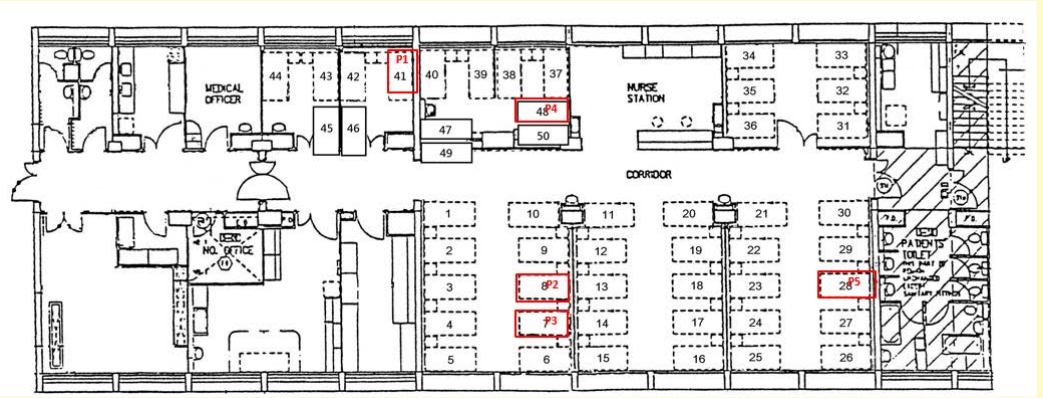
1. Assemble investigation team and resources
2. Establish existence of an outbreak
3. Verify the diagnosis
4. Construct case definition
5. Find cases and develop line listing
6. Perform descriptive epidemiology (time, person, place)
7. Evaluate hypotheses explaining exposure & disease
8. Implement control measures
9. Communicate findings
10. Maintain surveillance



Time, place, person illustrated by epi curve, line listing & floor map

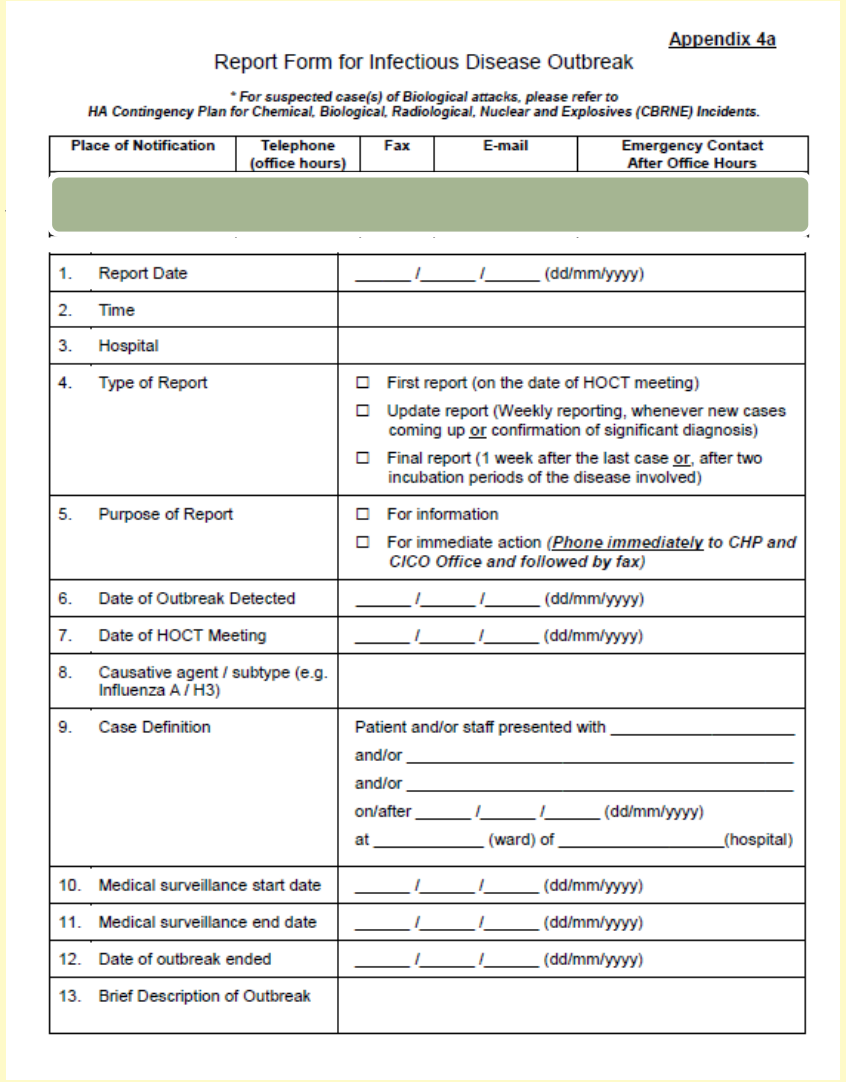
No.	Sex	Age	AdmDate	CollectDate	RptReadyDate	Specimen	Organism	Reasons for specimen	Diagnosis	Contact Precaution Date	Date of cohort	Nosocomial/Community	Colonization/Infection	R/T	Foley	Peripheral IV	CVC	Wound	Ventilator	ETtube	Tracheostomy	PEG	Tenckhoff	HD	Chest drain	Physiotherapy	Prior OT	High Dependance	Use of diaper	Diarrhea	OAH	Last negative result
P1	M	53	22/09/2020	27/10/2020	29/10/2020	Blood culture	Enterococcus faecium (VRE)	clinical specimen	ESRF, streptococcus septicemia	29/10/2020	29/10/2020	Nosocomial	Infection	N	N	Y	N	N	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N
P2	M	68	15/09/2020	29/10/2020	02/11/2020	Rectal swab	Enterococcus faecium (VRE)	contact tracing of P1	Infective endocartitis	29/10/2020	NA	Nosocomial	Colonization	N	N	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N
P3	M	74	18/10/2020	29/10/2020	03/11/2020	Rectal swab	Enterococcus faecium (VRE)	contact tracing of P1	Biliary sepsis	29/10/2020	NA	Nosocomial	Colonization	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	30/10/2019
P4	M	65	18/10/2020	30/10/2020	03/11/2020	Rectal swab	Enterococcus faecium (VRE)	contact tracing of P1	Confusion, Left pleural effusion	29/10/2020	03/11/2020	Nosocomial	Colonization	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N
P5	M	55	02/10/2020	30/10/2020	03/11/2020	Rectal swab	Enterococcus faecium (VRE)	contact tracing of P1	Infective endocartitis	29/10/2020	03/11/2020	Nosocomial	Colonization	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N





