



# Assessing the impact of the COVID-19 pandemic on nosocomial transmission of Carbapenem-resistant organisms (CRO)

Dr Kalisvar Marimuthu

Senior Consultant, Department of Infectious Diseases, Tan Tock Seng Hospital, Singapore

Senior Consultant, National Centre for Infectious Diseases, Singapore

Director, Infection Prevention and Control Office, Woodlands Health Campus, Singapore

Adj. Asst. Prof. of Medicine, National University of Singapore, Singapore

Contributors:

Professor Paul Ananthraj Tambyah, National University of Singapore

Professor Dale Andrew Fisher, National University of Singapore

Professor Stephan Harbarth, Prevention and Control of Infection, Geneva University Hospital

A/Prof Oon Tek Ng, National Centre for Infectious Diseases, Tan Tock Seng Hospital, Nanyang Technological University

A/Prof Brenda Ang Sze Peng, Tan Tock Seng Hospital, Singapore



## Positive and negative impact of COVID-19 on CRO

- Resource diversion resulting in:
  - Interruption of infection prevention and control (IPC) surveillance and audits
  - Interruption of screening for asymptomatic carriers (lab resources)
  - Prioritization of isolation facilities for COVID-19 patients
  - Slowing or complete cessation of AMR research
- Possible increase in antimicrobial utilization for COVID-19 related respiratory illnesses

Possible negative impact

- Increased awareness of IPC principles
- Increase awareness of importance of hand hygiene
- Possibility of increase in funding for IPC post-pandemic
- Disruption to health services resulting in reduction in non-COVID-19 hospitalization

Possible positive impact



## Impact: Surveillance and reporting

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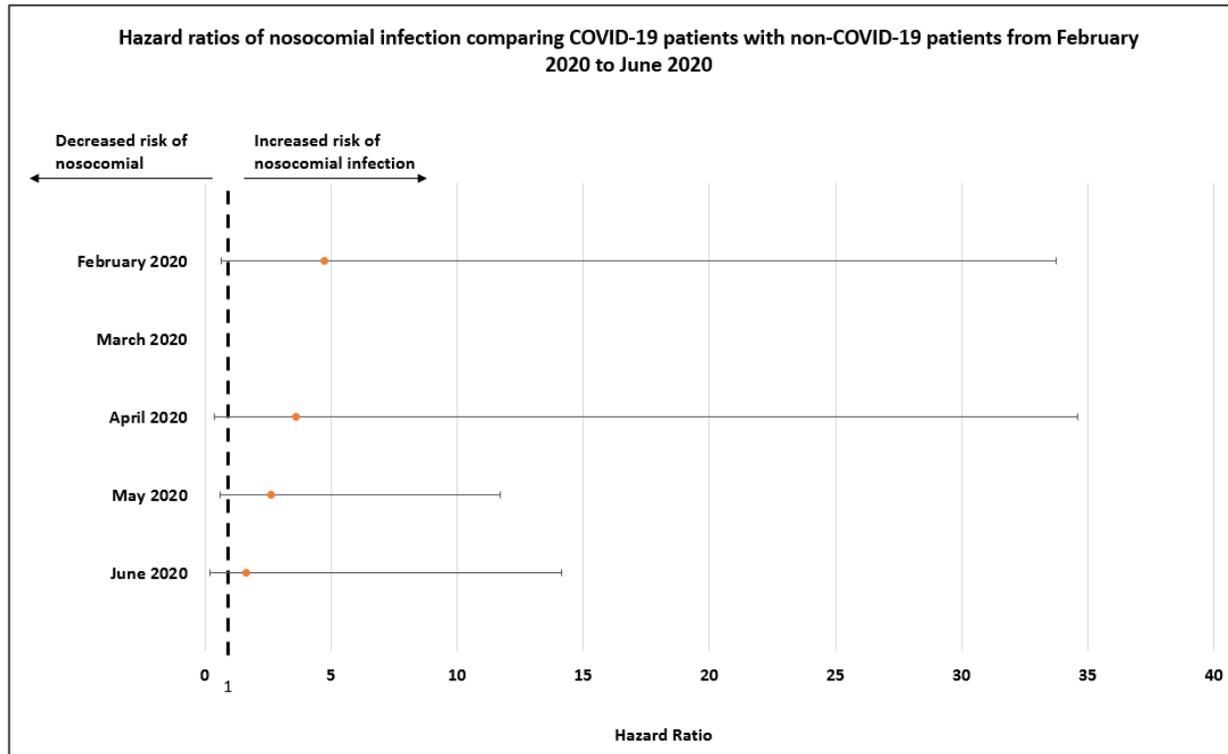
- National independent audit for IPC and AMU indicators were paused
  - IPC indicators included hand hygiene compliance, device associated infections in ICU, point prevalence survey of healthcare-associated infections (HAI), and other audits.
  - With the COVID-19 situation being more controlled in Singapore, we have restarted the audit
- Reporting of IPC indicators to the National Infection Prevention and Control Committee was paused
  - All reporting of IPC indicators were paused during the peak of COVID-19 pandemics

