

# CVIT COVID-19 Survey

**Conducted between April 4<sup>th</sup> and 7<sup>th</sup>, 2022**

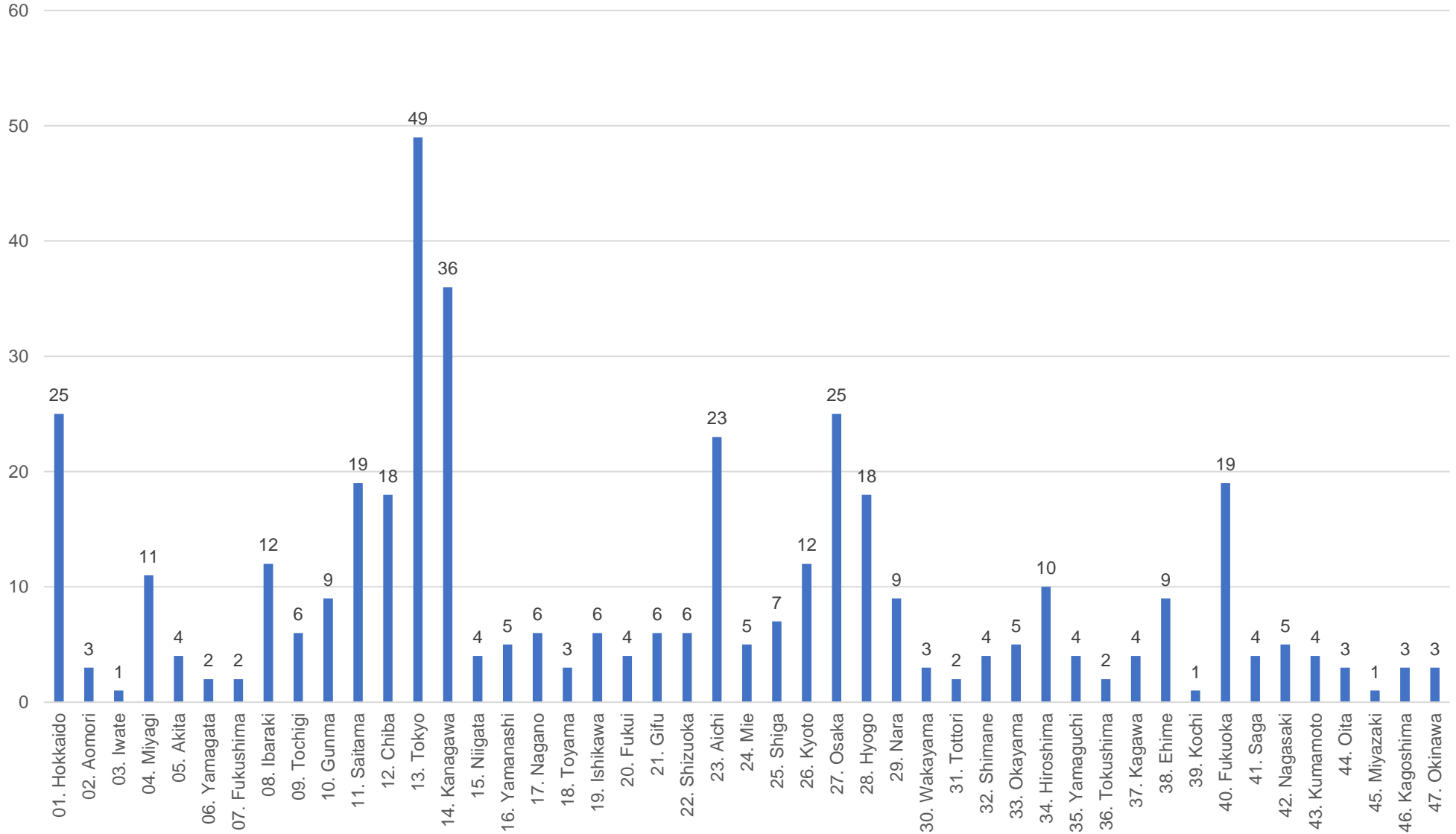
PCI practice pattern in Jan-Feb 2022 (during the 6<sup>th</sup> peak; 9<sup>th</sup> survey)  
and early Apr 2022 (10<sup>th</sup> survey)

No. of respondent facilities: 422

We truly appreciate their time and effort

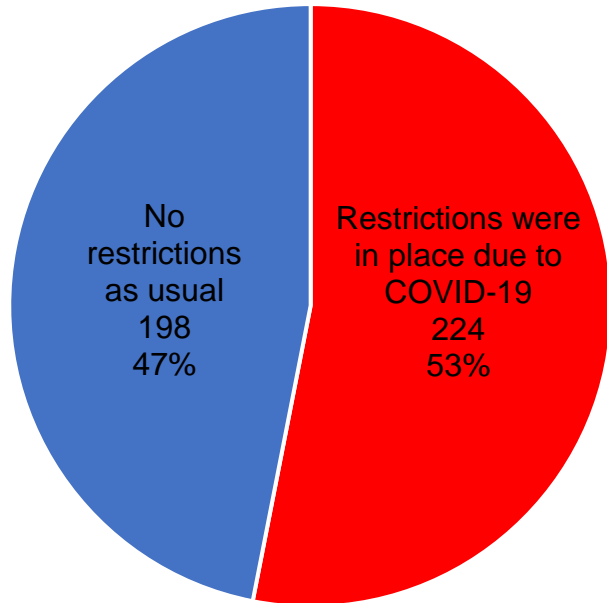
Yuji Ikari, CVIT President  
Tetsuya Amano, Registry Committee Chairman