Proper documentation

- Causative organism
- Case definition (symptom based +/- laboratory confirmation)
- Medical surveillance period
- Number of affected persons (staff/patient/visitor)
- Possible mode of transmission
- Control measures:
  - Isolation/cohort
  - Isolation precautions and PPE
  - Contact tracing
  - Enhance surveillance
  - Environmental disinfection
  - Environment sampling
  - Compliance monitoring e.g. hand hygiene, enteral feeding, napkin change procedure, suction, dressing, catheter care etc.
  - Closure of wards to admission and discharge when necessary
  - Notify visitors
  - Press release



Appendix 4a

Report Form for Infectious Disease Outbreak

** For suspected case(s) of Biological attacks, please refer to HA Contingency Plan for Chemical, Biological, Radiological, Nuclear and Explosives (CBRNE) Incidents.*

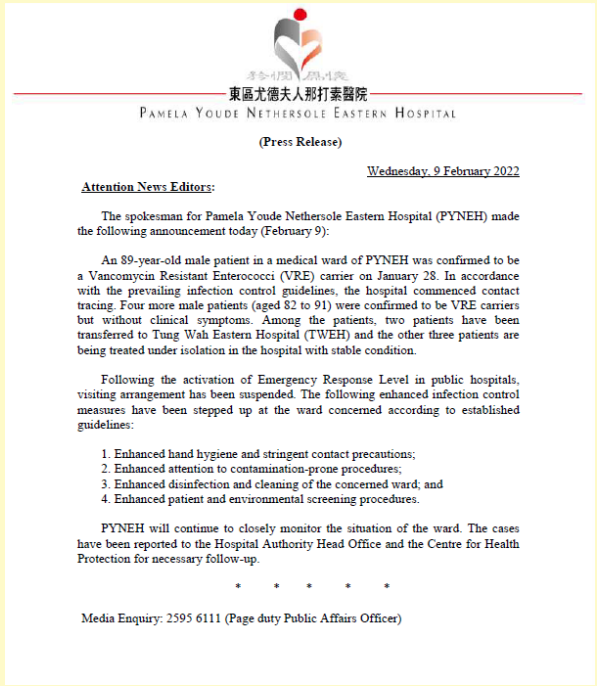
Place of Notification	Telephone (office hours)	Fax	E-mail	Emergency Contact After Office Hours

1.	Report Date	_____ /_____ /_____ (dd/mm/yyyy)
2.	Time	
3.	Hospital	
4.	Type of Report	☐ First report (on the date of HOCT meeting) ☐ Update report (Weekly reporting, whenever new cases coming up or confirmation of significant diagnosis) ☐ Final report (1 week after the last case or, after two incubation periods of the disease involved)
5.	Purpose of Report	☐ For information ☐ For immediate action *(Phone immediately to CHP and CICO Office and followed by fax)*
6.	Date of Outbreak Detected	_____ /_____ /_____ (dd/mm/yyyy)
7.	Date of HOCT Meeting	_____ /_____ /_____ (dd/mm/yyyy)
8.	Causative agent / subtype (e.g. Influenza A / H3)	
9.	Case Definition	Patient and/or staff presented with _____ and/or _____ and/or _____ on/after _____ /_____ /_____ (dd/mm/yyyy) at _____ (ward) of _____(hospital)
10.	Medical surveillance start date	_____ /_____ /_____ (dd/mm/yyyy)
11.	Medical surveillance end date	_____ /_____ /_____ (dd/mm/yyyy)
12.	Date of outbreak ended	_____ /_____ /_____ (dd/mm/yyyy)
13.	Brief Description of Outbreak	

External communication – Press release

Key points of the press release or important message include the followings:

1) Service area affected;
2) Number of patients involved;
3) Conditions and movement, if any, of patients;
4) Investigations conducted and results if available;
5) Infection control measures taken;
6) Timing of information dissemination.



東區尤德夫人那打素醫院
PAMELA YOUDE NETHERSOLE EASTERN HOSPITAL

(Press Release)

Wednesday, 9 February 2022

Attention News Editors:

The spokesman for Pamela Youde Nethersole Eastern Hospital (PYNEH) made the following announcement today (February 9):

An 89-year-old male patient in a medical ward of PYNEH was confirmed to be a Vancomycin Resistant Enterococci (VRE) carrier on January 28. In accordance with the prevailing infection control guidelines, the hospital commenced contact tracing. Four more male patients (aged 82 to 91) were confirmed to be VRE carriers but without clinical symptoms. Among the patients, two patients have been transferred to Tung Wah Eastern Hospital (TWEH) and the other three patients are being treated under isolation in the hospital with stable condition.

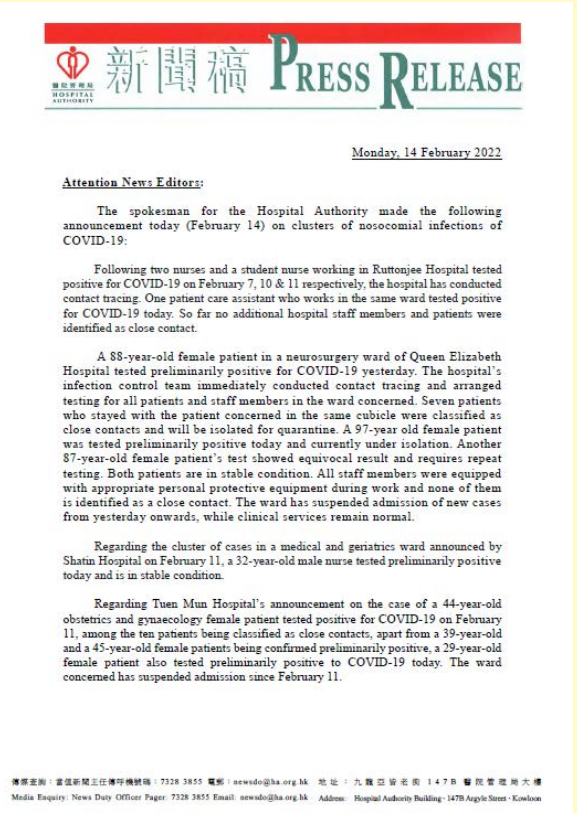
Following the activation of Emergency Response Level in public hospitals, visiting arrangement has been suspended. The following enhanced infection control measures have been stepped up at the ward concerned according to established guidelines:

1. Enhanced hand hygiene and stringent contact precautions;
2. Enhanced attention to contamination-prone procedures;
3. Enhanced disinfection and cleaning of the concerned ward; and
4. Enhanced patient and environmental screening procedures.

