

# A Classification Method for General Medicine Physicians to Advance Field Research in Japan

Masaki Tago <sup>1</sup>, Risa Hirata <sup>1</sup>, Kiyoshi Shikino <sup>2,3</sup>, Takashi Watari <sup>4</sup>, Hiromizu Takahashi<sup>5</sup>, Tomoyo Nishi<sup>1</sup>, Yosuke Sasaki <sup>6</sup>, Taro Shimizu <sup>7</sup>

<sup>1</sup>Department of General Medicine, Saga University Hospital, Saga, Japan; <sup>2</sup>Department of Community-Oriented Medical Education, Chiba University Graduate School of Medicine, Chiba, Japan; <sup>3</sup>Department of General Medicine, Chiba University Hospital, Chiba, Japan; <sup>4</sup>Integrated Clinical Education Center, Kyoto University Hospital, Kyoto, Japan; <sup>5</sup>Department of General Medicine, Faculty of Medicine, Juntendo University, Tokyo, Japan; <sup>6</sup>Department of General Medicine and Emergency Care, Toho University School of Medicine, Tokyo, Japan; <sup>7</sup>Department of Diagnostic and Generalist Medicine, Dokkyo Medical University, Tochigi, Japan

Correspondence: Masaki Tago, Department of General Medicine, Saga University Hospital, 5-1-1 Nabeshima, Saga, 849-8501, Japan, Tel +81 952 34 3238, Fax +81 952 34 2029, Email tagomas@cc.saga-u.ac.jp

**Purpose:** General medicine physicians in Japan play diverse roles depending on their work environments; however, there is no clear definition. In the United States, the establishment of a definition for “hospitalists” has contributed to the accumulation of evidence. To develop research in general medicine and build evidence in Japan, there is an urgent need to establish a systematic classification method for general medicine physicians.

**Methods:** Based on discussions with six hospital-based general medicine physicians with over 10 years of experience at an academic conference in 2024 and a literature review, we proposed a classification method for general medicine physicians.

**Results:** The proposed classification method was based on four indicators: physician maldistribution index, inpatient care contribution index (the contribution of one general medicine physician to inpatient care across all beds in the hospital), clinical content (home medical care, outpatient care, emergency response, inpatients management, and critical inpatients management), and education (medical students, clinical residents, and senior residents). These indicators were established by considering physician characteristics, target population, social environment, and hospital environment, enabling an objective evaluation of factors contributing to the practice of general medicine physicians.

**Conclusion:** This classification method may serve as a foundation for research that makes it easier to understand the characteristics of general medicine physicians under study and allows for the comparison of roles according to regional characteristics and hospital size. Future validation and continuous improvement of this classification method are expected to advance the accumulation of evidence related to general medicine physicians. In this paper, we present a proposal for a classification method; future validation of this classification is necessary.

**Keywords:** classification, general internal medicine, general medicine physician, hospitalist, indicator

## Introduction

General medicine physicians in Japan have different roles depending on where they work, despite having the same title.<sup>1</sup> The definition of general medicine physicians in Japan is not clear, and those with this title have very diverse backgrounds (ie, home visits, emergency care, primary care outpatient services, general outpatient services in university hospitals, and inpatient care), resulting in various titles for this group of physicians (ie, general medicine physicians, family physicians, primary care physicians, general internists, hospitalists, and emergency physicians).<sup>1</sup> Owing to this diversity, it is difficult to determine whether evidence created in one study can be applied to one’s own working environment, which is a limitation of general medicine research in Japan. Within the scope of our search, there have been no previous attempts to categorize general medicine physicians for evidence building. In the United States, by defining “hospitalists” as “physicians who specialize in comprehensive inpatient care and management”,<sup>2</sup> substantial evidence has been established regarding cost reduction<sup>3,4</sup> and quality of care improvement<sup>5</sup> related to hospitalists. Furthermore, while

in the United States, physician characteristics differ according to the specialist certification acquired,<sup>6</sup> in Japan, even among the same primary care physicians, the specialist certifications acquired differ, making classification by specialist certification difficult.<sup>7</sup> We previously suggested that the development of a clear classification method for general medicine physicians is necessary in Japan.<sup>8</sup> We believe that a clear and objective classification method that accurately reflects the background of general medicine physicians in Japan would clarify the target population for research and enable the creation and accumulation of high-quality evidence related to general medicine physicians.<sup>8</sup>

Based on our previous suggestion and expert opinion, in this project, we developed a new classification method for general medicine physicians using objective indicators aimed at clarifying the target population in research focusing on general medicine physicians and examined its potential and utility.