# Number of questionnaire responses by prefecture: Total 422 facilities

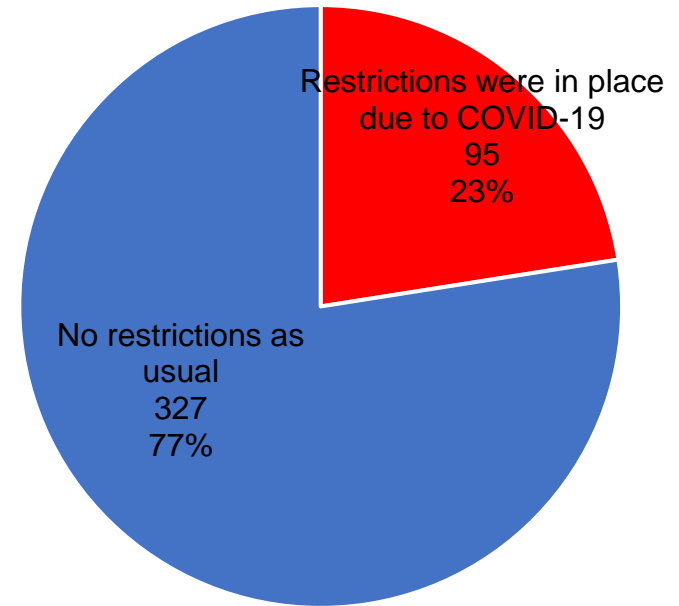


# General emergency room demand

Late January to early February 2022  
(6th wave peak)



Early April 2022



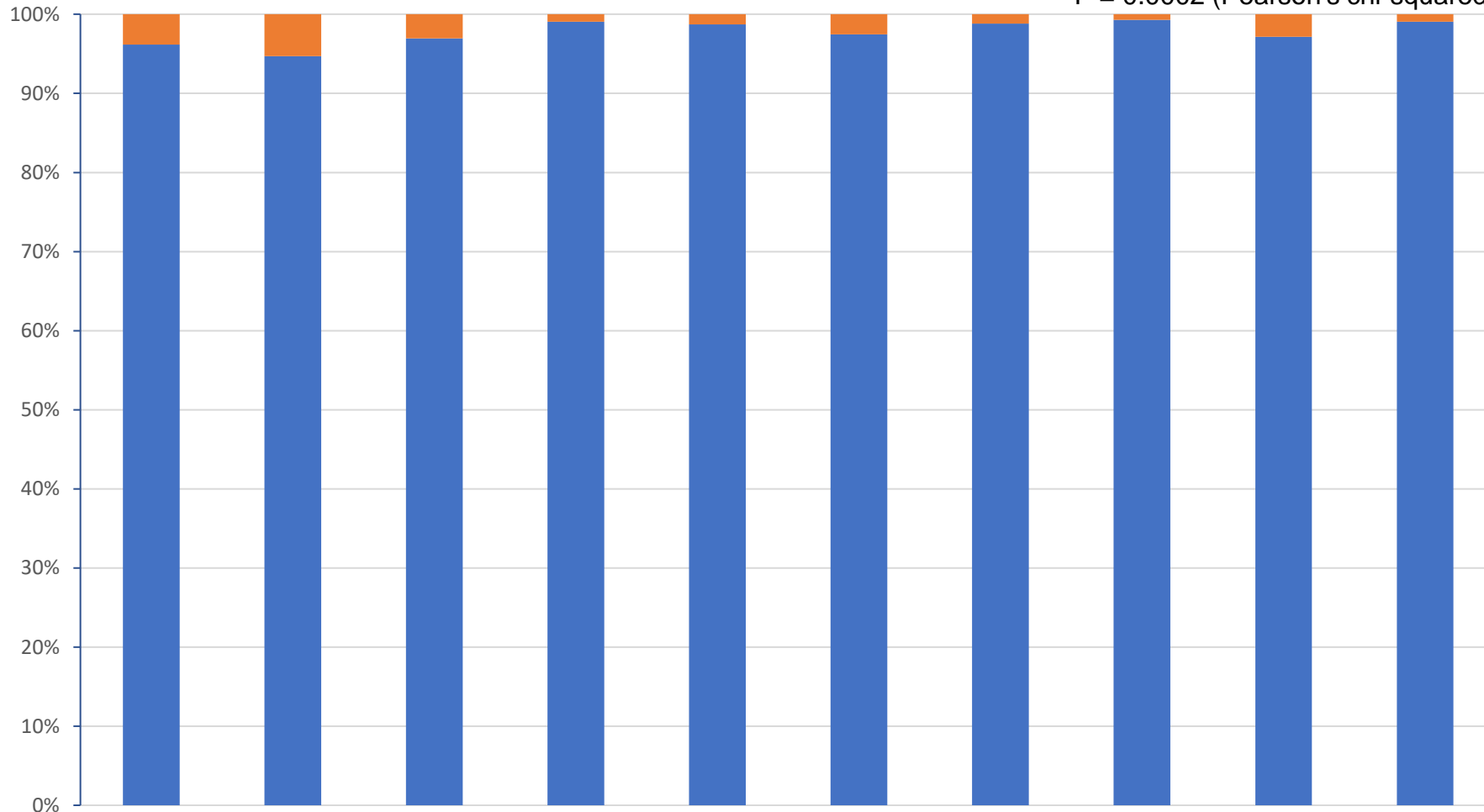
## Reference to restrictions due to COVID-19

