

A Study on New Lifestyles and Home Healthcare Hygiene: In light of Behavioral Changes in Healthcare

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新しい生活様式にともなう住居衛生 —健康管理に対する行動変容をふまえて—

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ABSTRACT

Behavioural changes are needed when adapting to new lifestyles, such as in the wake of the COVID-19 pandemic. Healthcare, in general, requires behavioural changes, with home-based healthcare requiring changes to housing functions.

When avoiding infection, or when recuperating at home, it is important to secure a sickbed in a private room, to prevent further infection of others by bathing and disinfecting laundry in a separate bathroom, and eat and do dishes in an environment that minimizes further infection. Proactive healthcare measures are important while receiving medical treatment—as exemplified by practices of preparing one's living environment for home nursing and meal delivery services advanced in Saitama Prefecture.

For the housing education update to hygienic living, preparations were made for hygienic housing with a focus on infection control via a remodelling of house facilities. These aspects included hand washing at the entrance of a home, washing and drying via cleanliness orientation, and an improvement in housing and living styles by introducing teleworking support and indoor ventilation systems. In terms of housing education, further instructions concerning safe living and hygienic environments should be developed.

KEY WORDS : Home Isolation, Domestic Infection, Home Medical care, Remodeling House, Residential Life

INTRODUCTION

The new lifestyles associated with COVID-19 measures aim to create a social model for human life and health. Current issues in the life sciences that contribute to new lifestyles have been discussed in the fields of food, clothing and housing, and the importance of acquiring

knowledge and skills which can be adapted to new lifestyles was emphasized¹. Life science suggest the behavioral changes correspond to new lifestyles, and healthy living environments are effective as teaching materials for learning housing knowledge and living skills. It is now necessary to accumulate knowledge and behavioral changes based on new lifestyles, and to promote the establishment of lifestyles and

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living environment planning.

In the wake of the COVID-19 pandemic, mildly infected people have had to stay at home in order to give priority to the treatment of severely ill patients. The function of home has changed, manifested by the stay at home, and end-of-night medical care has been increasing. It is required that transformed and the coordination and efficiency of medical and social services. Following COVID-19 pandemic, lifestyle change and a healthy social model are required to avoiding infection, healthcare and unhygienic housing are discussed in this paper. The provision of safe living environment is important for the promotion of health and welfare. The aim of this study is to improve the Japanese way of living and dwelling, focusing on the approach to infection control for housing prepared for hygiene. Taking into account the hygienic living environment, the development of lifestyle and learning about hygienic housing are examined for the housing education.

METHODS

(i) Issue of Home Healthcare

In September 2021, a state of emergency was declared in Tokyo to prevent the collapse of healthcare due to the rapidly increasing number of infected and critically ill patients (Figure 1).

Properly implement countermeasures against the COVID-19 infections is urged, reducing the workload of public health centers, which are the key to infection prevention in the region, and should be continue the system of health centers.

Guide of Home Care to home treatment for patients with COVID-19 infections has been prepared, which includes information on points to bear in mind when treating patients at home,

how to monitor their health, meal delivery services, criteria for completing treatment, and contact information in case symptoms worsen. This guide will help us to solve the problems for our living environment.

(ii) Tackling Health Inequalities

There are health inequalities in social stratification and regions. Issue is becoming increasingly apparent the problem of nursing care refugees and medical refugees in an aging society with low birthrates. Visible for the disparities and the factors, take measures that can be expected to be effective based on facts, verify the effectiveness of these measures, and should be disseminated effective measures.

(iii) Remodeling on Housing

The Corona disaster has caused people to spend more time at home, and small inconveniences in their homes have become more noticeable. Our fear of infection is that we are coming back from outings and bringing the virus into our homes, revealing new changes about housing.

HOME HEALTH CARE:

Residential Hygiene and Community Welfare

(i) 13 Symptoms of Urgency

Precautions during treatment of new coronavirus infections were given to those who stay at home to receive treatment. The Ministry of Health, Labor and Welfare² had compiled a list of the 13 urgent symptoms, which are shown in Table 1.