## Materials and Methods

In this project, six hospital-based general medicine physicians with over 10 years of experience (MT, KS, TW, HT, YS, and TS), who are the authors of this paper, discussed objective indicators to be used in a classification method for general medicine physicians at an academic conference of the Japanese Society of Hospital General Medicine in September 2024. To develop the classification method, factors contributing to the practice of general medicine physicians were identified, and their corresponding indicators were examined. When selecting indicators, the characteristics of physicians as well as external environmental (population and social environment) and internal hospital factors were considered, with an emphasis on simplicity, objectivity, and versatility. The positioning of research and education was also examined. Our recommendations are the result of focus group discussions with individuals of broad expertise and recent evidence, ensuring that they are grounded and directly relevant to the general medicine in Japan. A classification method for general medicine physicians was proposed to help target them in research, based on discussions and a literature review.

## Results

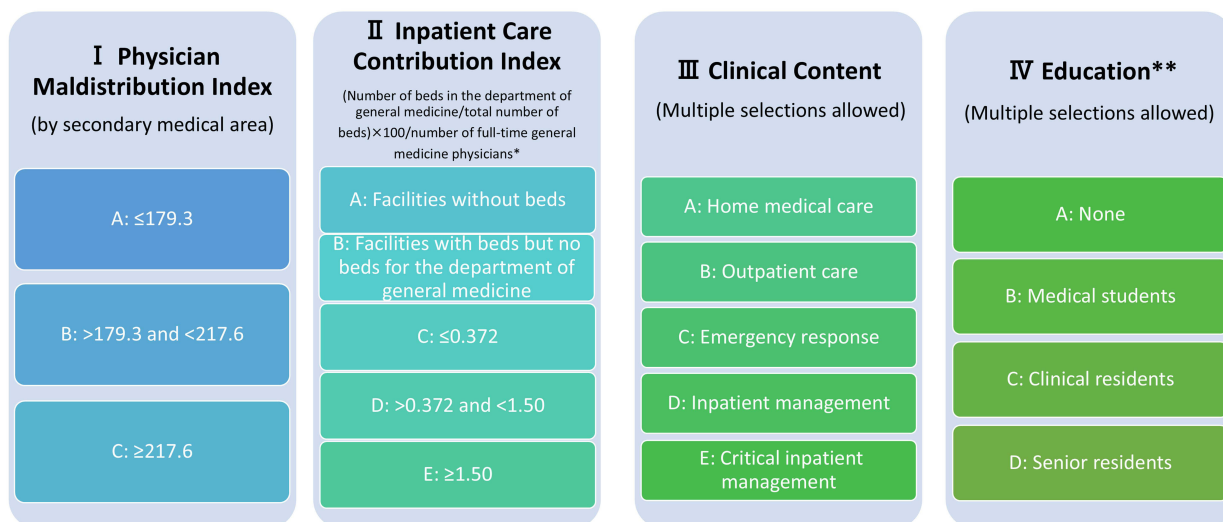
In developing the classification method, we examined in detail the factors contributing to the practice of general medicine physicians. In addition to the personal characteristics of physicians, external factors such as population, social environment, and internal hospital environment were identified as contributing factors to practice.<sup>9</sup> As the personal characteristics of physicians are diverse, we considered two elements—external and internal hospital environments—as important for objectively expressing background differences.

During the process of selecting items, external environment factors such as population, presence of other hospitals, hospital location (ie, proximity to stations, prefectural capital, and rural vs urban areas), and region (ie, Kyushu or Kanto) were considered. For the internal hospital environment, factors such as the number of beds, number and content of departments, other management indicators (bed occupancy rate, number of inpatients, financial balance), university hospital vs community hospital, and number of full-time physicians were considered.