- As of mid-December 2020 (2nd wave): 39%
- As of mid-February 2021 (3rd wave): 40%
- As of early May 2021 (4th wave): 42%
- As of early September 2021 (5th wave): 43%

# STEMI treatment

Business as usual
  Restrictions in place

P = 0.0002 (Pearson's chi-squared test)



←
→
 1st wave
 
←
→
 2nd wave
 3rd wave 4th wave 5th wave 6th wave

2020

2021

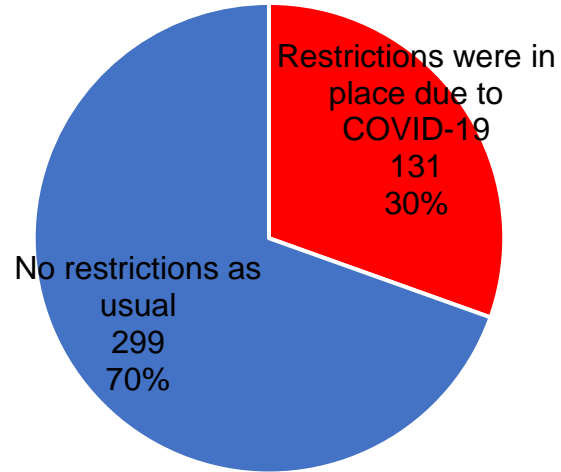
2022

PCI for STEMI  
Business as usual

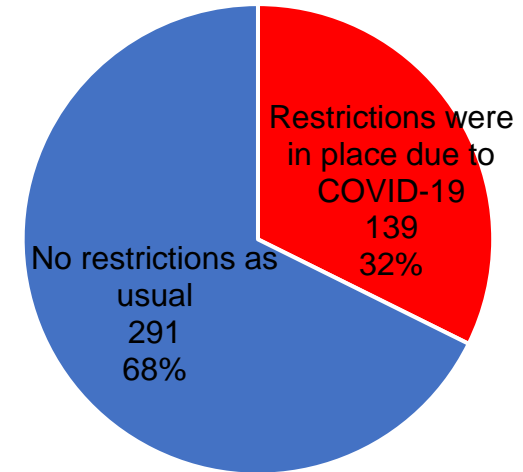
Mid-April	Late April	Mid-May	Mid-August	Mid-December	Mid-February	Early May	Early September	Late January	Early April
96.2%	94.7%	96.1%	99.1%	98.7%	97.5%	99.1%	99.3%	97.2%	99.1%

# ACS emergency room demand

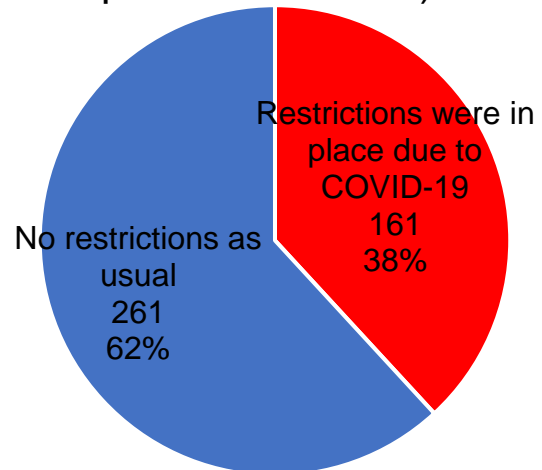
As of early May 2021 (4th wave)  
(430 respondent facilities)



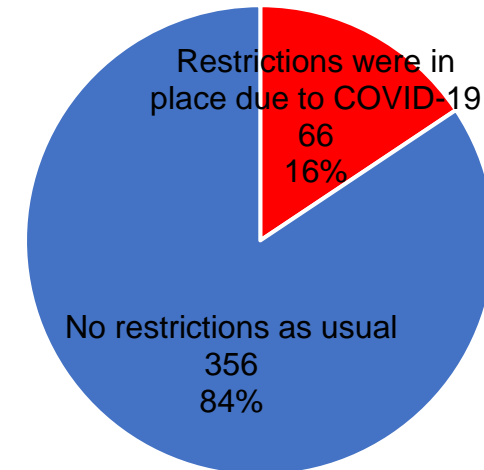
As of early September 2021  
(5th wave) (430 respondent facilities)



Late January to early February 2022  
(6th wave peak)  
(422 respondent facilities)



Early April 2022  
(422 respondent facilities)