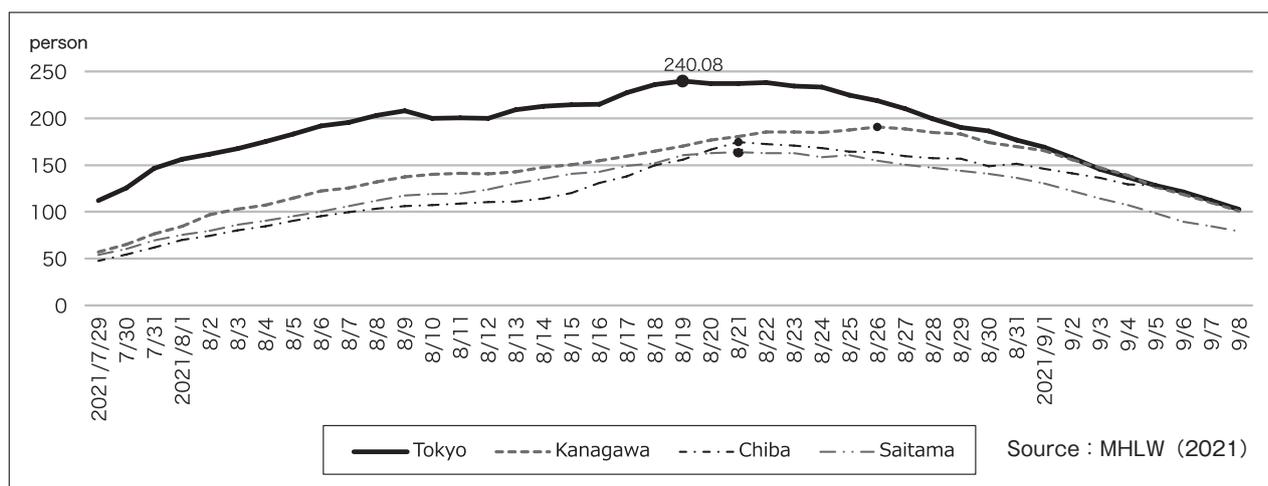


Figure 1 Number of Infected per 100,000 population in the last week: in the capital area

Table 1 Symptoms of Urgency 13 Points

Facial expression	1. Complexion is distinctly pale*
	2. Lips are purple
	3. Unusual and strange behavior*
Breathlessness	4. Respiratory rate is high
	5. Sudden breathlessness
	6. Difficulty in breathing, move a little in daily life
	7. Chest hurts
	8. Cannot breathe unless sitting
	9. Breathing on shoulders
	10. Lose the Breath, within two hours
Disturbance of consciousness	11. Dazed, weak response*
	12. Dazed, no response*
	13. Pulse is racing or disturbed

* If household members confirm these item

(ii) Guidelines for Home Care

To avoid home infections and to provide home treatment, it is very important to secure the patient's bed in their room, preferably with a separate toilet, to prevent infection from bathing and eating, and to disinfect laundry and dishes. A meal delivery service has been advanced in Saitama Pref. to support health management during medical treatment against the COVID-19, it is necessary to improve the environment for home nursing, shown in Table 2.

If a separate room cannot be provided due

to the housing situation, use dividers or curtains to partition off an area at least two meters from others and make sure the room has good air flow.

The virus also lurks on items such as tissues used to blow one's nose. When disposing of tissues used to wipe away bodily fluids, such as saliva or mucus, or other items used to care for the individual who is ill, make sure a plastic bag is already in place, lining the wastebasket, and place garbage inside the bag. Dedicate a wastebasket for the person infected. Be sure to tightly close the plastic bag so that you do not touch any of the tissues that have been disposed of, use two plastic bags to double-bag garbage, and wash your hands immediately after disposing of waste.

(iii) Disposable Tableware and Meal Delivery

Patients should take their meals in their own rooms. If sharing tableware, wash dishes with detergent, and dishes can be soaked for 10 minutes in a sodium hypochlorite solution diluted to 0.05% and then washed as normal if you feel concerned. Disposable tableware that can later be thrown away in a tightly closed plastic bag should be used.