Originally, general medicine physicians are expected to engage equally in practice, research, and education.<sup>10</sup> However, research is primarily conducted in university hospitals and large hospitals, so making it a major category might limit the number of eligible facilities. With the revision of the core curriculum, community medicine education has become more emphasized, and it is predicted that general medicine physicians may be involved in education regardless of their work location.<sup>11</sup> Therefore, the indicators included the physician maldistribution index for external environment, the inpatient care contribution index for internal environment, clinical content, and education (Figure 1).

The physician maldistribution index was created by the Japanese government, and it objectively shows physician maldistribution status at the national level for each secondary medical area, considering regional medical needs, population structure, and gender and age composition of physicians.<sup>12</sup> The index is updated annually and is easily accessible. Published tertiles were used to classify the cutoff values into three levels: A, B, and C.

We developed the inpatient care contribution index, calculated as (number of beds in the department of general medicine/total number of beds)  $\times$  100/number of full-time general medicine physicians, which is an indicator that measures the contribution of one general medicine physician to inpatient care in the entire hospital. Regarding specific



**Figure 1** Classification method for general medicine physicians. \*Beds = Only general beds targeted. If there is no fixed bed allocation for the Department of General Medicine, the average number of inpatients in general beds in the department at a single point in time was used. \*\*Education targeting medical students and physicians at one's own facility.

indicator values, clinics without beds had a value of 0, whereas general medicine departments with a large number of beds had higher values. For the cutoff values, we used tertiles calculated from previous data.<sup>13</sup>

Clinical content addresses variation in roles among even general medicine physicians, which depends on the characteristics of each hospital, such as home medical care, outpatient care, consultation, inpatient management, critical inpatient management, and emergency response; therefore, these were included as classification items.<sup>1,10</sup> As these clinical contents overlap and cannot be limited to a single option, multiple selections were allowed. Although considered, diseases managed in practice were not included as a classification indicator owing to their diversity and the difficulty of objective categorization.

Regarding educational content, the target education level (medical student, clinical resident, or senior resident) was used as an indicator, and multiple selections were allowed. Education was included because the core curriculum revision emphasizes community medicine education.<sup>11</sup>

To illustrate how this classification method works, we considered the Department of General Medicine at a 600-bed university hospital in Saga City, Saga Prefecture (population of approximately 220,000), where 15 full-time general medicine physicians work, provide inpatient care (10 beds), outpatient care, and consultation services, and are involved at all education levels. The inpatient care contribution index was calculated as  $(10/600) \times 100/15 = 0.11$ . Therefore, the departments were categorized as I-C, II-C, III-A/B/C/D/E, and IV-B/C/D.

## Discussion

The classification method proposed in this study helped to gain a more detailed understanding of the characteristics of the target population in research focusing on general medicine physicians. For example, it may reveal whether there are differences in patient satisfaction or quality of care between general medicine physicians with different clinical and educational backgrounds.

The significance of using the physician maldistribution index is that it shows that even hospitals of the same size have different roles and functions depending on the population size of the region. For example, in urban areas, access to medical care is good, the quality of medical care is high,<sup>14</sup> and many physicians are performing acute care,<sup>15</sup> whereas in

rural areas, there are fewer physicians, access to medical care is not easy, and the demand for nursing care rather than medical care is increasing.<sup>15</sup> Using this indicator allows research that considers the medical needs of the region and the distribution of physicians. For instance, it is possible to compare the roles of general medicine physicians in areas with physician maldistribution with those of physicians in urban areas.

The significance of the inpatient care contribution index is that it objectively evaluates the contribution of general medicine physicians to the hospital. Using this indicator allows for a distinction between large hospitals, where it is difficult to contribute through clinical practice alone because of the large number of physicians and numerous other duties (ie, administrative work and research), and community hospitals, where general medicine physicians can sufficiently contribute to the hospital through clinical practice alone. It also clearly differentiates facilities with beds from those without. Using this index enables research that considers hospital size and the contribution of general medicine physicians. For example, it allows a comparison of the roles of general medicine physicians in large hospitals and those in small-to medium-sized hospitals.

