

Guidelines

I. Features and prevention of critical diseases in elderly in evacuation areas

1-1). *Heart attack.* This condition includes angina pectoris, myocardial infarction, and other illnesses due to myocardial ischemia, a lack of blood flow in arteries.

Signs and symptoms of a heart attack

Location of symptoms	Central chest to left side of chest Apart from chest discomfort, anginal pain in the upper central abdomen, back, neck, jaw, or shoulders
Detailed symptoms	Worsening (“crescendo”) chest pain, specifically crushing, burning, or choking sensation Onset of severe oppression or worsening oppression
Duration of symptoms	Infrequent or lasting less than 10 min Lasting more than 15 min, suggesting unstable condition

Note: Caution is needed because silent or mild symptoms frequently occur in the elderly, especially in those with diabetes. In addition, elderly people sometimes present with atypical symptoms, including breathlessness, nausea, discomfort in the upper central abdomen, or burping.

Measures to prevent heart attack in shelters

- NMCP, PHN, or CSW should be aware of elderly who normally take medication for cardiac disease and/or hypertension.
- NMCP, PHN, or CSW should check on the elderly.
- NMCP, PHN, or CSW should ensure that the elderly drink plenty of fluid, including water, to prevent dehydration. They should also advise that the elderly consume a low-salt diet and not smoke.
- If the elderly have any of the above symptoms, medical staff should be alerted.

Tips to treat cardiopulmonary arrest in shelters

- NMCP, PHN, or CSW should perform CPR, pushing the central chest strongly and quickly (100 times per minute) and alert medical staff immediately.

1-2). *Hypertension.* Awareness of blood pressure (BP) and its variability in the elderly is necessary because they may have excessive mental and/or physical stress, especially if in an emergency evacuation area or first-aid station, relative to their day-to-day lives before the disaster.

Measures to deal with elderly receiving antihypertensive drugs

- First, elderly people who are usually prescribed antihypertensive drugs should be reported to medical staff. NMCP, PHN, or CSW should check on the elderly.

- Elderly people who have been diagnosed as hypertensive should also be checked by medical staff, NMCP, PHN, or CSW.
- BP should be measured frequently. If possible, it is better to measure it daily using an automatic BP machine. In high-risk patients, it is recommended that BP be measured in both the morning and evening.
- If the elderly person’s medication is not known because the prescription record is lost, a doctor or medical staff should be consulted.
- If an elderly person has a headache, palpitations, chest symptoms, and/or flushing, BP should be measured immediately and medical staff consulted.
- No smoking and a low-salt diet are also recommended. Endeavors must be made to ensure the elderly maintain physical activity (e.g. any exercise for at least 30 minutes a day).

2. Stroke/cerebrovascular disease (CVD)

Cerebrovascular accidents occur suddenly due to a disturbance in the blood supply to the brain and lead to a loss of cerebral function.

Signs and symptoms of stroke/CVD

If elderly people have any of the following symptoms, it is possible that they may have suffered a stroke/CVD. Consult medical staff immediately, because these situations may become medical emergencies.

- Symptoms starting suddenly and lasting from a few seconds to minutes
- Headache (mild to severe)
- Vertigo and/or dizziness (with nausea/vomiting on occasion)
- Disturbance of consciousness (snoring-like breathing, semiconscious state/coma)
- Motor disturbance including hemiparesis/hemiplegia/numbness, exhaustion, muscle weakness of the face (central facial palsy), drooling from one corner of the mouth, eyelid drooping (ptosis)
- Aphasia (difficulty with verbal expression, auditory comprehension)
- Sensory or vibratory disturbance (on one side)
- Visual field defect/hemianopia, double vision/polyopia
- Loss of balance when sitting, standing, or walking; loss of coordination.

Measures to prevent stroke/CVD in shelters

- First, medical staff and people around should be aware of elderly people who usually take medication for atherosclerotic diseases and/or lifestyle-related diseases (e.g. hypertension, diabetes, dyslipidemia, and cardiac diseases including atrial fibrillation).
- Also, people around should check on the elderly.

