

## News Release

### Title

A novel approach to safe medication therapy for hospitalized older patients: potential effectiveness of ward-specific strategies against high-risk medications

### Key Points

- Certain drugs require particular caution in prescriptions for older patients. These drugs are called PIMs (Potentially Inappropriate Medications), and their significance is increasingly recognized. However, currently known strategies for managing PIMs are time-consuming, and their continuous and effective implementation is not straightforward.
- In a post-acute and secondary care hospital in Japan, the types of frequently used PIMs on admission varied among the hospital wards.
- By categorizing hospitalized older patients based on each hospital's standard practices and identifying commonly prescribed PIMs within these categories, it may be possible to implement interventions against PIMs more efficiently than conventional methods.

### Summary

Older patients often receive numerous medications for various medical conditions, raising concerns about potential adverse effects. There exist groups of medications that require particular caution when prescribed to older individuals, known as Potentially Inappropriate Medications (PIMs). The high frequency of PIM use among hospitalized older patients is a significant challenge, and currently established PIM reducing strategies are labor-intensive and difficult to implement effectively, even in large hospitals. There is a growing need for PIM reducing strategies that can be easily and consistently implemented in small to medium-sized hospitals.

Many small to medium-sized, post-acute and secondary care hospitals in Japan have various wards in addition to rehabilitation units, including post-acute transitional care wards and acute care wards. If differences in the prevalence and types of PIMs exist among these wards, it would provide insights into potential strategies for addressing PIMs. Therefore, a research group led by Dr. Hirotaka Nakashima, Prof. Hiroyuki Umegaki of the Department of Geriatrics, Nagoya University Hospital, conducted analyses of patient data from Wako-kai Yamada Hospital. Yamada hospital is a medium-sized hospital in Gifu City, and

has the following four wards: an orthopedic rehabilitation ward, a neurologic rehabilitation ward, a rehabilitation and transitional care ward for other diseases, and an acute care ward. The researchers examined the ward-specific characteristics of PIMs on admission.

The results showed that there were no significant differences in the frequency of PIM use among the four wards. However, the types of PIMs varied by ward. Specifically, in the orthopedic rehabilitation ward, there was a higher use of sleeping pills and painkillers. In the neurological rehabilitation ward, antithrombotic drugs were more commonly used. The rehabilitation and transitional care ward for other diseases had a higher use of diuretics, while the acute care ward had a higher use of sleeping pills and diuretics.

The findings of this study suggest that, by categorizing hospitalized older patients based on each hospital's standard practices and identifying commonly prescribed PIMs within these categories, it may be possible to implement interventions against PIMs more efficiently than conventional methods. Future research should focus on verifying the intervention effects of a ward-based approach against PIMs. Moreover, this approach may have relevance to healthcare policy and could potentially promote safer medication therapy for a large number of older patients. This research was published in the online edition of "Scientific Reports" on September 15, 2023.

## **Research Background**

Older persons often suffer from multiple diseases, leading to the prescription of multiple medications. However, due to factors such as age-related declines in drug metabolism and excretion, older patients are prone to experiencing undesirable effects from medications. With such a background, there are groups of medications that require particular caution when prescribing to older patients, known as PIMs (Potentially Inappropriate Medications). The use of PIMs is associated with adverse drug reactions, falls, unexpected hospitalizations, and even death. It is well-known that the frequency of PIMs use is particularly high among hospitalized older patients.

Various tools, including lists of PIMs and procedures to reduce their use, have been proposed to decrease the use of PIMs. However, implementing these methods, even in large hospitals, can be challenging due to the time and effort involved. There is a need for PIMs intervention methods that can be easily and consistently implemented even in small to medium-sized hospitals.

In small to medium-sized, post-acute and secondary care hospitals in Japan, the wards are primarily categorized into the following types:

1. Orthopedic rehabilitation ward: after treatment for orthopedic diseases such as fractures at larger hospitals.
2. Neurologic rehabilitation ward: after treatment for neurological disorders like strokes at larger hospitals.
3. Rehabilitation and transitional care ward for other diseases: after treatment for other acute illnesses at larger hospitals.
4. Acute care ward: for acute illnesses (e.g., pneumonia) of patients living in nearby homes or nursing homes.

In many cases, a single hospital may have two or more of these types of wards. If there are distinct characteristics of PIMs for each ward, it might be possible to implement effective PIMs interventions based on these characteristics.

