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## Should People Change to Shared Footwear When Visiting Hospitals?



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### ABSTRACT

When visiting medical facilities such as hospitals in Japan as an outpatient, there are two methods of entering the building: with the outer footwear as they are or taking them off at the entrance. In the latter condition, the visitors need to use shared inner footwear, such as slippers, provided by the facility. This act of changing footwear is limited to relatively small medical facilities. However, in recent years, even in small facilities, there have been cases where people choose not to take off their outer footwear and refuse changing shared inner footwear. There seems to be a reason for choosing either of these methods, such as hygiene and economic factors. Therefore, in this study, we will clarify the differences considering multiple factors, such as the spread of infectious diseases, and consider which practice is better.



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## INTRODUCTION

When visiting medical facilities such as hospitals in Japan as an outpatient, there are two practices regarding footwear; the visitors either keep on their shoes and sandals when entering the building or take off their shoes at the entrance and change into shoes, such as shared slippers, provided by the facility before entering. It seems that each facility can consider which practice to choose, but only small facilities such as clinics use the latter, whereas larger facilities such as hospitals do not<sup>1-3)</sup>. Hygienic or economic reasons are considered to explain these practices. Therefore, in this paper, we analyze how the efforts of visitors and medical facility personnel, the spread of infectious diseases, and the dirtiness of facilities change depending on whether the visitors change to slippers, and then evaluate which is the more suitable method.

In the Medical Care Act, a "hospital" is defined as a medical facility that has inpatient facilities with 20 or more beds, and other medical facilities are referred to as "clinics." Clinics often do not have hospitalization facilities. Furthermore, as per the Medical Care Act, a "general hospital" is defined as a hospital with a detention facility for more than 100 patients. Its medical services include internal medicine, surgery, obstetrics and gynecology, ophthalmology, and otolaryngology. Moreover, it has an intensive care unit, lecture room, pathological anatomy room, laboratory, and laboratory facilities for chemistry, bacteriology, and pathology; it is also approved by the prefectural governor.

### **When changing to shared footwear such as slippers**

An overview of this practice is provided in Table 1. In Japan, many privately owned clinics (such as relatively small clinics with only a single department including family doctor or dentist) have traditionally used this practice<sup>1-3)</sup>. The outer footwear changed to shared slippers and is stored in a shoebox at the entrance. Similarly, when it rains, the umbrellas brought to the facility are placed in the umbrella stand at the entrance. This prevents dirt such as soil and dust, which may carry pathogens from the visitor's home or the outside environment, from being scattered inside the facility<sup>3)</sup>. However, medical facilities must prepare slippers in advance, replace old ones, and pay attention to the quality and quantity of dirt on them<sup>1)</sup>. According to previous research, footwear may contribute to the transmission of *Trichophyton*<sup>4)</sup>; thus, it is necessary to manage and store the slippers properly, and disinfect them regularly to prevent infections<sup>5)</sup>. Traditionally, shared footwear with antibacterial effects

has been used; however, it has been found that these have little effect on reducing or killing pathogens<sup>4),6)</sup>. In particular, during the COVID-19 pandemic, many people tend to resist the use of shared footwear. As the feet are distant from the mouth and nose, they are not similar to the hands, but are more likely to contribute to pathogen transmission rather than being infected by droplets<sup>4),5),7)</sup>. Further, these methods are limited to cases where the facility staff is attentive (using practices such as disinfecting immediately after use or distinguishing used footwear from unused ones). In addition, considering the Japanese people's tendency toward cleanliness in recent years, it seems necessary to devise ways to ensure that the shared footwear is kept clean. This involves arranging the slippers neatly at the entrance, placing them in a shoebox in an orderly manner, separating them according to location, and indicating whether they have been disinfected or not<sup>5)</sup>. Further, under special circumstances such as when a part of the facility is the residence of a staff member, the action of changing the footwear in this manner is indispensable because people do not wish to invade the living space while wearing outer footwear. Further, if there is no step at the entrance owing to the structure of the building, it is difficult to use slippers because it is difficult to know where to change the footwear.

#### **When not changing to shared footwear**

This practice is often used in large-scale hospitals (with multiple clinical departments and a large number of outpatients) other than privately run medical facilities. In recent years, this method has also been used at small-scale medical facilities<sup>2)</sup>. Outpatients enter the facility with their footwear and receive a medical examination. If the medical facility needs to be kept clean when providing examinations and surgical treatment, slippers or other provided inner footwear is worn or the outer footwear is removed for the medical treatment<sup>8)</sup>. Even if this method is used, it is normal to use measures for preventing foreign substances such as dirt, from being brought into the entrance. Typical examples include the use of rugs, such as foot-wiping mats, and adhesive sheets that can remove mud from the outside footwear<sup>9)</sup>. However, mud stains in corridors and similar instances are unavoidable because differences in the strength of the effect on footwear for each user and their attenuation due to long-term use are inevitable<sup>10)</sup>. Frequent cleaning of corridors is essential to maintain high cleanliness. However, in relatively large hospitals, it is difficult to prepare a large number of shoes (when about 50 people a day is considered as a reference<sup>3)</sup>) and keep shoe boxes clean and tidy<sup>8)</sup>. Further, in cases where people cannot walk on their own and visit the hospital in a

wheelchair, it may be necessary to eliminate these steps so that they do not have to change their footwear<sup>2)</sup>. However, it is naturally considered that pathogens may be brought in via footwear<sup>4),6)</sup>, and if a person is physically less resistant to infectious diseases visits the hospital or is already hospitalized, the floor needs to be divided into multiple zones, and it is possible to restrict that only certain footwear can be worn there. From the beginning, places, where visitors enter, are unavoidable, even if pollution progresses to some extent. However, in restricted areas, other treatments (in addition to changing footwear, air curtains, air pressure control, and others) are applied to maintain strict cleanliness.

