



Cardiology Department Policy in Japan After Coronavirus Disease-2019 (COVID-19)

— Descriptive Summary of 2nd Nationwide Survey by
the Japanese Circulation Society —

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Background: Cardiovascular department restriction policies on procedures resulting from the COVID-19 pandemic have not been fully evaluated.

Methods and Results: We performed a retrospective analysis of a nationwide survey performed by the Japanese Circulation Society in August 2020. The total response rate was 48.9% (651/1,331). The rate of restriction of cardiovascular procedures peaked in April. Exacerbations of heart failure due to hospital restrictions were noted in 43.8% of departments.

Conclusions: Many departments restricted their cardiological procedures, and this rate changed according to the pandemic situation. The exacerbation of cardiovascular disease resulting from pandemic restrictions should not be ignored.

Key Words: Medical policy; Pandemics

Since the end of 2019, the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and its associated coronavirus disease-2019 (COVID-19) have spread throughout the world.¹ Due to the virus's highly infectious nature and hospitals lacking sufficient medical resources, many cardiovascular procedures and hospitalizations have been restricted and non-urgent procedures have been rescheduled and postponed.^{2,3} In cardiology, many associations and groups, such as the American College of Cardiology and the European Society of Cardiology, have offered recommendations on what to do about non-urgent procedures and outpatient clinic visits.^{4,5} Despite many statements about the restrictions, the actual departmental policies during the COVID-19 pandemic, especially

in Japan, have not been fully evaluated. The Japanese Circulation Society (JCS) performed a nationwide survey of cardiology departmental policy to guide institutional decision making. In light of the current increasing number of COVID-19, an analysis of departmental decisions from early in 2020 would be useful to many decision makers. Thus, the chief objective of this study was to explore cardiology departments' policy changes in early 2020 in Japan.