The significance of the clinical content indicator is that it can classify the diverse clinical roles of general medicine physicians. Using this indicator enables research that considers the specialization of general medicine physicians. For example, it can verify whether there are differences in patient outcomes, satisfaction, and quality of care between general medicine physicians specializing in home medical care and those specializing in emergency medicine. We considered including diseases managed in practice as an indicator, but did not because departments of general medicine at universities often manage not only common diseases but also diseases requiring cross-organ approaches and those requiring holistic and social approaches;<sup>10</sup> this diversity makes them difficult to categorize objectively and simply. Additionally, specific clinical performance indicators, such as number of outpatients and inpatients, were avoided in this classification method because their magnitude does not contribute to distinguishing departments of general medicine in research, and overly detailed categorization was expected to make the method less user-friendly.

The significance of the educational content indicator is that it visualizes the educational roles of general medicine physicians. This indicator can be used to assess differences in educational effectiveness between general medicine physicians involved in medical student education and resident education. Many general medicine physicians believe that educational achievements are not properly evaluated, and that there is a need for the development of research related to education in the future. General medicine, which requires cross-organ diagnostic skills and diagnostic reasoning, has a high affinity for education,<sup>16</sup> and education for clinical and senior residents is necessary for the development of future practitioners. In the case of education for senior residents and above, it may be necessary to further subdivide them based on their years of experience and to obtain specialty and instructor qualifications. Regarding undergraduate education, departments of general medicine at universities conduct clinical training for almost all medical students, mainly through outpatient practice.<sup>16</sup> Furthermore, with the revision of the core curriculum, undergraduate education in community medical institutions (community medical education) is also being emphasized, so it was incorporated as an indicator in this classification method.<sup>11</sup>

## Limitation

The classification method proposed in this study was based on expert discussions; however, the validity, utility, and feasibility of its actual implementation have not yet been verified. The validity of the inpatient care contribution index is also unknown, as it evaluates only the quantity, not the quality, of practice. In the future, it will be necessary to apply this classification method to general medicine physicians across various hospitals in Japan, verify its validity, and make modifications. The cutoff values used in the classification will also need to be modified during the verification process. In addition, it is important to examine how the classification results vary across hospitals and how they relate to clinical outcomes. Therefore, it is necessary to conduct a nationwide study with the cooperation of academic societies related to general medicine and verify whether the classification results align with actual practice.

## Conclusion

We developed a classification method for general medicine physicians with diverse backgrounds for use in research targeting this population. This method involves four categories: physician maldistribution index, hospital information

(inpatient care contribution index), clinical content, and educational content, considering not only the environment surrounding general medicine physicians but also practice and education. By repeatedly verifying and improving this method in the future, we aim to propose it as an established tool for use in research, contributing to the accumulation of useful evidence regarding general medicine physicians.

## AI Declaration

For this study, we utilized AI assistance (Claude Sonnet 4.0) to organize the information and translate the text to English.

## Acknowledgments

We thank Dr. Masahiko Ezoe, Department of General Medicine, Saga University Hospital, for supporting this work.

## Author Contributions

All authors made a significant contribution to the work reported with respect to the conception, study design, execution, acquisition of data, analysis, and interpretation. All authors participated in drafting, revising, and critically reviewing the article and gave their final approval of the version submitted for publication. All authors agreed on the journal for submission and agreed to be accountable for all aspects of the work.

## Funding

There is no funding to report.

## Disclosure

The authors report no conflicts of interest in this work.