PYNEH will continue to closely monitor the situation of the ward. The cases have been reported to the Hospital Authority Head Office and the Centre for Health Protection for necessary follow-up.

* * * * *

Media Enquiry: 2595 6111 (Page duty Public Affairs Officer)



新聞稿 PRESS RELEASE

Monday, 14 February 2022

Attention News Editors:

The spokesman for the Hospital Authority made the following announcement today (February 14) on clusters of nosocomial infections of COVID-19:

Following two nurses and a student nurse working in Ruttonjee Hospital tested positive for COVID-19 on February 7, 10 & 11 respectively, the hospital has conducted contact tracing. One patient care assistant who works in the same ward tested positive for COVID-19 today. So far no additional hospital staff members and patients were identified as close contact.

A 88-year-old female patient in a neurosurgery ward of Queen Elizabeth Hospital tested preliminarily positive for COVID-19 yesterday. The hospital's infection control team immediately conducted contact tracing and arranged testing for all patients and staff members in the ward concerned. Seven patients who stayed with the patient concerned in the same cubicle were classified as close contacts and will be isolated for quarantine. A 97-year old female patient was tested preliminarily positive today and currently under isolation. Another 87-year-old female patient's test showed equivocal result and requires repeat testing. Both patients are in stable condition. All staff members were equipped with appropriate personal protective equipment during work and none of them is identified as a close contact. The ward has suspended admission of new cases from yesterday onwards, while clinical services remain normal.

Regarding the cluster of cases in a medical and geriatrics ward announced by Shatin Hospital on February 11, a 32-year-old male nurse tested preliminarily positive today and is in stable condition.

Regarding Tuen Mun Hospital's announcement on the case of a 44-year-old obstetrics and gynaecology female patient tested positive for COVID-19 on February 11, among the ten patients being classified as close contacts, apart from a 39-year-old and a 45-year-old female patients being confirmed preliminarily positive, a 29-year-old female patient also tested preliminarily positive to COVID-19 today. The ward concerned has suspended admission since February 11.

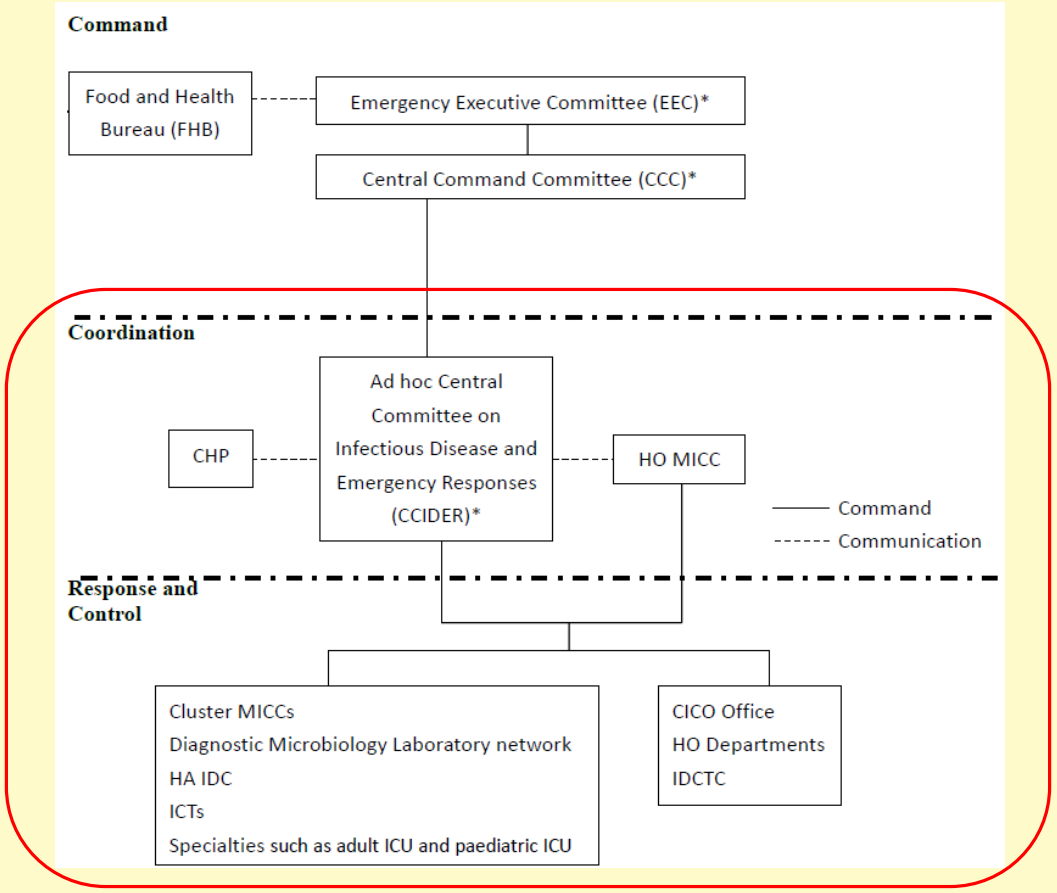
Media Enquiry: News Duty Officer Pager: 7328 3855 Email: newsdo@ha.org.hk Address: Hospital Authority Building · 147B Argyle Street · Kowloon

Level 2 - Unusual outbreaks in the community with implications for hospital services and the public at large

- If the outbreak has a significant element of spread in the community or of multiple sources or spreading across hospitals, ad hoc Central Committee on Infectious Diseases and Emergency Response (CCIDER) meeting will be convened with representatives from HICTs and CHP.