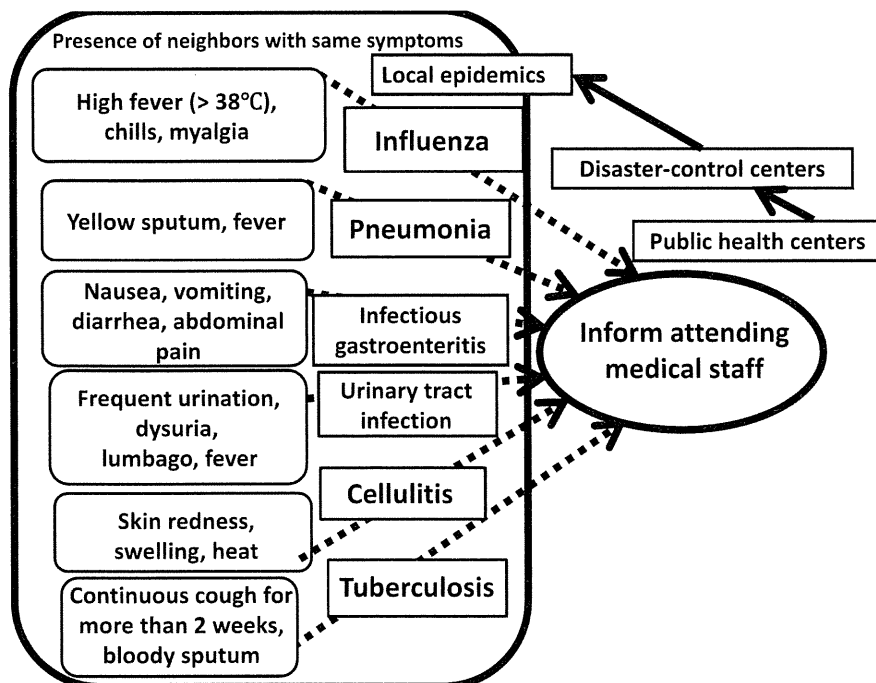


Figure 2 Measures to rapidly detect infectious diseases.

- Continue usual drugs including anticoagulation drugs if possible.
- In cases of unidentified medical conditions because of loss of an elderly person's prescription record, medical staff should be consulted.
- Anticoagulation drugs are generally essential. However, it is better to consult medical staff because it is necessary to check for external wounds or bleeding from the gastrointestinal tract, including stress-induced ulcer.
- CVD is strongly associated with hypertension. Measure BP regularly.
- No smoking is strongly recommended.
- Drink any fluid, including a lot of water, to prevent dehydration.
- A low-salt diet is strongly recommended. Endeavor to take dietary fiber in vegetables including seaweed and mushrooms.
- Endeavor to do any type of exercise or walk for at least 30 minutes a day regularly.
- Prevent constipation.
- Be careful about changes in temperature, especially in winter.

3. Infectious diseases

Signs and symptoms of infectious diseases

It is useful to have information on epidemics of infectious diseases in stricken areas before and after disasters, in order to quickly detect illness. In particular, this measure is beneficial for diseases, such as influenza, food poisoning and viral gastroenteritis, with a short

incubation time from infection to the onset of symptoms (i.e. several hours up to 3 days). Pay special attention to elderly persons with these symptoms and immediately inform medical staff if there is suspicion that an elderly person has such an illness. In relation to this point, it is important to collect epidemiological information from district public health centers through disaster-control centers (Fig. 2).

In fact, many evacuees in shelters developed vomiting and diarrhea after the 2007 Noto Peninsula Earthquake. It was possible to immediately predict an outbreak of norovirus gastroenteritis among evacuees since a local epidemic of this infectious disease had already been observed in the Noto area before the quake.

However, local epidemics are not always useful for detecting infectious diseases, particularly those with a long incubation period (i.e. several months up to 2 years) such as pulmonary tuberculosis.