Provide a meal delivery service for patients with COVID-19 by Saitama pref., during the recuperation, not accept any unnecessary visitors. It should be considerate of delivery personnel, and choice the package placement.

Table2 Home Treatments: Point of Preparation

Preparation of the Treatment Environment
<ul style="list-style-type: none"> ✓ Separate living space, at private room, to limit contact with others. ✓ Toilets, Bathrooms, and Sinks should be equipped with hygiene products for disinfecting shared spaces. ✓ Towels, Soap, Toothpaste, and other Hygiene goods should be prepared for the patient. ✓ Dishes and Sheets should be prepared for the patient, and not shared with household members. ✓ Gloves and Masks should be prepared for washing dishes and bed sheets.
Preparing Medicine
<ul style="list-style-type: none"> ✓ If you are taking any medications, stockpile them for about two weeks.
Securing Food Supplies
<ul style="list-style-type: none"> ✓ Provide a meal delivery service, during the recuperation

Guidelines for Home Care by Saitama prefecture³

(iv) Issue of Home Medical Care

Utilize AI to analyze big data of information, such as real-time physiological measurement data of each individual, information from the medical field, infection information, and environmental information. Through AI analysis, medical and nursing care reduce the burden, it will be possible to achieve the following goals: comfortable living by using robots for daily life support, promotion of health and early detection of diseases through real-time automatic health checkups, receiving optimal treatment anywhere by organizing and sharing medical data, and reducing the burden of medical and nursing care by using robots for support. It will also enable society as a whole to reduce social costs, such as medical and nursing care costs, and solve the problem of labor shortages in medical and other fields.

HOUSING WITH VENTILATION

Virus particles can remain in the air for an extended period when ventilation is poor. Regularly ventilate the patient's room, open windows in the patient's room and the rooms of other household members once an hour for about 5-10 minutes for ventilation. Create air flowing with ventilating fans, kitchen or bathroom exhaust fan, in the case windows are small or only one window. Air conditioners with fresh air intakes are also effective, ventilation route open windows diagonally across from each other.

(i) Avoid Sharing Cloth and Linens

Wash clothes and linens with detergent and dry thoroughly. Wearing gloves and a mask when handling clothes and sheets soiled with the bodily fluids of the patient (Table 3). Avoid sharing towels, sheets, pillowcases and clothing, soiled with bodily fluids such as feces or vomit, first disinfect the items by soaking them in hot water, at least 80°C, for a minimum of 10 minutes.

Launder clothes and linens regularly

- ✓ *The items can then be laundered as usual.*
- ✓ *If you are concerned, launder the items of the person who is ill separately from those of others in the home.*

Self-Isolation Handbook for COVID-19 Patients⁴

(ii) Ventilate Toilets and Bathrooms

Clean and ventilate toilets, bathrooms, and other areas that are shared with the patient, make sure to properly ventilate the room using the bathroom exhaust fan, and take a shower or bath after all other household members. Bathe the patient last, and spray down the shower room after use and open any shower room windows to ventilate the bathroom.

After an infected person uses the bathroom, disinfect the toilet seat, toilet flushing lever or controls, doorknobs, and any other frequently touched surfaces using a paper towel or tissue soaked in alcohol or diluted bleach, 0.05% sodium hypochlorite solution.

- ✓ *If a bathroom is shared after an infected person uses the bathroom, disinfect the toilet seat, toilet flushing lever or controls, doorknobs, and any other frequently touched surfaces using a paper towel or tissue soaked in alcohol or diluted bleach, 0.05% sodium hypochlorite solution.*
- ✓ *Wash hands or use an alcohol-based hand sanitizer and wear a mask before leaving your room, talking with other household members, or before using the bathroom and other shared spaces.*

Self-Isolation Handbook for COVID-19 Patients

Table3 Notes to Spend Time During Home Treatment

Precautions during medical treatment

- ✓ Do not go out during the recuperation period.
- ✓ Separate your living space from those who live with you, and avoid leaving your private room as much as possible.
- ✓ Wear a mask when going in and out of the room.
- ✓ Wash your hands frequently with soap.
- ✓ Ventilate the room every 30 minutes/an hour, during the day.
- ✓ Keep nasal tissues closed and dispose of them.
- ✓ When sharing a bath with someone, the household members should use the bath first, and the patient should use it last. After using the bath, be sure to ventilate it sufficiently.
- ✓ Prohibit drinking alcohol and smoking, make it difficult to accurately monitor the health condition of the patient and may cause them worsen.