# Emergency framework/STEMI handling

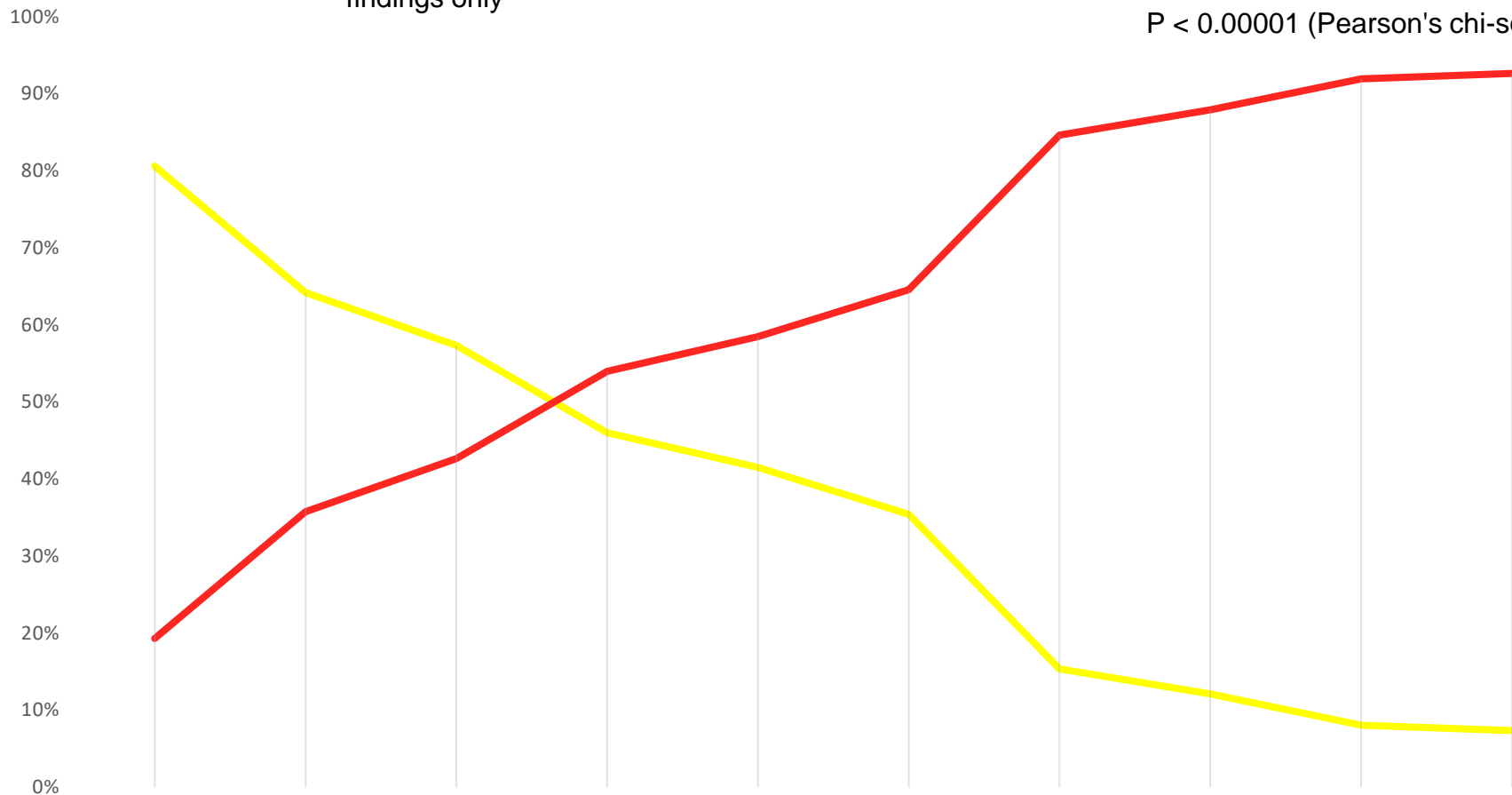
- During the fourth and fifth waves, medical restrictions of one kind or another were placed on about 30% of facilities providing emergency medical services; however, this number increased to a little less than 40% during the sixth wave. However, it showed a recovery trend in April 2022.
- Primary PCI was performed in 97.2% of respondent facilities even during the sixth wave peak, and performed in 99% or more of them in April 2022 as usual.

# STEMI patient screening

Physical findings only

CT/PCR/antigen/antibody screening conducted

P < 0.00001 (Pearson's chi-squared test)