Measures to prevent transmission of infectious agents in shelters

- The environment in shelters induces an increased risk for outbreaks of infectious diseases because many evacuees are living together in a very limited space.
- It is very important to wash hands and gargle as standard precautions. Please apply hand disinfectant when it is not possible to use water. It is essential to wash hands or use hand disinfectant after using the toilet.
- NMCP, PHN, or CSW should not directly touch human bodily fluids (e.g. blood, urine, feces, nasal discharge, and sputum) with their hands because the fluids may include infectious microorganisms.

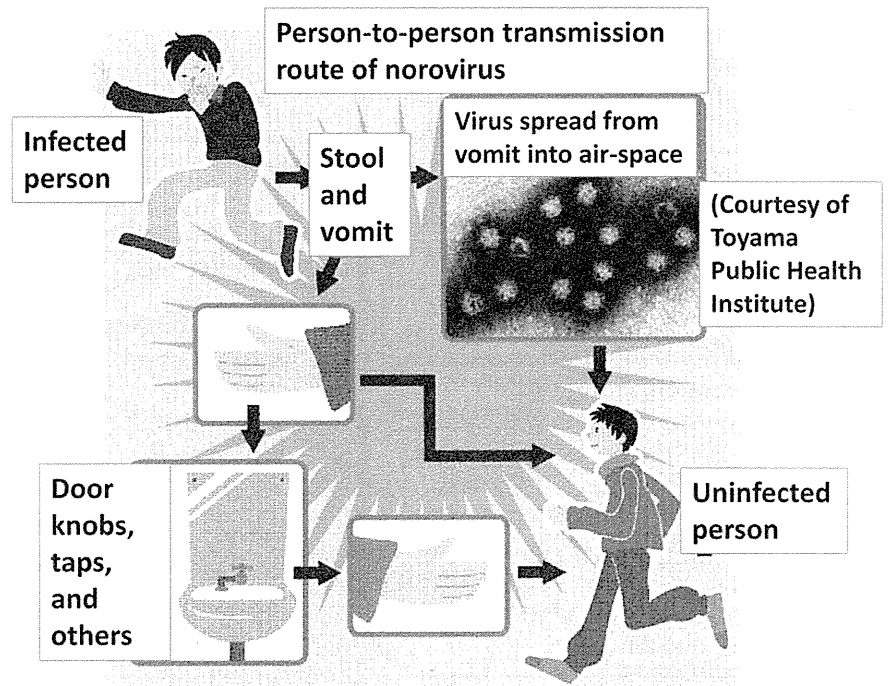


Figure 3 Person-to-person transmission route of norovirus.

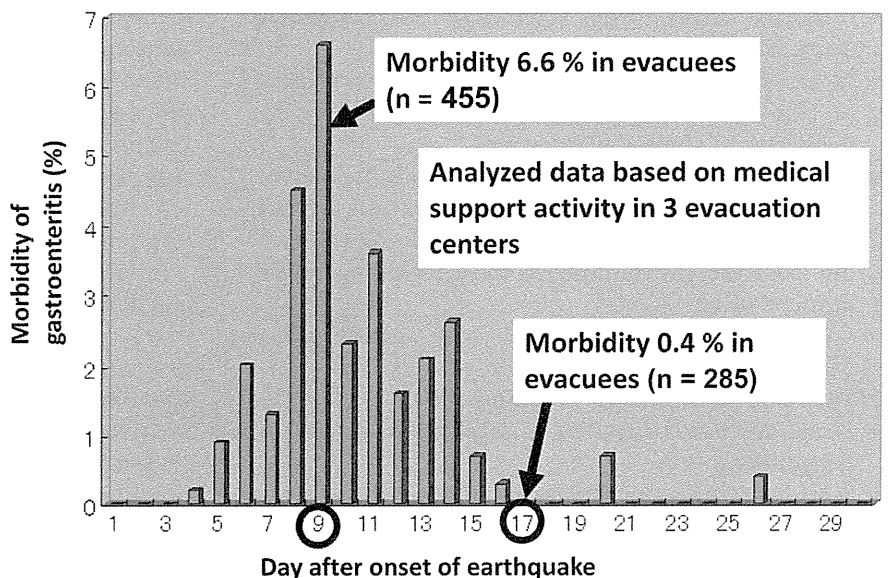


Figure 4 Morbidity of gastroenteritis in evacuees in shelters after the 2007 Noto Peninsula Earthquake.