## CONCLUSION

Considering the time and effort for the visitors, not changing footwear is considered more convenient. In recent years, based on this idea, the percentage of small-scale facilities that do not use shared footwear has increased. Elderly people may feel that conventional methods are better. However, other age groups may be reluctant to be barefoot or show socks, or maybe reluctant to step on the floor of a medical facility. There is also the problem of contamination of slippers, which are the commonly shared footwear; however, there are cases where shared footwear such as slippers prepared at the facility are not used at all. Problems such as ease of walking in the hospital and injuries such as tripping caused by walking with slippers also need to be considered. However, if footwear is not changed, protection against contamination of the facility by using a foot-wiping mat at the entrance is essential<sup>9)</sup>. Scattering mud and rainwater in the facility corridor because of outer footwear or umbrellas in rainy weather is not desirable and must be avoided to prevent infectious diseases<sup>11)</sup>. Further, floor cleaning must be performed in parallel with these steps.

For preventing the spread of infectious diseases, the entire medical facility can be protected when shared footwear is used, and only a fixed area can be protected when it is not used. As contracting a new illness by visiting a medical facility is counter-productive, precautionary measures must be taken. However, as the scale of the facility increases, considering the whole scenario at once and uniformly is difficult. Thus, in the case of a small-scale medical facility, the overall cleanliness may be considered collectively, whereas, in a large-scale hospital, only parts of sections (each small section) should be narrowed down.

When dealing with visitors including foreigners, they may not take off their outer footwear when entering a medical facility according to lifestyle in countries other than Japan.

However, to prevent the dirt and pathogens brought into the facility from interfering with medical treatment, it is necessary to mark a place to take off outer footwear partially and to consider the length from the corridor to the examination room as well as the flooring material. According to previous reports, large amounts of substances that act as a source of infection are unlikely to enter the facility even if the visitors wear outside footwear. This may vary with the location of the facility and other factors such as the lack of soil on the roads around the facility. It is considered that even a carpet floor in the hospital would not pose a problem<sup>12)</sup>, provided the pollution situation is understood and the floor is cleaned properly to ensure minimal pollution. In addition, it is necessary to consider in advance what to do if the contamination progresses unintentionally (such as closing the hospital or advanced cleaning being performed by a contractor).

Overall, not using slippers is considered to become the mainstream practice in the future, and this is desirable from a hygienic as well as economic perspective. This is because if a foot-wiping mat and dirt-resistant floor are prepared at the beginning, it is not necessary to prepare slippers or shoe boxes, and the space can be used appropriately. Regardless of whether the visitors choose to use the shared footwear, the time and effort required will not change because the cleanliness of the shared footwear or the floor would need to be maintained.

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**Table No 1: Advantages and disadvantages of wearing sharedslippers atthe hospital**

	Use shared slippers	No slippers(Outer footwear strictly prohibited)
Advantages	<ul style="list-style-type: none"> <li>-Minimizesthe dirt in the hospital</li> <li>-Preventsnosocomial infections</li> <li>-Less formalcompared to outer footwear, relaxing</li> </ul>	<ul style="list-style-type: none"> <li>-Saves the trouble forvisitors</li> </ul>
Disadvantages	<ul style="list-style-type: none"> <li>-Concernsabout dirt on the sharedslippers</li> <li>-Warm and uncomfortable when wearing the slippers immediately after others have used them</li> <li>-Infection from dirty slippers</li> <li>-Large outer footwear such as boots are difficult to store in shoeboxes</li> <li>-Elderly people and patients on wheelchairs need time to change (resulting in a crowded entrance).</li> <li>-Lost or stolen shoes due to misplaced footwear</li> </ul>	<ul style="list-style-type: none"> <li>-Dirt and mud from the outside can be easily brought in (the hospital gets dirty).</li> <li>-On rainy days, rainwater is brought in, which makes the floor slippery.</li> </ul>
Workaround	<ul style="list-style-type: none"> <li>-Those who change footwear should avoid putting their feet on the floor (bacteria on the floor).</li> <li>-Store slippers in a place where bacteria do not fall (storage box, etc.) or disinfect when not in use.</li> <li>-There is an allowable limit for disinfecting slippers (usually twice a day for about 50 people).</li> <li>-Prepare alcohol for self-sterilization.</li> </ul> <p>It is necessary to appeal that slippers are used hygienically.</p>	<ul style="list-style-type: none"> <li>-Frequent cleaning of the floor is required (however, considering COVID-19, a spray cannot be used).</li> <li>-Disinfect the soles using a front door mat to reduce the risk of floor infection.</li> <li>-There is also a case of devising floor material.</li> <li>-Shared footwear will be rented only when entering areas such as hospital wards.</li> <li>-Air pressure control and air curtains will be installed in some areas such as hospital wards.</li> </ul>

Based on the data in references 8–11).

Bringing in mud and dust from the outside makes it easier for infectious diseases to spread.

Pathogens such as bacteria are more likely to adhere to the wet surfaces leading to their proliferation.

“Slippers” in the table indicate the shared foot-wear used in the hospital.