## References

1. Yokota Y, Watari T. Various perspectives of “general medicine” in Japan-respect for and cooperation with each other as the same “general medicine physicians”. *J Gen Fam Med.* 2021;22(6):314–315. doi:10.1002/jgf2.500
2. Hudali T, Papireddy M, Bhattarai M, Deckard A, Hingle S. Evaluating YouTube as a source of patient education on the role of the hospitalist: a cross-sectional study. *Interact J Med Res.* 2017;6(1):e1. doi:10.2196/ijmr.6393
3. Auerbach AD, Wachter RM, Katz P, Showstack J, Baron RB, Goldman L. Implementation of a voluntary hospitalist service at a community teaching hospital: improved clinical efficiency and patient outcomes. *Ann Intern Med.* 2002;137(11):859–865. doi:10.7326/0003-4819-137-11-200212030-00006
4. Meltzer D, Manning WG, Morrison J, et al. Effects of physician experience on costs and outcomes on an academic general medicine service: results of a trial of hospitalists. *Ann Intern Med.* 2002;137(11):866–874. doi:10.7326/0003-4819-137-11-200212030-00007
5. White HL, Glazier RH. Do hospitalist physicians improve the quality of inpatient care delivery? A systematic review of process, efficiency and outcome measures. *BMC Med.* 2011;9(1):58. doi:10.1186/1741-7015-9-58
6. Phillips WR, Dai M, Frey JJ, Peterson LE. General practitioners in US medical practice compared with family physicians. *Ann Fam Med.* 2020;18(2):127–130. doi:10.1370/afm.2503
7. Miyawaki A, Mafi JN, Abe K, et al. Primary care physician characteristics and low-value care provision in Japan. *JAMA Health Forum.* 2025;6(6):e251430. doi:10.1001/jamahealthforum.2025.1430
8. Hirata R, Togo M, Shikino K, et al. Standardizing generalist definitions to improve evidence in general medicine: addressing diverse interpretations and lack of consistency. *Int J Gen Med.* 2024;17:2939–2943. doi:10.2147/IJGM.S468755
9. Russell A, Fromewick J, Macdonald B, et al. Drivers of scope of practice in family medicine: a conceptual model. *Ann Fam Med.* 2021;19(3):217–223. doi:10.1370/afm.2669
10. Togo M, Watari T, Shikino K, et al. A statement on the ten skills characteristic of exemplary Japanese hospitalist practice. *J Hosp Gen Med.* 2021;3(2):68–70. doi:10.60227/jhgmmeibun.3.2\_68
11. Ministry of education, culture, sports, science and technology: model core curriculum for medical education in Japan. [homepage on the Internet]. Available from: [https://www.mext.go.jp/component/a\\_menu/education/detail/\\_icsFiles/afiedfile/2018/06/18/1325989\\_30.pdf](https://www.mext.go.jp/component/a_menu/education/detail/_icsFiles/afiedfile/2018/06/18/1325989_30.pdf). Accessed April 16, 2025.
12. Ministry of health, labour and welfare [homepage on the Internet]. Available from: <https://www.mhlw.go.jp/content/10800000/000665196.pdf>. Accessed April 4, 2025.
13. Togo M, Hirata R, Katsuki NE, et al. Contributions of Japanese hospitalists during the COVID-19 pandemic and the need for infectious disease crisis management education for hospitalists: an online cross-sectional study. *Risk Manag Healthc Policy.* 2023;16:1645–1651. doi:10.2147/RMHP.S422412
14. Seo Y, Takikawa T. Regional variation in national healthcare expenditure and health system performance in central cities and suburbs in Japan. *Healthcare.* 2022;10(6):968. doi:10.3390/healthcare10060968

15. Kusunoki T, Yoshikawa T. The distribution structure of medical and care resources based on regional characteristics throughout Japan in 2020. *BMC Health Serv Res.* 2024;24(1):222. doi:10.1186/s12913-024-10699-5
16. Tago M, Shikino K, Hirata R, et al. General medicine departments of japanese universities contribute to medical education in clinical settings: a descriptive questionnaire study. *Int J Gen Med.* 2022;15:5785–5793. doi:10.2147/IJGM.S366411

**International Journal of General Medicine**

**Publish your work in this journal**

The International Journal of General Medicine is an international, peer-reviewed open-access journal that focuses on general and internal medicine, pathogenesis, epidemiology, diagnosis, monitoring and treatment protocols. The journal is characterized by the rapid reporting of reviews, original research and clinical studies across all disease areas. The manuscript management system is completely online and includes a very quick and fair peer-review system, which is all easy to use. Visit <http://www.dovepress.com/testimonials.php> to read real quotes from published authors.

Submit your manuscript here: <https://www.dovepress.com/international-journal-of-general-medicine-journal>

**Dovepress**

Taylor & Francis Group