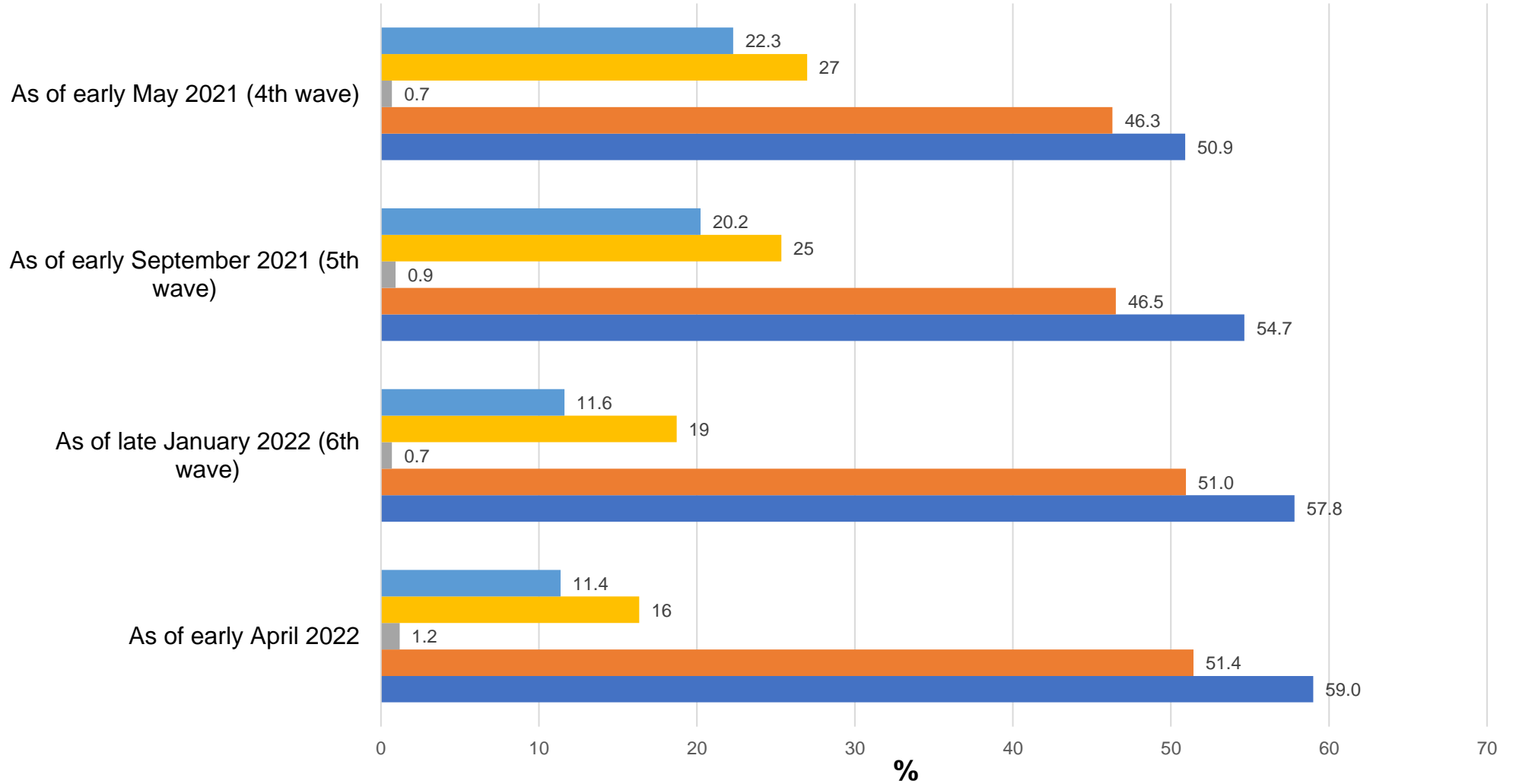


1st wave 2nd wave 3rd wave 4th wave 5th wave 6th wave

	2020			2021			2022			
CT/PCR/ Antigen/ Antibody screening, etc. conducted	Mid-April	Late April	Mid-May	Mid-August	Mid-December	Mid-February	Early May	Early September	Late January	Early April
	19.3%	35.8%	42.7%	54.0%	58.5%	64.6%	84.7%	87.9%	91.9%	92.7%

# COVID-19 screening for STEMI cases (Multiple responses permitted)

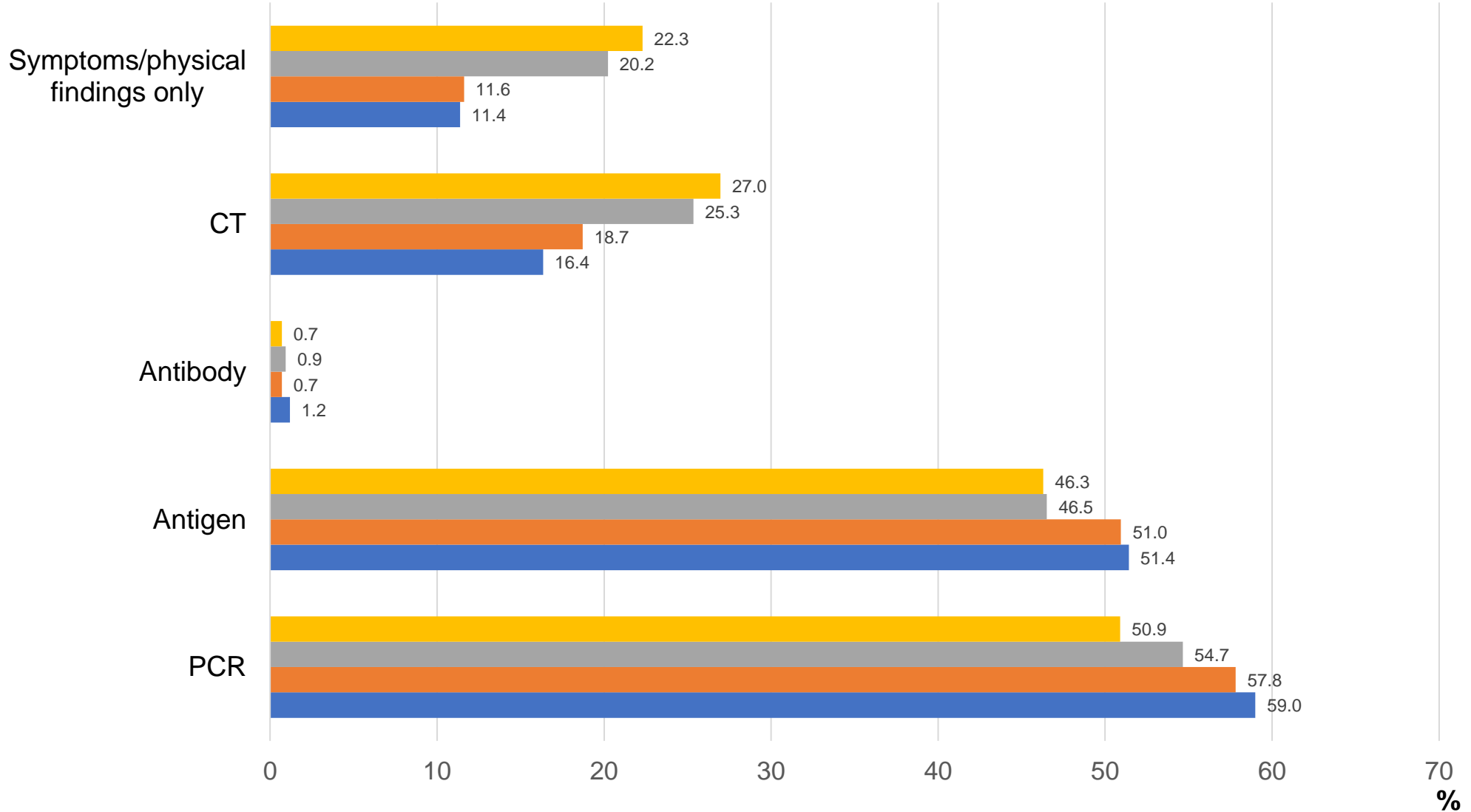
■ Symptoms/physical findings only   ■ CT   ■ Antibody   ■ Antigen   ■ PCR