Reference indicators for convening an ad hoc CCIDER meeting:

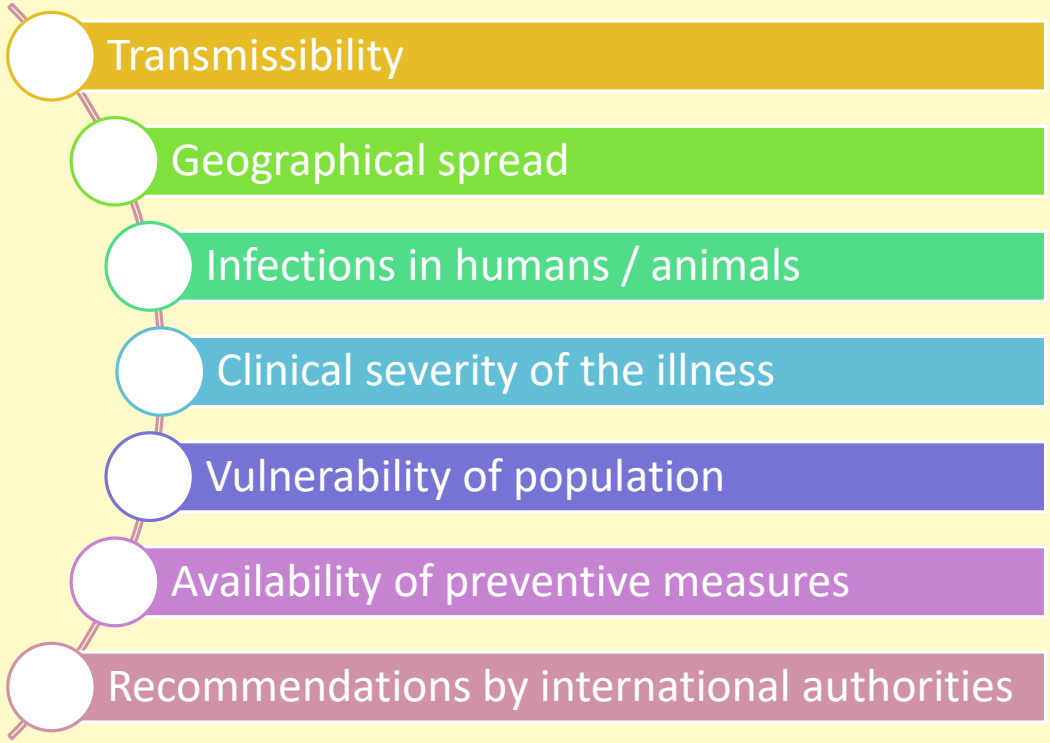
1) Large number of cases of a serious disease
2) Significant number of cases occurring in more than one hospitals/clusters
3) When the outbreak has signs of continual spread or cannot be controlled after implementation of enhanced infection control measures
4) When the outbreak has significant implication for the services of the public hospitals
5) Emergence of novel disease or serious disease with potential of community-wide spread



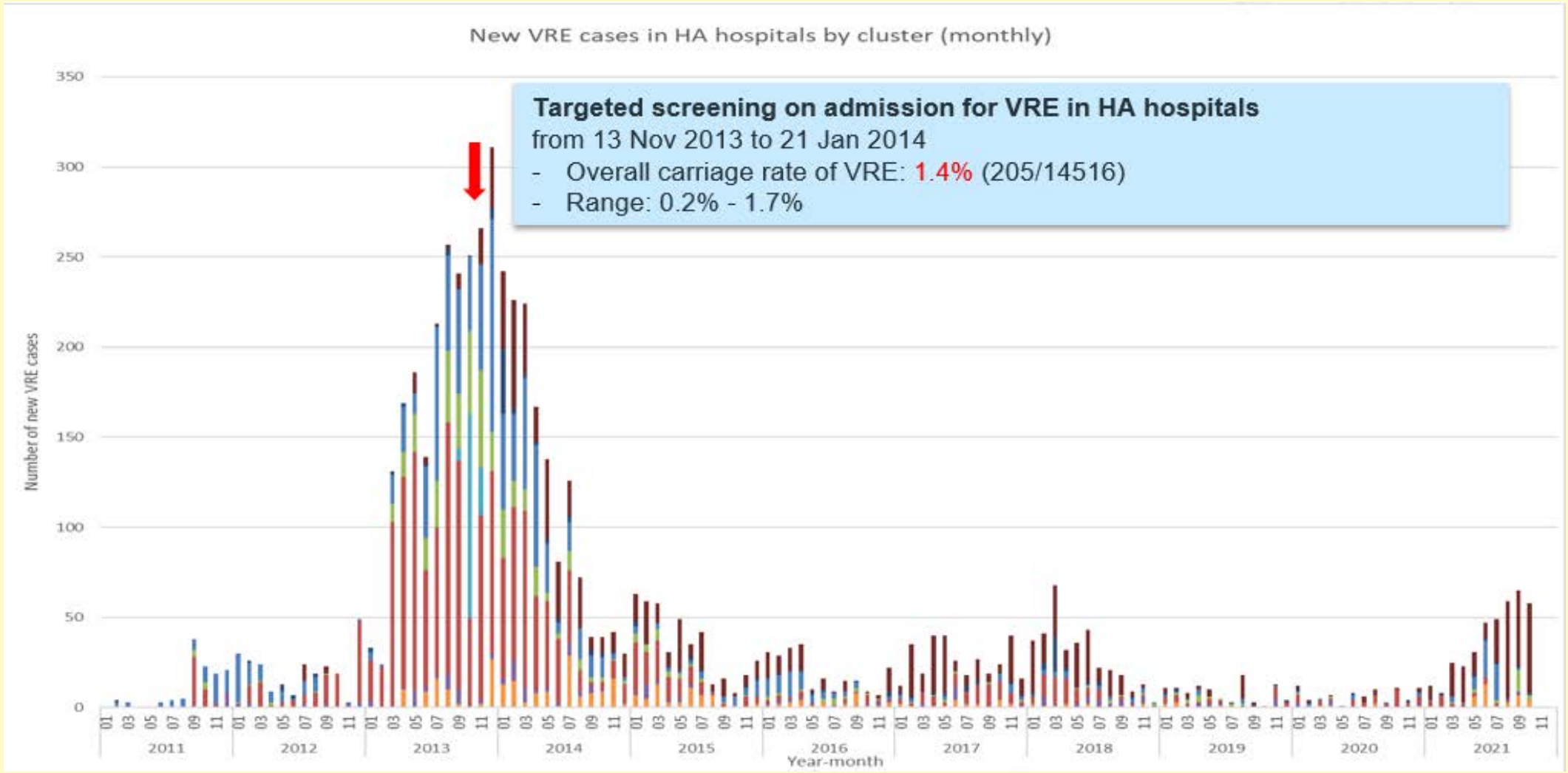
Terms of Reference of Ad hoc CCIDER

1. Provide strategic advice on management of infectious diseases, infection control and contingency planning for outbreaks
2. Lead and coordinate management of emerging infectious diseases and corporate responses to major outbreaks
3. Recommend clinical trials on infectious diseases and standards in infection control
4. Monitor and report on surveillance programs on infection control and drills on emergency response for outbreaks
5. Disseminate and share knowledge on infectious diseases, infection control and contingency planning