Precautions for those who live with

- ✓ Minimize contact with the patient under home treatment.
- ✓ Separate the living space from the elderly, the patient with a high risk of serious illness, medical personnel, or welfare/nursing staff.
- ✓ Wear masks all household members.
- ✓ Wash hands frequently with soap.
- ✓ Use alcohol to disinfect doorknobs and other areas touched by the patient.
- ✓ Clean and ventilate toilets, bathrooms, and other areas that are shared with the patient, and bathe the patient last.

Guidelines for Home Care by Saitama prefecture³

(iii) Clean and Disinfect Common Areas

Disinfect frequently high-touched surfaces; doorknobs, light switches, remote controls, bathroom vanities, toilet levers.

- Clean and disinfect common areas and high-touch surfaces in the home*
- ✓ *Detergents, such as dishwashing soap, household cleaning products, and laundry detergent, which contain surface acting agents (surfactants), soap, alcohol (at least 60% alcohol content), and sodium hypochlorite, the active ingredient in household bleach, are effective against SARS-CoV-2.*
 - ✓ *When an infected person touches their nose or mouth, the virus adheres to their hand. By touching surfaces such as hand railings, tables, and doorknobs, the virus is transferred to environmental surfaces. When others unknowingly touch those surfaces, and then touch their mouth, nose, or eyes, they may become infected.*
 - ✓ *Use disposable gloves when disinfecting. When finished, remove the gloves and thoroughly wash your hands.*

Self-Isolation Handbook for COVID-19 Patients

SOCIAL FACTORS OF HEALTH

(i) Increasing Health Disparities

Health is not only determined by biological factors such as genes and lifestyle, many other factors are involved⁵. One of them is social factor, which include individual socio-economic factors, such as personal income, family situation and connections with friends and social networks. Social factors as an environment, including national policies and the richness of human connections at work and within the community, social capital, collectively known as the Social Determinants of Health. The causality about working conditions, poverty and disease has long been known throughout the world.

(ii) Social Determinants of Health

In the COVID-19 pandemic, people most vulnerable to risk in society suffered a major battering. As health disparities increased, insurers and health care providers expanded the range of health status influencing factors to be considered. It was speculated that the COVID-19 pandemic would cause many problems, including an increase in chronic diseases, exhaustion of physicians, and shortage of human resources.

As health disparities increase, insurers and health care providers are changing to expand the range of health status influencing factors to be considered to include social determinants of health such as income and healthy diet.

(iii) Self-Medication as Healthcare

Self-medication will support health checks through blood samples, test strips from a pharmacy, and vital data measurement through wearable devices. The data from the wearable device will be stored as a daily personal health record, afford to link the home appliances. Linked the data receiving medical care at the application programming interface to the various data from the Super City initiative⁶, the causal relation erases the appearance of the disease in the living environment.

Residents alerted to the onset of the illness can consult a public health nurse about their symptoms within the app. After consultation, the service is expected to get medicines at a pharmacy, go to personal physician, or call an emergency room. Through the online medication guideline process, the Cabinet Office was proposed to distribute drugs without physical contact.

(iv) Change the Social Environment

It became apparent that it was important to change the social environment, to create

a community where people could become healthier just by living in the districts, where they would want to walk, where they would have more opportunities to eat healthy food, where they would feel less stressed just being home. With an aging population, regional health care will fail unless home care is available everywhere. When requesting medical attention, continuous PHR and prescription medical history should be used.

(v) Self Check of Health

The countermeasures against the syndrome of sick houses caused by mould and house dust mites are increasing. WHO guidelines indicate that conditions are such that there are identifiable problems caused by excessive humidity that can be measured or viewed, such as mold, water leakage, mould odours, deteriorating building, and microbial contamination. It seems that the cause of summer hypersensitivity pneumonitis is trichosporon, a black mould⁷.