# COVID-19 screening for STEMI cases (Multiple responses permitted)

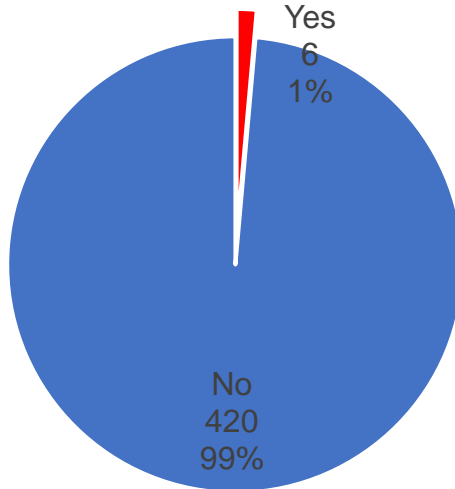
- As of early May 2021 (4th wave)
- As of early September 2021 (5th wave)
- As of late January 2022 (6th wave)
- As of early April 2022



# Catheter treatment among patients with a confirmed COVID-19 diagnosis

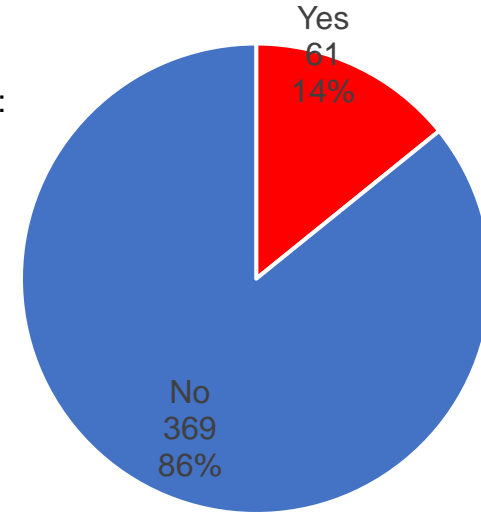
As of early August 2020 (5th wave)

No. of  
respondents:  
426 facilities



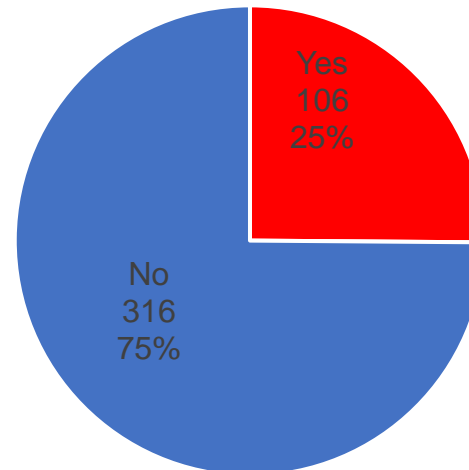
As of early September 2021 (5th wave)

No. of  
respondents:  
430 facilities



Early April 2022

No. of  
respondents:  
422 facilities



Detailed comments from  
facilities that conducted  
catheterization on next page

# Comments from hospitals that conducted cardiac catheterization for COVID-19 positive patients (1)

## PPE

- It was hard to remain calm because a mask/face guard limited the visual field when conducting PCI.
- Manipulation under full PPE was inconvenient and hot.
- PCI under PPE was a physically heavy burden.
- All medical practices became difficult due to full protection.
- A patient with AMI associated with cardiogenic shock was transferred to a catheterization room to conduct PCI urgently; however, a positive result of the quantitative antigen test conducted before the procedure was reported during catheterization. This frightened us since intratracheal intubation was performed in the catheterization room before the test results were reported. Fortunately, the results of the PCR tests conducted for consecutive days were negative in all staffs.
- In the case of patients suspected to have STEMI, we initiate examinations under full PPE before obtaining the results.
- For STEMI cases and shock cases, COVID-19 positive may be identified after treatment. This may influence our mental strain.

## **Comments from hospitals that conducted cardiac catheterization for COVID-19 positive patients (2)**

### **Catheterization room/traffic line**

- The catheterization room used for a COVID-19 positive patient cannot be used after catheterization for a certain time because of cleaning the room.
- It was inconvenient due to being conducted in catheter rooms dedicated for patients with suspected or not confirmed COVID-19, where only minimum devices were placed.
- It was hard to take measures for airborne droplets onto devices and peripheral equipment.
- Waiting time for next examination was caused by cleaning, refuse separation, etc. in catheterization rooms after CAG/PCI. It seemed substantially stressful for physicians/nurses involved, as expected.
- Management of severe ACS had to be conducted by zoning, resulting in difficulty in conducting post-surgery rehabilitation.