Ad hoc CCIDER will be convened for risk assessment by continuous situation update and reviewing the latest scientific evidence on the epidemiology. Areas of concern in the risk assessment as follow:



Outbreaks of VRE in HA hospitals in 2013-14



Control strategy for VRE outbreaks in 2013-14

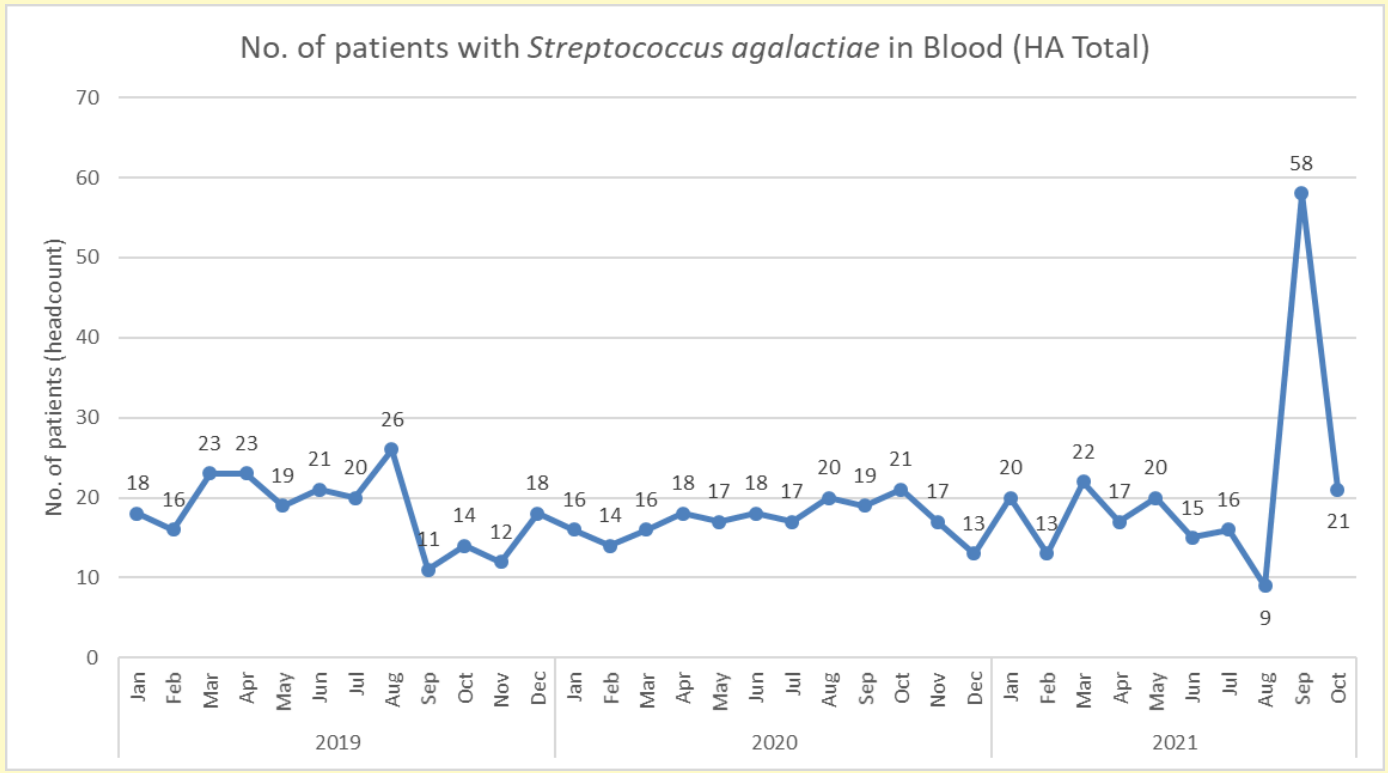
	Recommendations	Implementation
1	PAN-VRE screening	**30 September to 11 November 2013**
2	Cohorting all inpatients into clean, contact, known and unknown categories in designated cubicles.	**Yes according to Guideline**
3	Screened and follow up contacts if discharged to • dialysis centre or • elderly homes.	**High risk screening on 1 August 2013**
4	4. Electronic tagging so that whole HA knows.	**Yes according to Guideline**
5	Two step decontamination with detergent and then Clorox twice daily on all surfaces.	**↑↑ monitoring and compliance**
6	Top down to all COS & consultants	**Yes. Task Force in May 2013**
7	Bottom up Education by open staff forum: junior staff can ask senior staff to do hand hygiene according to WHO recommendations.	**9 August 2013 then weekly**
8	Hand hygiene (HH): alcoholic hand rub at all bed ends.	**Yes since 2008**
9	All patients must have • Directly observed alcoholic hand rub before meals, • HH before oral medications • Toilet has poster to educate patients. • HH with medicated soap after using toilet. • Installation of toilet cleanser in patient toilet	**Yes in May 2013** **August 2013** **August 2013** **18 September 2013** **23 September 2013**
10	Antibiotic optimization to decrease overall use of antibiotics and give shortest possible duration of antibiotics according to clinical settings.	**Yes Antibiotic Stewardship Program**
11	Surveillance to see that the epidemic curve is really going down with these measures.	**Yes weekly reporting since May 2013**