If NMCP, PHN, or CSW are aware that the environment (floors in shelters, portable toilets, and temporary water-suppliers) has been contaminated with vomitus or diarrheal matter, contact medical staff. Do not clean the contaminated environment yourself. The staff can deal with this using 0.1% sodium hypochlorite disinfectant.

- Norovirus can spread via person-to-person transmission and lead to gastroenteritis outbreaks (Fig. 3).⁷ However, it is unnecessary to isolate subjects with gastroenteritis from the stricken areas. The outbreak

in shelters after the Noto quake was quelled after one week of interventions including personal hand hygiene, gargling, and the use of disinfectant on environmental surfaces (Fig. 4).⁸

In addition, respiratory hygiene (cough etiquette) is recommended to prevent respiratory infections.⁹ With respect to coughing, rhinorrhea, sneezing, and sputum, please instruct evacuees to behave as follows: (i) use a tissue to cover your mouth and nose when you cough or sneeze (Fig. 5); (ii) drop used tissue in a special waste basket; and (iii) wash your hands with soap and warm



Figure 5 Respiratory hygiene (cough etiquette).

water or clean with alcohol gel or wipes since your hands may be contaminated with secretions (Fig. 5). Elderly people who frequently cough or sneeze should be asked to wear a surgical mask provided by medical staff. Please keep a distance of more than 1 m between symptomatic subjects and others.

4. Dehydration

Signs and symptoms of dehydration

If an elderly person has some of the more severe symptoms of dehydration listed below, call medical staff immediately.

- Muscle weakness
- Physical fatigue
- Increased body temperature
- Decreased urine production
- Dry skin, even under the armpits.

Measures to prevent dehydration in shelters

- When elderly people feel thirsty, they are already dehydrated, so do not restrict water intake.
- To prevent dehydration, an elderly person without particular illness such as heart failure or kidney failure

Table 1 Risks for dehydration in the elderly

Inability to feed oneself
Appetite loss (decrease in food intake)
Swallowing problems
Diarrhea or vomiting
Thirsty or dry mouth
Taking a diuretic
Increased body temperature
Decreased urination
No air conditioning/not using air conditioning
Limitation of water intake to avoid frequent urination

simply needs to replenish fluids with at least one liter of water per day.

- When elderly people have any of the risks for dehydration listed in Table 1, they should be carefully assessed by a doctor for dehydration.

5. Malnutrition

Signs and symptoms of malnutrition

When an elderly person has any of the risks for malnutrition listed below, the person should be carefully assessed by medical staff.

- Consumed less than half the usual dietary intake for at least 1 week
- Diarrhea or vomiting for more than 2 or 3 days
- Decrease in body weight of more than 5% for 2 weeks
- Insufficient intake or dysphagia due to inadequate food
- Receiving enteral or parenteral nutrition.

Measures to prevent malnutrition in shelters

The following general precautions to prevent malnutrition should be considered:

- Adequate food supply
- Adequate types of food consumed
- Adequate feeding assistance
- Dental issues such as gum disease, cavities, and poorly fitting dentures
- Regular assessment of nutritional status and weight loss.

6. Gastrointestinal disorders

Signs and symptoms of gastrointestinal disorders

When elderly evacuees have any of the signs and symptoms of gastrointestinal disorders listed below, they should be carefully assessed by medical staff.