## **Comments from hospitals that conducted cardiac catheterization for COVID-19 positive patients (3)**

### **Others**

A patient hospitalized by COVID-19 suffered from in-hospital AMI. The patient was treated with urgent PCI, however, had shock during PCI. Originally, treatment has been conducted by a limited number of physicians; however, since this occurred suddenly, multiple physicians entered the catheterization room and administered emergency medical treatment with incomplete protection. Fortunately, the patient with COVID-19 developed AMI before discharge from the corona virus ward; thus, no viral shedding might occur. Although no cluster was identified, there was a possibility of causing a cluster in our hospital if such cases occurred in patients with COVID-19 who were shedding viruses. Theoretically, a limited number of staff treats under complete protection. However, we are acutely aware that many staff may reflexively enter a catheterization room for emergency medical treatment when sudden changes in a patient's condition occur.

## **Comments from hospitals that conducted cardiac catheterization for COVID-19 positive patients (4)**

Some facilities are familiar with COVID handling, and there are some opinions for ingenuity.

### **PPE, etc.**

- We experienced STEMI in positive cases confirmed by other facilities and STEMI cases determined as PCR-positive during treatment. We have been performing catheterization for all urgent cases using an N95 mask plus goggles in catheterization rooms with doors closed until PCR results are confirmed. This is a heavy burden for operators, but we are currently familiar with the manipulation under this procedure.
- Experiences for STEMI cases with confirmed positive results. Quarantine catheterization rooms, restriction of the number of staff, administer PCI under full PPE, as simulated. IABP was required for LMT cases but administered without any problem since such situations were simulated.
- Wear an N95 mask, administer under maximum precaution. Although it is slightly hard to breathe due to an N95 mask, there is no particular problem as usual.
- An airborne infection isolation system is placed at the entrance of the catheterization room to address COVID-19 at any time.

## **Comments from hospitals that conducted cardiac catheterization for COVID-19 positive patients (5)**

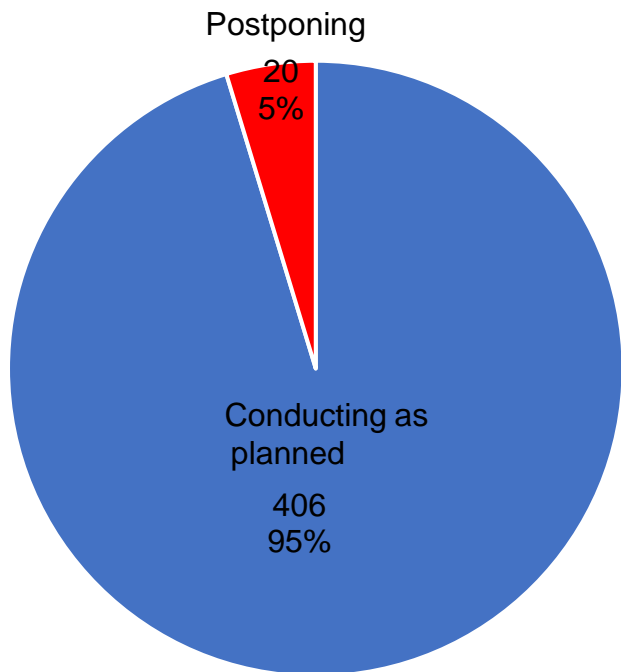
Some facilities are familiar with COVID handling, and there are some opinions for ingenuity.

### **Practice of catheterization/PCI**

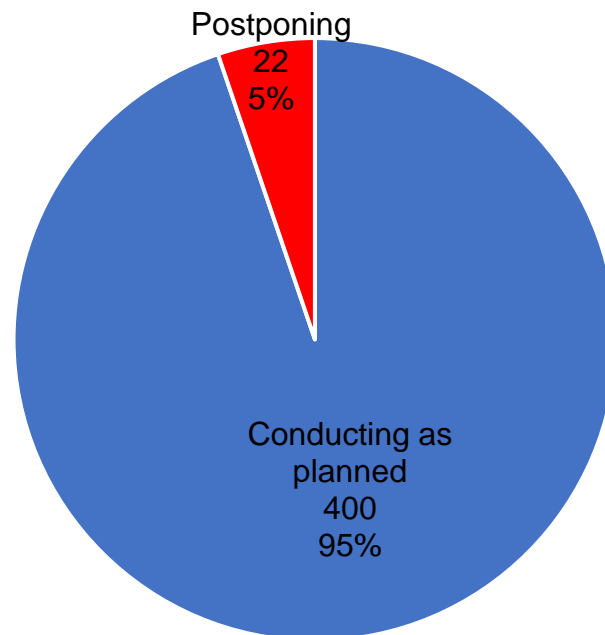
- We have a contrast medium injector. According to the development history of this equipment (developed by Professor Mitsudo to enable to conduct PCI by one-person), PCI by one-person, where only one PCI operator enters the catheterization room, has been used.
- For patients who are positive or potentially positive for COVID-19, the number of operators are restricted, without the use of IVUS.
- Angio-guided PCI without imaging modalities was performed.