For details:

1. Cai, Yiyang, et al. "Prevalence of healthcare-associated infections and antimicrobial use among adult inpatients in Singapore acute-care hospitals: results from the first national point prevalence survey." *Clinical Infectious Diseases* 64.suppl\_2 (2017): S61-S67.
2. [https://www.moh.gov.sg/docs/librariesprovider5/resources-statistics/guidelines/national-infection-prevention-and-control-standards\\_2019.pdf](https://www.moh.gov.sg/docs/librariesprovider5/resources-statistics/guidelines/national-infection-prevention-and-control-standards_2019.pdf)



## Impact: Nosocomial infections and antimicrobial utilization

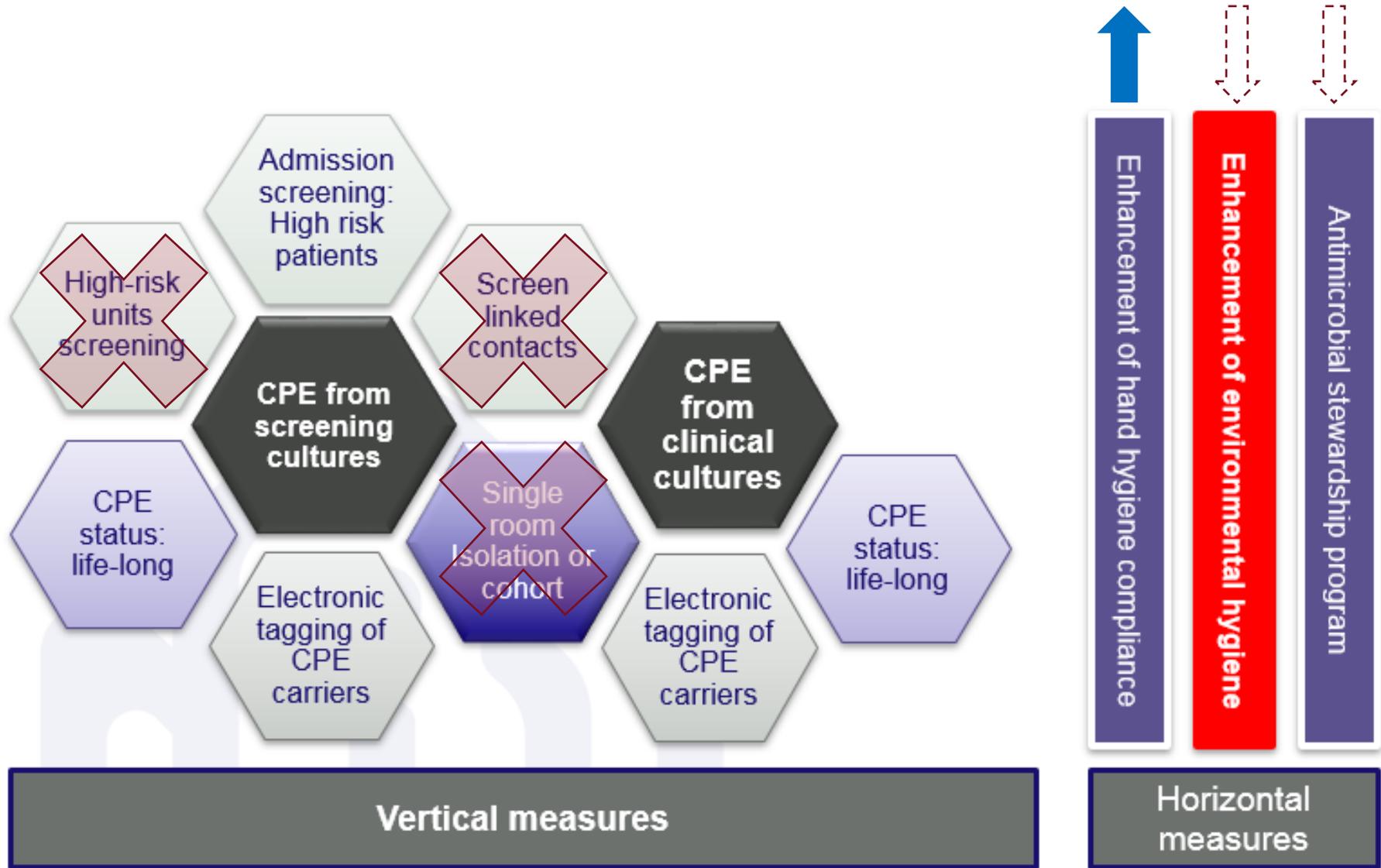


Unpublished data

- COVID-19 ICU patients did not have more nosocomial infections (CAUTI, CLABSI, VAP, and secondary bacteraemia) compared to non-COVID-19 patients
- A recent analysis by the TTSH antimicrobial stewardship program:
  - Overall use of antimicrobial for COVID-19 patients was 6.2% (36/577) COVID-19 patients
  - Close to 60% were assessed to be appropriate use.

Sources: HAI surveillance team, National Centre for Infectious Diseases (NCID) and Antimicrobial Stewardship Program, Tan Tock Seng Hospital

# Impact: Incomplete implementation of CRO control strategies



# Impact: Diversion of isolation/cohort facilities for CRO



In a point prevalence survey of one of the hospital, compared to 2018, in August 2020:

Inpatients with VRE (infection and colonization) reduced by 40%

- Percentage of VRE patients in single room isolation reduced by 78%
- Percentage of VRE patients in cohort cubicles increased by 28%
- Percentage of VRE patients on contact precaution without geographical separation increased by 65.2%