- Upper central abdominal pain after meals (on suspicion of stomach ulcer)
- Upper central abdominal pain when hungry (on suspicion of duodenal ulcer)
- Gastric discomfort

- Appetite loss
- Heartburn
- Tarry (black) stool or blood in the stool.

Measures to prevent gastrointestinal disorders in shelters

The following general precautions to prevent gastrointestinal disorders should be considered:

- Avoid psychological stress.
- Eat substantial meals at regular mealtimes.
- Wash hands, gargle, and disinfect cooking utensils to prevent infectious enteritis.
- Flush or discard any vomit, and change diapers with rubber gloves while wearing a flu mask. Thoroughly clean and disinfect contaminated surfaces with a bleach-based household cleaner immediately after an episode of illness.
- Drink sufficient liquid and take a lot of exercise to avoid constipation.
- Do not ignore the urge to defecate and maintain a regular bowel habit.

7. *Diabetes mellitus (DM)*

7-1). *Hyperglycemia*

Signs and symptoms of exacerbation of DM

If elderly people have any of the symptoms described below, their DM might be worsening. Please contact medical staff if any of the following symptoms are detected:

- Frequent urination
- Increasing incontinence
- Thirst
- Fatigue
- Not looking well.

Measures to prevent exacerbation of DM in shelters

- Eat meals regularly and take medication with meals.
- Patients with DM type 1 should not skip basal insulin injections.
- Drink enough water to prevent dehydration.
- If someone has a fever or little appetite, monitor blood glucose more frequently than usual or consult a doctor promptly.

7-2). *Hypoglycemia*. In addition, if elderly evacuees are taking hypoglycemic medication, be alert for symptoms of hypoglycemia.

Signs and symptoms of hypoglycemia

The symptoms described below might be caused by hypoglycemia. Please contact medical staff if any of the following symptoms are detected:

- Strong feeling of hunger
- Cold sweats
- Palpitations
- Weakness

- Sleepiness
- Slurred speech
- Blurred vision
- Convulsion.

Measures to prevent hypoglycemia in shelters

- Elderly people should avoid exercise or working when hungry.
- Eat meals regularly.
- Eat carbohydrates (e.g. rice, bread, noodles, or potatoes).
- If people cannot eat a meal, they should reduce or skip their hypoglycemic medication.
- Set a higher goal of glucose control (150–200 mg/dL) than usual.

Tips to treat hypoglycemia in shelters

- NMCP, PHN, or CSW should ask those with the above symptoms to take a glucose tablet.

8. *Bronchial asthma*

Signs and symptoms of exacerbation of bronchial asthma

If elderly people have any of the following symptoms, bronchial asthma might be worsening. Please contact medical staff if the following symptoms are detected:

- Paroxysmal wheezing or coughing, or reoccurrence of these symptoms
- Breathlessness during the night
- Breathlessness when moving, speaking, or lying down
- Cyanosis or edema
- Drowsiness.

Measures to prevent exacerbation of bronchial asthma in shelters

- Let NMCP, PHN, CSW, or medical staff know that if an elderly person is taking medication.
- Continue taking medicine.
- Wash your hands and gargle regularly, wear a mask if available, and be careful about infectious diseases such as colds.
- Keep warm.

9. *Chronic obstructive pulmonary disease (COPD)*

Signs and symptoms of exacerbation of COPD

If an elderly person has any of the following symptoms, COPD might be worsening. Please contact medical staff if the following symptoms are detected:

- Increased respiratory rate and shortness of breath
- Worsening of dyspnea on exertion or at rest
- Increased frequency or severity of cough and excessive sputum production
- Mucopurulent sputum (change in sputum character)
- Cyanosis or edema
- Drowsiness.