Methods

Study Population

This was a retrospective analysis of the 2nd nationwide

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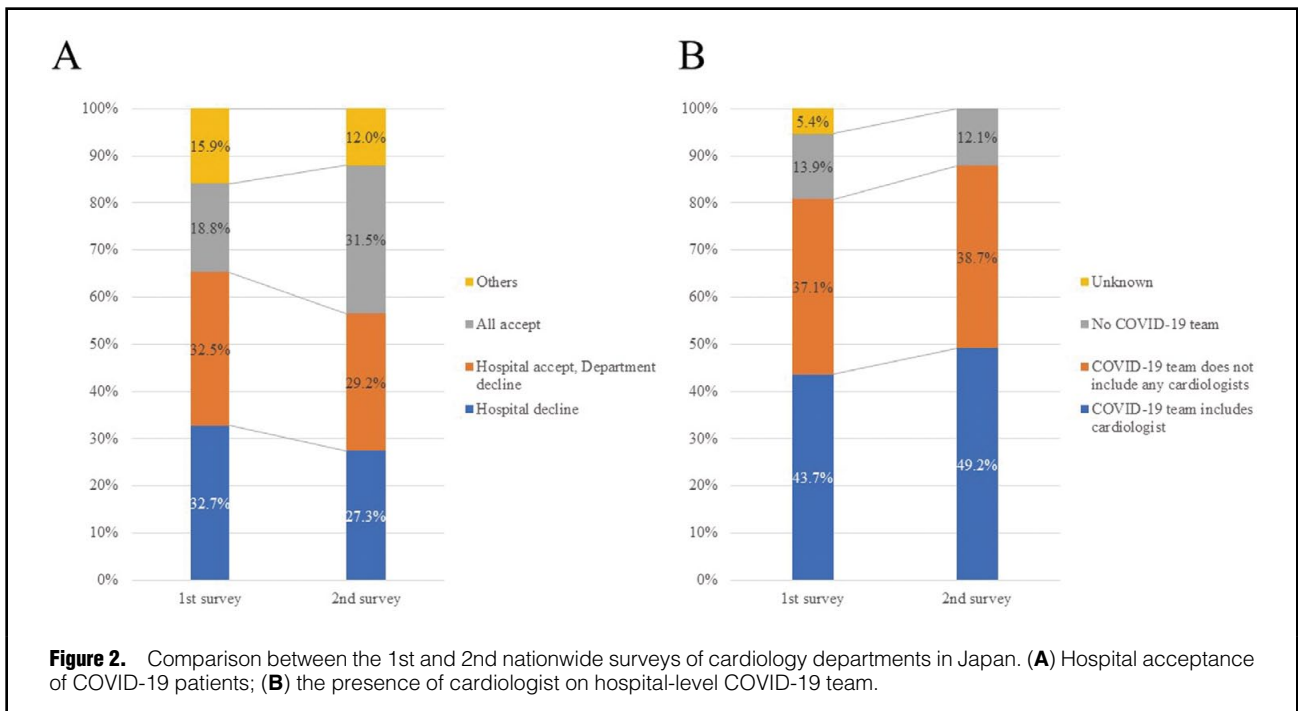
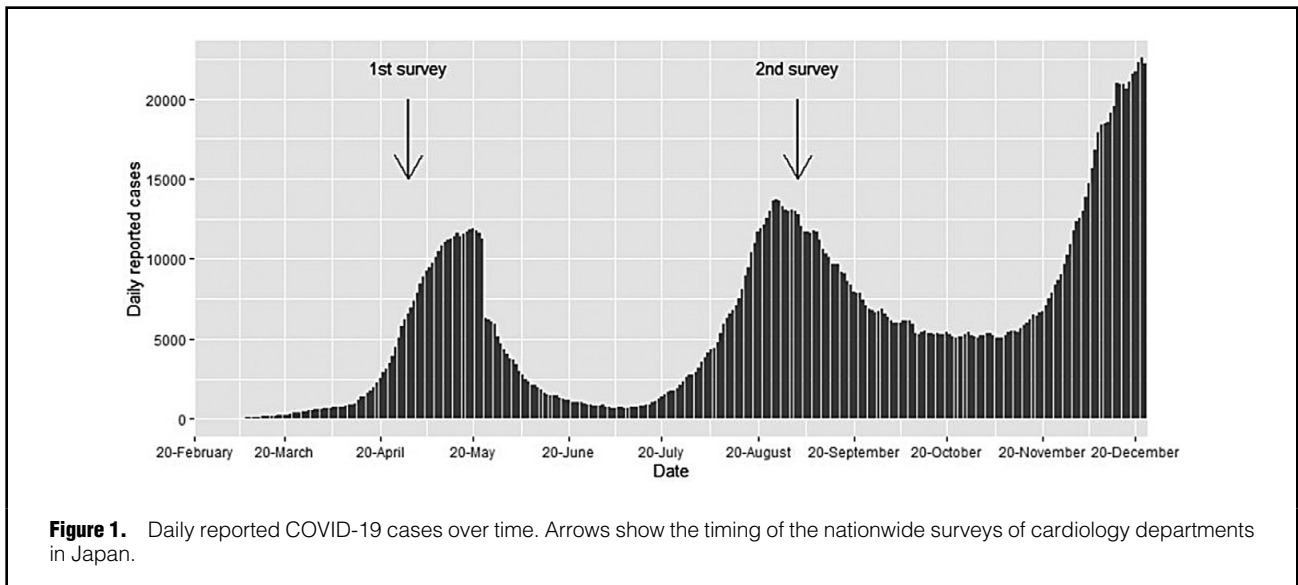
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survey performed by the JCS about COVID-19-related department policies in Japan (1st survey was performed on April 13, 2020). This nationwide survey was performed using Google Form, a web-based survey system, on August 17, 2020. The questionnaire, including a study agreement, was sent by e-mail to a total of 1,358 cardiology training hospitals authorized by the JCS.⁶ The survey was closed on August 28, 2020 (after one and a half weeks). The total questionnaire required about 20min to complete. Duplicate responses were deleted, leaving the most recent response, and hospitals for which a geographic location could not be identified were excluded. The study was approved by the institutional review board of the JCS.

Questionnaire

This 2nd survey asked each institution about: (1) general hospital and department policies about COVID-19 patients; (2) specific policies on the restriction of examinations and procedures in the cardiology department for all patients, especially including non-COVID-19 patients; and (3) experiences related to the exacerbation of non-COVID-19 typical cardiovascular diseases (ischemic heart disease, aortic/peripheral artery disease, heart failure, arrhythmia, and hypertension) due to restraints by the patients themselves on seeing a doctor or by the hospital's restriction policy. Answers were required to be based on the time period around August 17, 2020.