Inpatients with CRE/CPO (infection and colonization) reduced by 26.7%

- Percentage of CRE/CPO patients in single room isolation reduced by 90.5%
- Percentage of CRE/CPO patients in cohort cubicles increased by 78.0%
- Percentage of CRE/CPO patients on contact precaution without geographical separation increased by 17.6%



# Will COVID-19 reverse the gains of past?

Between 2010 and 2015 with increasing surveillance cultures:

- Bacteria mediated transmission was reducing
- Plasmid mediated transmission was stabilizing
- We were expecting, with increasing focus on environmental hygiene, both bacteria and plasmid mediated transmission to reduce
- We are not so sure anymore (?)

**Source: CaPES study group, Singapore. Unpublished data**

# Effect: Carbapenemase-producing organisms (CPO)

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CPO, carbapenemase-producing organisms; NCPCRE, non-carbapenemase-producing carbapenem-resistant Enterobacteriaceae

Sharp decline was observed in Carbapenemase-producing organisms (CPO)

**Source: Preliminary data from CaPES study group, Singapore**

# Effect: Carbapenemase-producing organisms (CPO)

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Source: Preliminary data from CaPES study group, Singapore

# Effect: Down trending carbapenem-resistant non-fermenters: temporary effect?

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Source: Prof Dale Fisher, National University Hospital



## Summary

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- The impact of COVID-19 on AMR, specifically CRO, needs to be studied.
- Current data, while the pandemic is still ongoing, suggests that there is no clear increase in CRO.
- But continuous follow-up of data and analyses are needed.