Measures to prevent exacerbation of COPD in shelters

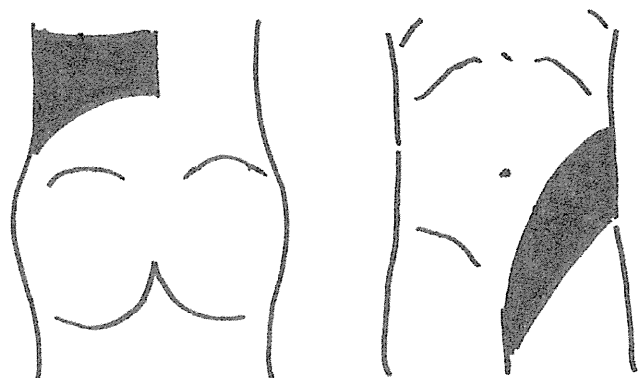


Figure 6 Areas where pain occurs due to urinary tract diseases.

- Let NMCP, PHN, CSW, or medical staff know if an elderly person is taking medication.
- Continue taking medication and inhaling bronchodilators.
- Avoid exposure to smoke and dust.
- Try to wash your hands and gargle regularly.
- Keep warm and do not stay in the cold.

10. Chronic kidney disease (CKD)

Signs and symptoms of CKD

If elderly evacuees have any of the following symptoms, CKD might be worsening. Please contact medical staff if the following symptoms are detected:

- Inactivity, fatigue, or weakness
- Edema
- Appetite loss
- Nausea and/or vomiting
- Pruritus.

Measures to prevent CKD in shelters

- Let NMCP, PHN, CSW, or medical staff know if an elderly person is taking medication.
- Continue taking medicine.
- Have regular blood pressure checks.
- Restrict salt intake.
- Drink enough water to prevent dehydration.
- Keep warm.
- Be careful about infectious diseases such as colds.

11. Urinary diseases

Signs and symptoms of urinary diseases

If an elderly person experiences some of the more severe symptoms of urinary diseases listed below, call medical staff immediately.

- Pain on urination
- Lower abdominal pain (Fig. 6)
- Back pain, lumbago (Fig. 6)
- No urination for half a day or longer

- Distention of lower abdomen
- Bloody urine
- Cloudy smelly urine
- Frequent urination
- Incontinence
- High fever (in cases of pyelonephritis, 38°C or higher)
- Limiting water intake in order to avoid frequent urination or incontinence.

Measures to prevent urinary diseases in shelters

- Replenish fluids with at least one liter of water per day in persons without particular illness such as heart failure or kidney failure.
- Do not avoid going to the toilet.

12. Post-traumatic stress disorder (PTSD)

Signs and symptoms of PTSD

Please contact medical staff if an elderly person has any of the following symptoms. Please contact medical staff if the following signs are detected:

- Sudden change in personality
- Absent-mindedness and the inability to respond quickly
- Restlessness
- Frequent hyperventilation
- Frequent palpitations
- Panic attacks.

Measures to prevent PTSD in shelters

- If elderly people feel distressed or pain, they should confide in someone (a medical staff member, NMCP, PHN, or CSW).
- It may be necessary for the elderly to take medication if they cannot sleep or feel distressed and there is no alternative.

13. Depression

Signs and symptoms of depression

It is not unusual for an elderly person to experience grief after suffering from severe stress. Please contact a medical staff member if the following symptoms of depression are detected:

- Cannot help thinking of bad things
- Not knowing what to do despite actually having many things to do
- Feeling too sluggish to move, although the results of a medical checkup and blood tests are normal
- Unable to sleep at night
- Always thinking of dying.

Measures to prevent depression in shelters

- It is important to maintain a routine, including waking up and going to sleep at the same time daily.
- If elderly people feel distressed or pain, they should confide in someone (a medical staff member, NMCP, PHN, or CSW).

- It may be necessary for the elderly to take medication if they cannot sleep or feel distressed and there is no alternative.
- If an elderly person has been attending a clinic for the treatment of depression, please tell a medical staff member. It is important that the person continues to receive treatment.

14. Behavioral and psychological symptoms of dementia (BPSD)

Signs and symptoms of BPSD

Please contact a medical staff member if the following symptoms of dementia are detected:

- Restlessness and speaking in a disjointed manner
- Paranoid or having delusions (e.g. a false idea of being robbed)
- Becoming angry or starting to cry suddenly.