HA Guidelines on active surveillance culture (ASC) for VRE & CPE

Type of screening	Criteria	Issue year (VRE)	Issue year (CPE)
Contact screening	• Patient stay in the same cubicle with any positive case for 2 days or more • Trace back to 10 weeks before detection date staying with the index ➢ In the same ward for confirmed case detected through a clinical specimen. Contact tracing restricted to the same cubicle if the case has transferred in-between wards/hospitals. ➢ In the same cubicle for confirmed case detected though surveillance culture or contact tracing • Further restrict to the same cubicle for confirmed case detected through clinical specimen within 48 hours of admission	2011 2012 2019	2010 (CRE) 2016 2019
Targeted screening (Optional)	• Consider the following screening based on local hospital epidemiology and at the discretion of HICT • high risk of carriage or developing severe infection of VRE • ICU admission and discharge screening	2012	/
Admission screening	• Patient who has history of hospitalization (including day care/procedure in hospital) outside Hong Kong in the last 6 months • Extend the above criteria to last 12 months.	2014 2016	2010 (CRE) 2016
	• Patient who is tagged in the CMS as a known case or who is a contact of known case	2014	2016 (contact case) 2019 (confirmed case)
Sentinel surveillance	• Stool submitted for investigation of *Clostridium difficile*	2014	2016
Extended screening (Optional)	Consider according to the local scenario: 1. Admission screening for patients who have been admitted to local hospitals within 3 months; 2. Regular random screening of stool specimens submitted for culture; 3. Screening of patients with prolonged hospitalization e.g. for 14 days; 4. Admission to high risk units e.g. intensive care unit, haematology.	2019	2016 (point 1 to 3) 2019 (point 1 to 4)

Cluster of invasive Group B Streptococcus ST283 cases related to freshwater fish 2021

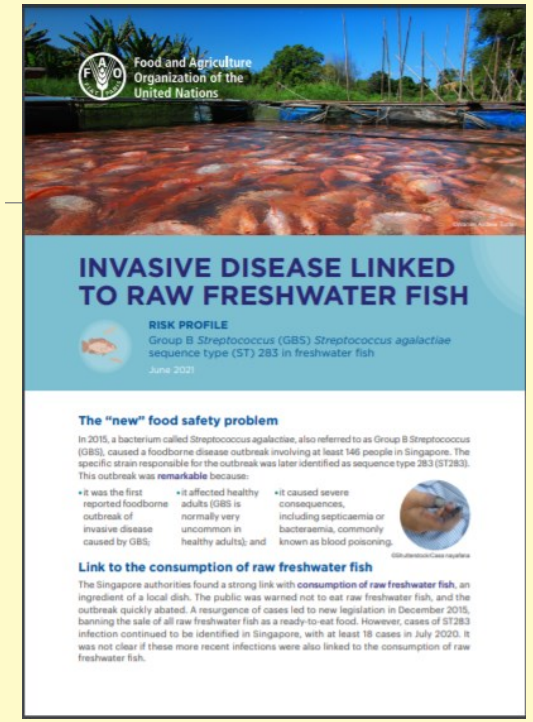
- On 28 September 2021, a hospital ICO informed CICO Office an increase in incidence of Group B *Streptococcus* (GBS) in blood was observed in late Sep 2021.
- In response, CICO reviewed the laboratory data. On September 30, 2021, HA has alerted CHP of an upsurge of invasive GBS cases in public hospitals since Sep 2021.



Invasive GBS infections

Singapore reported outbreaks of invasive GBS disease in nonpregnant adults in 2015 and 2020.

- In 2015, an outbreak of invasive GBS infection in more than 160 people was reported and ST283 was isolated in some cases. The outbreak was linked to the consumption of ready-to-eat (RTE) raw fish of two freshwater fish species - 'Asian bighead carp' and 'snakehead'.
- Studies have shown that freshwater fish had significantly higher numbers of bacteria compared to saltwater fish. Hence, the consumption of raw freshwater fish is likely to present higher risks of bacterial infection such as GBS, compared to saltwater fish if the fish is consumed raw.



In Hong Kong, Chinese Yu Sang is a prohibited food under the Food Business Regulation (Cap 132X). Following the outbreak of invasive GBS disease in Singapore, the Centre for Food Safety advised consumers not to eat raw or undercooked freshwater fish, especially when having hot pot or congee.

In a local study, the CUHK reviewed 1645 GBS isolates from 1993 to 2012 and identified 48 (2.9%) cases with GBS Type III ST283.

In 2021, the Food and Agriculture Organization (FAO) of the United Nations has warned of illness linked to eating raw freshwater fish in Southeast Asia.

References:
1. Emerging Infectious Diseases Vol. 22, No. 10, October 2016
2. Emerging Infectious Diseases Vol. 22, No. 11, November 2016
3. FAO - RISK PROFILE Group B *Streptococcus* (GBS) *Streptococcus agalactiae* sequence type (ST) 283 in freshwater fish
4. Food Safety Focus (114th Issue, January 2016) – Food Incident Highlight

Epidemiological, environmental and laboratory investigation by CHP

- As of 10 October, a total of 79 cases of GBS bacteraemia have been detected in HA since September 2021 (58 cases in September and 21 cases in October).
- Preliminary epidemiological investigations showed that some of the patients have history of handling freshwater fish, including grass carp, before onset of symptoms. Some of them had reported handling of raw freshwater fish with hand wounds.
- CHP has collected some fish and environmental samples taken in markets visited by some of the in early October for GBS screening.
- Genetic analysis revealed that 32 human belonged to a particular strain of serotype III ST283 which was of almost identical genetic sequencing to 5 fish/ environmental samples taken in markets visited by some of the cases, while 27 cases belonged to other serotypes or a different strain of ST283 and genetic analysis were pending for the other 20 cases.
- Combining the epidemiological, environmental and laboratory investigation so far, the recent upsurge was probably due to an outbreak of GBS cases caused by a strain of GBS ST283. Based on available information, the CHP considers that handling raw freshwater fish, particularly those with hand wounds may be associated with the infection and the risk of associated with consumption of undercooked freshwater fish cannot be excluded at this stage.
- CHP issued a press release to appeal for heightened vigilance against invasive GBS in early Oct 2021, followed by a Letter to Doctors in mid Oct 2021.

Figure 1 - An image of freshwater fish swab taken during field investigation performed by CHP at local wet market.