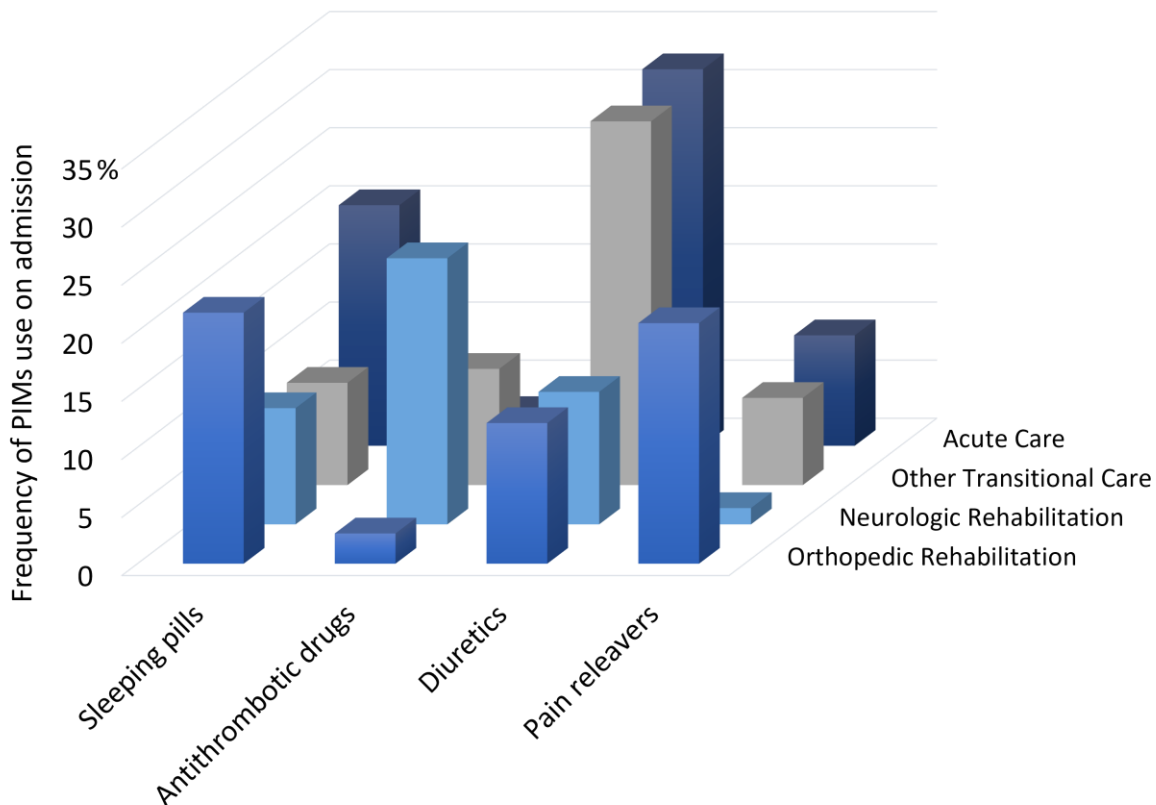
Therefore, the research group analyzed data from hospitalized older patients in Wako-kai Yamada Hospital, a medium-sized hospital located in Gifu City, to investigate the ward-specific features of PIMs at the time of admission. Yamada Hospital has approximately 110 beds and has those four types of wards mentioned above.

## Research Results

A total of 541 patients were included in the study. The criteria for PIMs were based on the Screening Tool for Older Person's Appropriate Prescriptions for Japanese (STOPP-J). At the time of admission, patients were using approximately 7 different medications. Around 60% of the patients were taking PIMs. Analyses based on hospital wards revealed that the frequency of PIMs use did not differ significantly among the four wards. However, characteristic features of PIM types were observed in each ward (**Figure**). Specifically:

- The orthopedic rehabilitation ward had a higher prevalence of sleep medications and pain relievers use.
- The neurologic rehabilitation ward had a higher prevalence of using two or more antithrombotic medications.
- The rehabilitation and transitional care ward for other diseases had a higher prevalence of diuretic medication use.
- The acute care ward had a higher prevalence of sleep medications and diuretics.

(Figure)



### Research Summary and Future Perspective

Hospitals sharing similar characteristics with Yamada hospital could focus on the PIMs identified in the present study. Other hospitals could develop more practical PIMs countermeasures by grouping patients in a manner suitable to each hospital and identifying the most common PIMs. This approach might be more feasible than traditional method of intervening equally for all PIMs in hospitalized patients.

Future research should focus on verifying the intervention effects of a ward-based approach against PIMs. It will be of great interest to see whether these interventions successfully reduce the use of PIMs as intended and have a positive impact on patients' health indicators, such as their physical function at discharge.

The present study also has implications for healthcare policy. Currently, Japan has implemented policies with a focus on reducing the excessive use of medications. As a result of this policy, the prevalence of polypharmacy seems to have decreased. However, conversely, the prevalence of PIMs has not decreased; in fact, it has increased. In other countries, policies aimed at reducing specific medications use have been implemented, but they have not always yielded the intended results, as other similar medications use may increase. One potential approach could involve assisting in the investigation

and intervention of PIMs on a hospital-by-hospital or ward-by-ward basis. This would also enhance the staff's sense of participation in combating against PIMs, compared to if the government were to take the lead in reducing specific PIMs.

### **Publication**

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