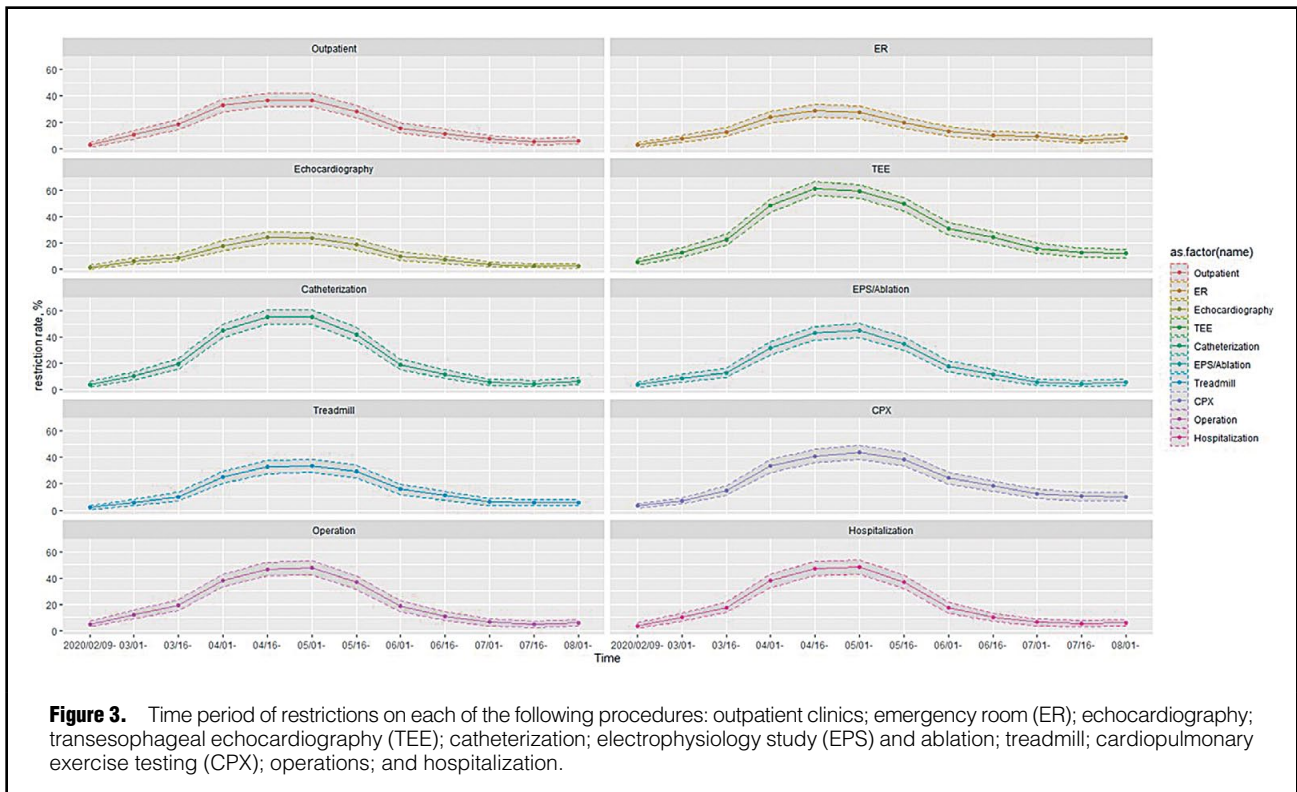


Figure 3. Time period of restrictions on each of the following procedures: outpatient clinics; emergency room (ER); echocardiography; transesophageal echocardiography (TEE); catheterization; electrophysiology study (EPS) and ablation; treadmill; cardiopulmonary exercise testing (CPX); operations; and hospitalization.

Departmental policy also included any restrictions in the cardiology department on practices in outpatient clinics, emergency rooms, echocardiography for both outpatients and inpatients, transesophageal echocardiography (TEE), catheterizations (coronary, peripheral, and right heart), ablation and electrophysiological study (EPS) therapies, treadmills, cardiopulmonary exercise testing (CPX), scheduled operations, and scheduled hospitalizations. If the cardiology department had restricted any of these practices, the questionnaire asked if/when it was planned to lift these restrictions.