# Planned manipulation (PCI)

August 2020

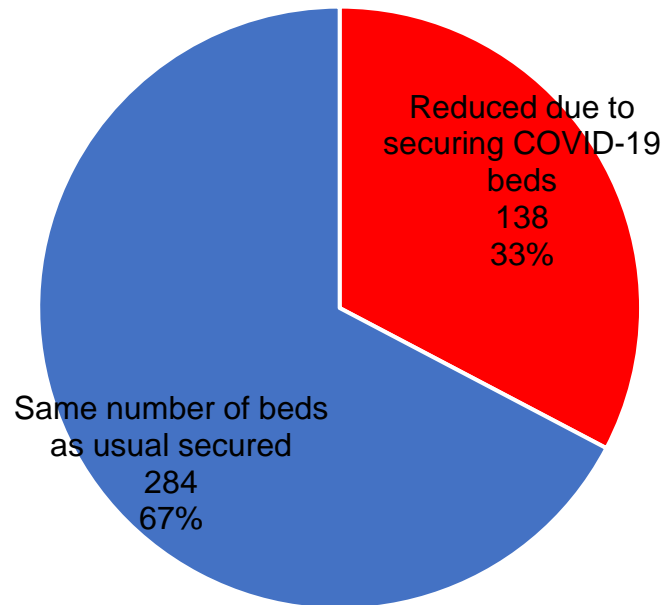


Present (early April 2022)

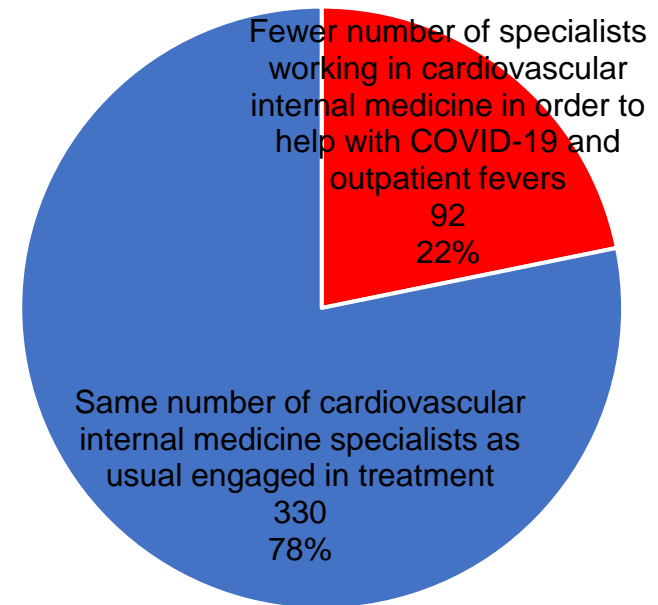




## Bed utilization at present (early April 2022)



## Cardiovascular internal medicine specialists secured at present (early April 2022)



# Most troublesome COVID-19 related issues at the facility (1)

- There is a time loss to wait for COVID-19 test results.
- Positive patients who are not predicted by symptoms, physical findings, contact history, etc. are increasing.
- Staff standing by at home due to close contact is increasing, resulting in a lack of physicians/staff in the clinical department.
- Since CCU still remains as the hospital ward for severe COVID-19, the bed utilization is decreasing, which encumbers usual beds and beds for the acute phase due to admission of COVID-19 patients.
- Staff is devoted to COVID-19 wards, and there is a lack of manpower for usual medical care due to infection of staff in the clinical department, etc.; thus, duty and urgent treatment are impossible.
- At the sixth wave peak, a series of infections including multiple infections in hospital wards, infections of staff, etc. occurred, resulting in restriction of admission of urgent patients including ACS as well as restriction of overall medical care. In contrast, in the case where neighboring hospitals restricted admission, our hospital might be responsible for the second emergency duty; thus, there was a difficulty in the management of physicians and staff in the medical department.

## **Most troublesome COVID-19 related issues at the facility (2)**

- Screening for all cases has not been conducted due to the limited number of PCR kits.
- Postponement of elective PCI
- An antigen test or PCR test before hospitalization is mandatory upon scheduled hospitalization; thus, a visit only for a pre-hospitalization test is a heavy burden for patients.
- When COVID-19 infection occurs in inpatients or staff, urgent treatment including ACS may be restricted for hospitals, and the burden is increasing because staff is devoted to medical care for COVID-19. On the other hand, working time is restricted in terms of labor management, in addition, hospitals have a responsibility to seek to provide safe and best medical care in such circumstances. Therefore, cardiovascular specialists working at local base hospitals are facing a predicament. We develop a critical feeling that a further decrease in young physicians who aim to be cardiovascular specialists may occur under these situations.
- No academic conferences can be held locally.

# Acknowledgments

We would like to express our sincere thanks to the many facilities who took time out of their busy schedules to fill in the questionnaire.

These results will be shared not only with the CVIT administrative board and related committees, but the Japanese Circulation Society, various government agencies and insurance committees in order to spur constructive debate in the medical system, especially in the emergency treatment of cardiovascular diseases.

The PCI performance assessed based on J-PCI in 2019 and 2020 was published in CVIT homepage and Lancet Reg Health West Pac. 2022 Mar 22;22:100434 (<https://www.sciencedirect.com/science/article/pii/S2666606522000499>). Due to efforts of Japanese cardiologists and medical staffs, it was found that there was no difference in door to balloon time of primary PCI for STEMI patients ( $83.2 \pm 55.8$  min in 2019 and  $83.3 \pm 53.6$  min in 2020;  $p = 0.78$ ), and there was also no statistical difference in mortality of STEMI patients during hospitalization.

PCI prognoses, etc. will be announced on the J-PCI f/u registry in the future.