衞生防護中心匯報侵入性乙型鏈球菌群組爆發個案最新情況

****

衞生署衞生防護中心今日（十月二十一日）表示正繼續積極跟進侵入性乙型鏈球菌群組爆發個案的流行病學調查，並再次提醒市民不應進食未經煮熟的淡水魚或水產，亦要小心處理未經煮熟的淡水魚或水產，避免接觸傷口。

截至十月二十日為止，醫院管理局（醫管局）通知衞生防護中心上月和今月共有88名住院病人證實感染侵入性乙型鏈球菌，並提供了68名病人的樣本以進行基因序列分析。化驗分析顯示，68名病人樣本當中，32宗個案屬於血清三型基因序列型283（ST283），27宗個案為其他血清型或與上述群組基因排序不相同的ST283序列型，其餘9宗個案基因序列分析結果有待確定。

根據中心現時的流行病學調查，32宗ST283個案感染源頭相同，屬於群組爆發。32名病人分別為14男18女，年齡介乎31至87歲，居於不同地區。一半病人均表示曾處理淡水魚，當中部分人報稱處理未經煮熟的淡水魚時手部帶有傷口，無人報稱曾食用淡水魚生。當中三人為食肆廚師、一人為兼職魚販。根據醫管局資料，該32名病人當中，兩名病人已離世（死因未能確定與感染有關），另外十人已出院。

中心結集了部分個案曾到訪的街市內採集的魚樣本和環境樣本，確定與該32宗ST283個案的基因排序吻合。中心認為病人感染可能與處理未經煮熟的淡水魚時手部帶有傷口有關，但是亦不能排除與食用未煮熟的淡水魚有關。

https://www.chp.gov.hk/files/pdf/cdw_v18_sp_bulletin.pdf

Invasive GBS infections

- Singapore reported outbreaks of invasive GBS disease in nonpregnant adults in 2015 and 2020.
  - In 2015, an outbreak of invasive GBS infection in more than 160 people was reported and ST283 was isolated in some cases. The outbreak was linked to the consumption of ready-to-eat (RTE) raw fish of two freshwater fish species - 'Asian bighead carp' and 'snakehead'.
  - Studies have shown that freshwater fish had significantly higher numbers of bacteria compared to saltwater fish. Hence, the consumption of raw freshwater fish is likely to present higher risks of bacterial infection such as GBS, compared to saltwater fish if the fish is consumed raw.
- In Hong Kong, Chinese Yu Sang is a prohibited food under the Food Business Regulation (Cap 132X). Following the outbreak of invasive GBS disease in Singapore, the Centre for Food Safety advised consumers not to eat raw or undercooked freshwater fish, especially when having hot pot or congee.
- In a local study, the CUHK reviewed 1645 GBS isolates from 1993 to 2012 and identified 48 (2.9%) cases with GBS Type III ST283.
- In 2021, the Food and Agriculture Organization (FAO) of the United Nations has warned of illness linked to eating raw freshwater fish in Southeast Asia.

Figure 4. Clinical manifestations of GBS disease in tilapia caused by GBS ST283

References:

1. Emerging Infectious Diseases Vol. 22, No. 10, October 2016
2. Emerging Infectious Diseases Vol. 22, No. 11, November 2016
3. FAO - RISK PROFILE Group B *Streptococcus* (GBS) *Streptococcus agalactiae* sequence type (ST) 283 in freshwater fish
4. Food Safety Focus (114th Issue, January 2016) – Food Incident Highlight

Ultrasound gel contamination by *Burkholderia cepacia* complex (BCC)

- A local hospital reported a case who was a post-liver transplant recipient and developed *B. cepacia* bacteremia on 31 October 2019 immediately followed a central line insertion in adult intensive care unit (AICU)

- Environmental surveillance was conducted in AICU where the case was staying
  - Medical equipment (e.g. ultrasound probe)
  - Consumables for central venous catheter insertion (e.g.: skin antiseptic solution, sterile and non-sterile ultrasound gels, and sterile probe cover)
  - Subsequently, the ultrasound gel was tested positive for *B. cepacia* complex

Outbreak investigation does not limited to specific infectious diseases, but also medical products for patient care

General Information about *B. cepacia* complex

- *B. cepacia* complex
  - Gram-negative bacteria
  - Can be found in soil and water
  - Often resistant to common antibiotics
  - Can be transmitted by direct contact with contaminated medical equipment and environmental surfaces
  - Person-to-person transmission is also possible

- Have been associated with outbreaks originating from contaminated faucets, nebulizers, chlorhexidine solution, bottled water, ultrasound gels, etc

- People who are immunocompromised or have chronic lung diseases, particularly cystic fibrosis, are more susceptible to *B. cepacia* complex infections.

Ad hoc CCIDER meeting was convened to lead the investigation and advise on the preventive measures

- By reviewing the clinical cases, there were no significant increase in the number of suspected invasive *B. cepacia* complex infection in other hospitals.
- **Testing non-sterile medical gel** available in HA for *B. cepacia* complex in HA laboratory
  - Two out of 7 brands of non-sterile medical gel were tested positive for *B. cepacia* complex
- **Remedial actions:**
  - HA issued safety advice to cluster procurement to alert them about the incident and quarantined the affected brand products with immediate effect.
  - HO BSSD and cluster procurement have arranged alternative ultrasound gel to the affected hospitals.
    - The clinical service in all cluster is NOT affected
  - HO BSSD has followed up with the Department of Health on the voluntary product recall of the affected brand products.
  - HO BSSD and CICO Office would work together for the quality requirement of non-sterile medical gel (e.g. Good Manufacturing Practices) for future purchase.

Quality Control of Non-sterile Ultrasound Gel

1. Bacteriostatic
2. Good manufacturing practice
   - Meet the requirements for external preparation and aerobic bacteria count should be $<10^2$ cfu/ml
3. Non-refillable container

Good Practice

(TFIC's recommendation on 25 Nov 2019)

Sterile gel

- Be aware that once a container of sterile ultrasound gel is opened, it is no longer sterile and contamination during ongoing use is possible.

Non-sterile gel

- Containers should not be refilled.
- When opening a new gel bottle, date the bottle and discard according to the manufacturer's instructions or on the 28th day after opening.
- Ensure that tips of containers do not come in direct contact with patients, staff, instruments, or the environment e.g. dispense gel on a clean gauze and then onto patient's skin.

Storage of gel

- Product should be stored in areas that are dry and protected from potential sources of contamination, such as dust, moisture, insects, or rodents.
- If evidence of contamination is present, or if package integrity has been breached, product must be discarded.

Level 3 - HA Preparedness Plan for Infectious Disease Pandemic

HA's response to infectious disease pandemic generally follows the HK Government response system. A 3-tier system is differentiated according to the risk of the infectious disease causing serious health impact in HK.