Data Linkage and Statistics

A similar survey (1st survey) performed on April 13, 2020 included some of the same questions as the 2nd survey, which was used to illustrate the differences between April and August. The linked questions were: “Does your hospital/department accept COVID-19 patients?” and “Does your hospital have a COVID-19 team, and does that team include a cardiologist?” The restriction rate for each examination and procedure in a month was calculated via the total number of hospitals restricted for each procedure divided by the total number of hospitals in each month. The total number of reported COVID-19 cases was retrieved from *Toyo Keizai Online* (<https://toyokeizai.net/sp/visual/tko/covid19/>, accessed December 7, 2020) and officially reported by the Ministry of Health, Labour, and Welfare in Japan (https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/0000121431_00086.html, accessed December 7, 2020) (Figure 1).

Results

After excluding 27 hospitals without a valid e-mail address,

the overall response rate was 48.9% (651 replies). Among the hospitals that replied, 504 had also replied to the 1st survey (77.4%).

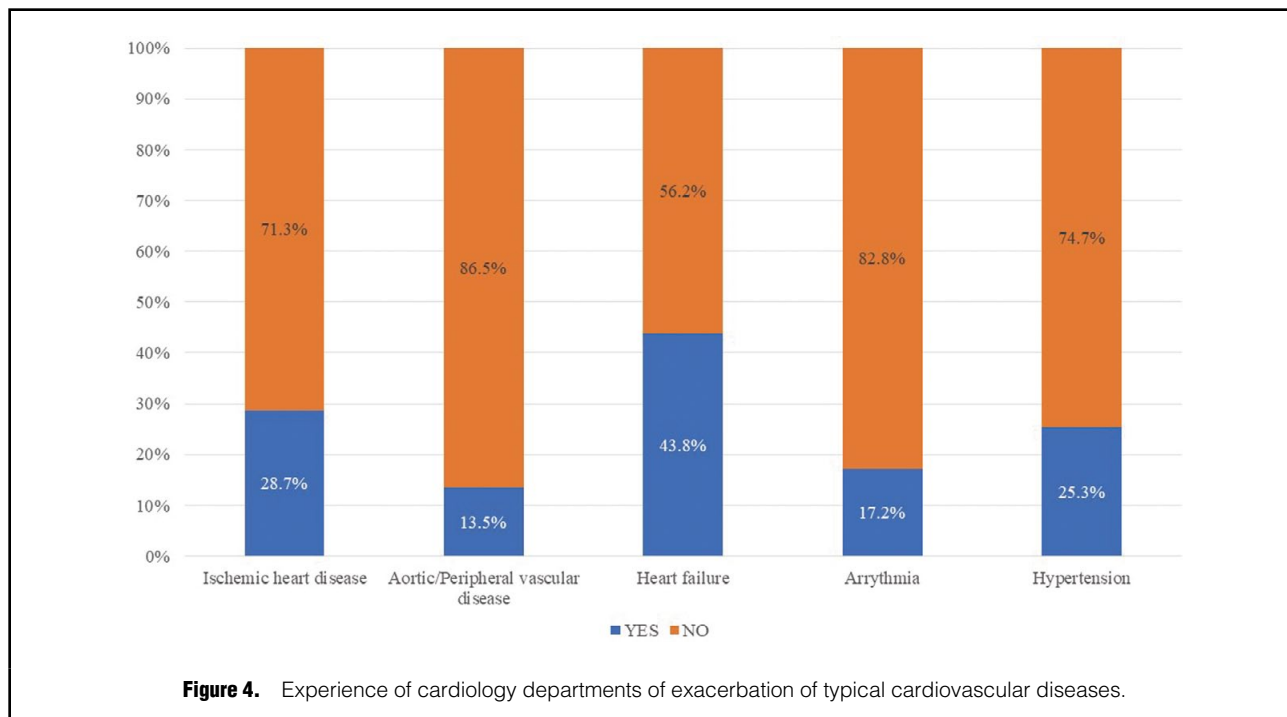
Figure 2 shows the comparison between surveys about hospital acceptance during the COVID-19 pandemic and the presence of a cardiologist on the hospital-level COVID-19 team. Compared with the 1st survey, the percentage of hospitals accepting all patients, regardless of a COVID-19 diagnosis, increased (18.8% to 31.5%) and the number of that declined to accept COVID-19 patients at both the hospital level and the department level decreased (32.7% to 27.3% and 32.5% to 29.2%, respectively).