Table4 Self Check of Health

✓ Easy to catch a cold
✓ Have asthma
✓ Chronic disease
✓ Weak skin
✓ Allergy symptoms
Hay fever
Atopic dermatitis
Food allergy
✓ Sensitive to smell
Difficulty with chemical smells
Exposure to chemical substances
✓ Seasonal diseases
Pneumonia and asthma caused by mold

Summer Hypersensitivity Pneumonitis

- ✓ *Coughing gets worse in certain places.*
- ✓ *Feel better when leave the home*
- ✓ *The same symptoms appear in household members living together.*

Report of the expert meeting on mold control, 2018

HOUSING IMPROVEMENT INITIATIVES

The function of the house has been attracting attention due to home treatment. The COVID-19 disease has increased the amount of time spent at home, and concerned about small inconveniences in their homes, as a private space or workspace need in our house. The noise and the sunlight during weekday, they were away at school or work. Most often, they will be worried about coming back from going out and bringing viruses or dirt into the house.

Focused on renovation demand from housing equipment manufacturers and construction firms. The first thing that increased demand was to set up new workspaces. As the infection spread, the demand for entrances and washrooms increase to keep viruses out of the home, increased over the last year and new products are available⁸.

(i) Entrance Remodeling

Increase in demand, attention has been focused on compact washbasins that can be installed in the entrance area, and each company has released new products. Second washbasins have been much attention in interior planning, installed in a space where it can be used enter the home from an outing, and features a washbasin that can be shown off, a counter with a narrow depth, a wooden counter as furniture, ceramic bowls, and automatic sensor touchless sink faucets. The focus of the remodeling has become the entrance area, used to be a place to take off one's shoes, but now it has become a place to wash one's hands when enter the house, and a place to prepare oneself so as not to bring in dirt and viruses from outside. Remote working at home utilize the entrance space for hobbies and work.

(ii) Drying Spaces for Laundry

The concept of hygiene in home life began

to change dramatically with the COVID-19. The need to prevent viruses from outside the home extends to changing clothes and taking a shower when returning home. Instead of drying clothes outside, using dryers to laundry and linens every day. The drying their clothes outside concerned about drying clothes outside brings pollen and PM2.5 onto their clothes. Gas dryers have been increasing in recent years due to the need to dry laundry with hot air at temperatures of 80 degrees Celsius or higher, eliminating bacteria that cause unpleasant fresh-dry odors in clothes, without drying laundry outside. Building a new house or remodeling, design a large laundry room where everything from washing, drying and ironing to folding and putting away clothes is done in one room, and place it close to the entrance. Home hygiene has started to change dramatically with the COVID-19 pandemic.

(iii) Securing a workspace

As a response to the new normal, it has been proposed that teleworkers make effective use of limited space, such as using an attic as a workspace. Health conscious products such as the next generation indoor environment system are also available. Supplying clean air is directly related to protecting the health of the family, so it is a great added value. Supplying clean air is directly related to protecting the health of the family, so it is a great added value.

CONCLUSIONS

Establishing new lifestyles conducive to residential hygiene and the living environment was examined through behavioural models. The determinants of health-related lifestyles are considered not only in the voluntary and

individual decision-making process, but also in the socio-demographic attributes of individuals. This concept of public health is effective for improving living environment. The accumulation of medical information will reveal the incidence of illness in the living environment.

Home hygiene began to change dramatically with the COVID-19 pandemic, it was suggested that infection control efforts improve housing and lifestyles in Japan. In this context, the requirements for housing equipment and home disposal are different than in the past. Building houses and providing flexible equipment to meet these needs is becoming increasingly important.

For the housing education update to hygienic living, preparations were made for hygienic housing with a focus on infection control via a remodelling of house facilities. In the social context of teacher training, Japan, as an advanced country in science technology, should be required to provide incentives to solve various problems on a global scale. In terms of housing education, further instructions concerning safe living and hygienic environment should be developed.

NOTE AND REFERENCE

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