HA will activate the same response levels according to response levels activated by the Government.

Alert
Low Risk

Coordinated by Food and Health Bureau (FHB) and steer Government response

Serious
Moderate Risk

Steering Committee chaired by Secretary for Food and Health (SFH)

Emergency
High and Imminent Risk

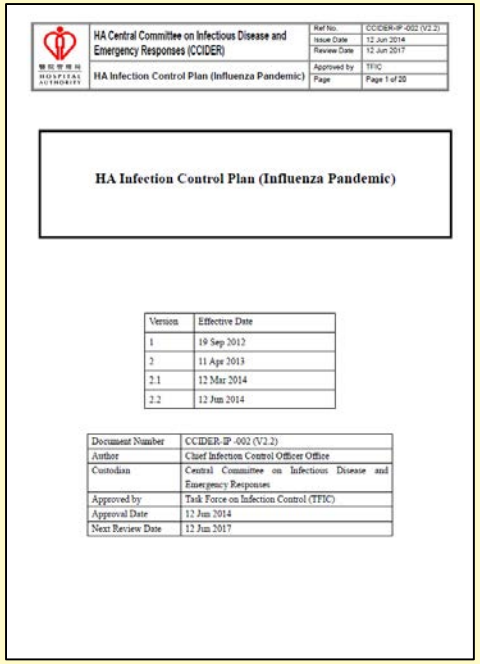
Steering Committee chaired by the Chief Executive with FHB

Serious (1) level: No human case
Convene Ad hoc CCIDER

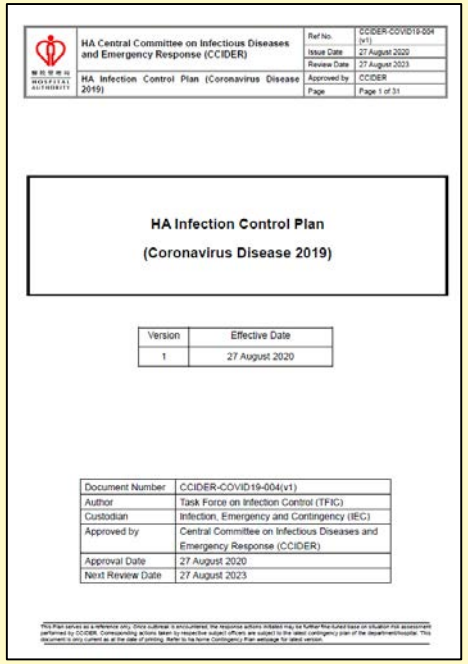
Serious (2) level: Human case(s) or Emergency level
Convene Ad hoc CCIDER
↓
HA Central Command Committee (CCC) chaired by CE of HA
↓
Emergency Executive Committee (EEC) delegated by HA Board.

Preparedness on infectious disease outbreaks

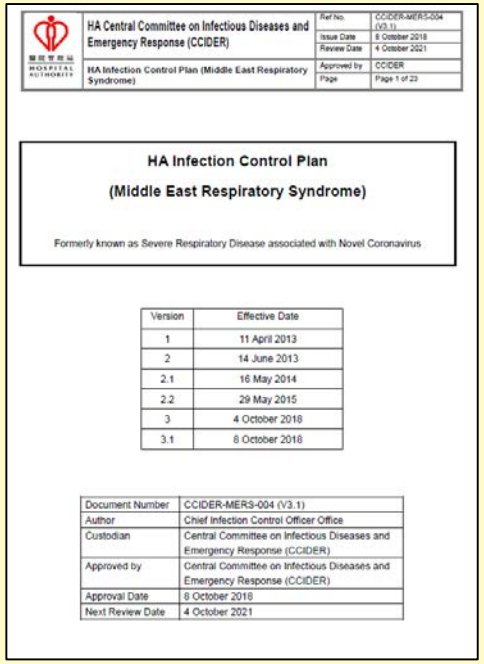
- Infection Control plans and Preparedness plans have been formulated to illustrate the response measures of individual infectious diseases



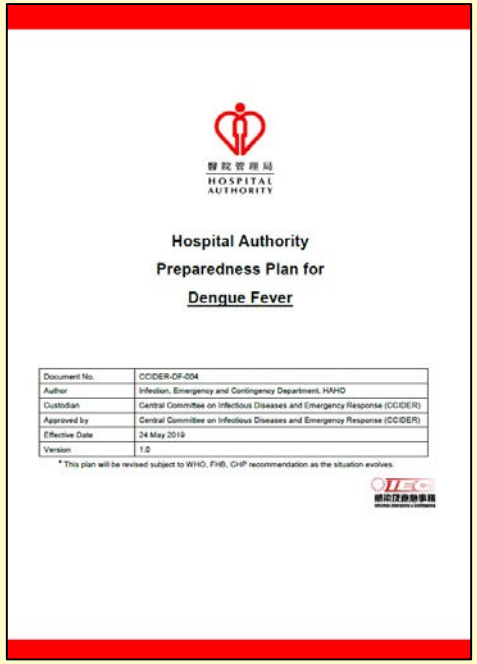
Infection Control Plan for Influenza Pandemic



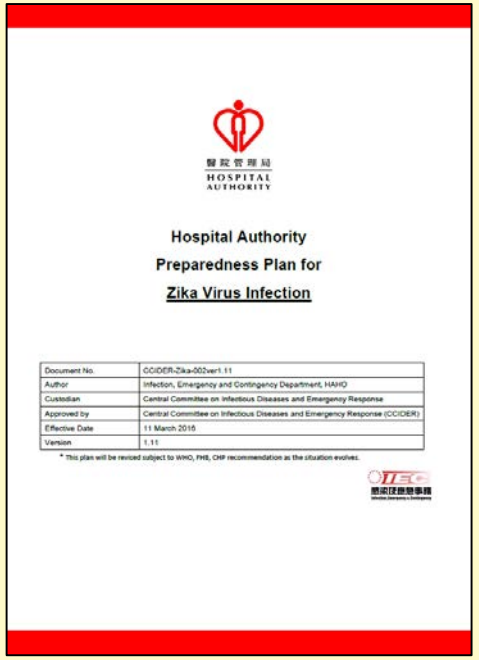
Infection Control Plan for COVID-19



Infection Control Plan for MERS



Preparedness Plan for Dengue Fever



Preparedness Plan for Zika Virus Infection

Thank you