Of the total of 651 departments, 345 (53.0%) restricted at least 1 of the listed procedures from early March to early August. Among these hospitals, the specific hospital restriction policy changed during that periods (Figure 3). Furthermore, TEE (61.2%) and catheterizations (55.1%) were restricted most frequently, and these restriction rates peaked between the end of April and early May.

Figure 4 shows the results of a typical cardiovascular disease exacerbation in each department. Heart failure was most frequently experienced (43.8%), followed by ischemic heart disease and hypertension (28.7% and 25.3%, respectively).

Discussion

This study was a retrospective descriptive analysis of a 2nd nationwide survey regarding departmental policy during the COVID-19 pandemic. This is the first report describing temporal changes in policy adopted by hospitals and cardiology departments. We confirmed the exacerbation of typical non-COVID-19 cardiovascular diseases under the restrictions. This information should be heeded in upcoming



COVID-19-related pandemic situations.

Comparisons Between Surveys

Our data revealed significant general policy differences between the 1st and 2nd surveys. The acceptance of COVID-19 patients at both the hospital level and the department level increased. Considering the actual reported number of COVID-19 patients in Japan was greater in August than in April, these data imply that departmental policies were not determined solely by the reported number of COVID-19 cases. There are several possible reasons. First, many hospitals lacked adequate personal protective medical equipment, especially in April. Many strategies, including nationwide supply chain improvement, international collaborations, new technological improvements such as 3D printing, and improved allocation of medical resources across the country, were implemented rapidly, which could have ameliorated the shortage of medical resources.^{7,8} Second, there was widespread concern about the infectivity and stigmatization of the disease. Especially in Japan, the first stigmatization of COVID-19 was reported at the end of March 2020.⁹ Risks to healthcare providers were also reported, which could have reduced the motivation of healthcare workers.¹⁰ Appropriate and precise knowledge and information about COVID-19 that could have reduced such concerns have spread gradually. In addition, the number of COVID-19 teams that included a cardiologist on the team had also increased. Although the effect of placing a cardiologist on the COVID-19 team has not been fully evaluated, having a heart team during decision making would help to provide appropriate and rapid sharing of information for heart-related decisions.

Sequential Changes in Cardiology Department Policy

Our results also revealed that almost half of the departments had restricted cardiovascular procedures early in 2020 during

the COVID-19 pandemic. The restriction rate peaked around the end of April. As discussed above, the same reasons could be applicable to the time period of restriction. Unfortunately, there are few reports on restrictions implemented in cardiology departments in general. Nganou-Gnindjio et al reported the majority of cardiology services (76.5%) and consulting programs (85%) were reconfigured in Africa around July 2020.¹¹ This suggests structural changes in cardiology departments occurred more frequently in other countries. Further evaluation of these structural changes and their effect on patient outcomes are necessary.

Indirect Effect of COVID-19 on Other Typical Cardiovascular Care

The effect of the COVID-19 pandemic on cardiovascular disease care has also not been fully evaluated. Among cardiovascular diseases, the striking reduction in admissions for acute myocardial infarction (AMI) has been most frequently reported. De Rosa et al reported a 48.4% reduction in admissions for AMI in Italy.¹² Healthcare delivery systems in northern California also reported a 48% reduction of myocardial infarction admissions.¹³ Severino et al revealed heart failure admissions in Italy also reduced (incidence rate ratio: 0.57 [95% confidence interval 0.45–0.72]) from February to March 2020.¹⁴ Despite the subjective nature of our data, many clinical experiences about the deterioration of patient health due to heart failure and ischemic heart disease support our findings. In addition, our data revealed that other typical cardiovascular diseases, such as hypertension and arrhythmia, should not be ignored.

Study Limitations

First, the survey response rate was less than 60%, so sampling bias cannot be denied. Second, the subjective

nature of the exacerbation of typical cardiovascular disease is also noteworthy. We should validate these results by using a nationwide registry and administrative datasets.

Conclusions

Cardiology departmental policies changed during the initial and second wave of COVID-19. Several procedures were restricted due to the COVID-19 pandemic. The exacerbation of typical non-COVID-19 cardiovascular diseases from the perspective of a clinical cardiologist should be considered.

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Disclosures

No conflicts of interest exist in this study. But we declare that some of our co-authors, S.S., I.K., and K.N. are in member of *Circulation Reports* Editorial Team.

IRB Information

This study was approved by Japanese Circulation Society Ethics Committee (No.11-1)

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