Measures to prevent BPSD in shelters

- Create an environment in which dementia patients can spend time with familiar people.
- Prepare a quiet environment so that dementia patients can get adequate sleep at night.
- Preparations should be made so that a dementia patient can be transferred to a professional medical institute when psychological symptoms or behavioral abnormality is observed.

15. Delirium

Signs and symptoms of delirium

Please contact medical staff if any of the following physical symptoms are detected in elderly persons who had previously been well and not experienced any decrease in cognitive function:

- Speaking or behaving in an erratic manner
- Absent-mindedness or being distracted
- Emotional instability (e.g. becoming angry, starting to cry, or getting excited suddenly).

Measures to prevent delirium in shelters

- Particular attention should be paid to dehydration, infections, and other underlying physical disorders, which can cause delirium in the elderly. Please be aware that elderly people with physical disorders are potential delirium patients.
- Keeping the elderly company and talking to them to provide stimulation are effective for preventing lethargy during the daytime. At night, create a quiet environment to help them achieve a regular sleeping pattern.

16. Dental diseases

Signs and symptoms of dental diseases

If an elderly person is showing some of the more severe symptoms of dental disease listed below, call medical staff immediately.

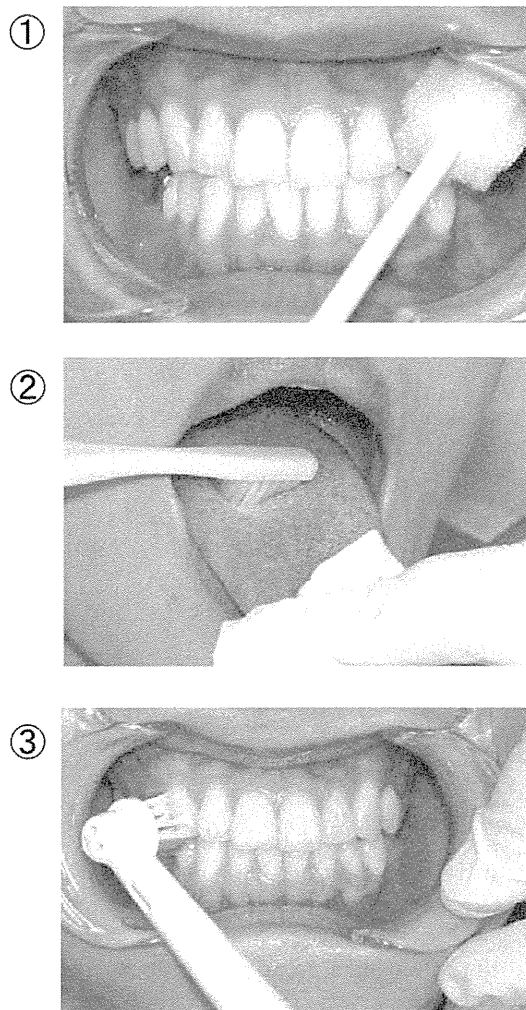


Figure 7 Systematic oral care program.

- Pain from dental caries
- Swelling and bleeding of the gingival
- Severe halitosis
- Fur on the tongue.

Measures to prevent dental diseases in shelters

- Keep cleaning the mouth.
- Brush the teeth every day.
- Those who are unable to do the above independently need to receive a systematic oral care program (Fig. 7)¹⁰

- 1 Remove oral-mucosal and gingival saburra by using an oral care sponge for one minute.
- 2 Remove fur from the tongue with a tongue brush for half a minute.
- 3 Remove bacterial flora from the tooth surface with an electric toothbrush for 2.5 minutes, if an electric power supply is available.
- 4 Rinse the mouth for 1 minute.

17. Functional inactivity

Signs and symptoms of functional inactivity

Elderly people often may not complain of their subjective symptoms accurately, or they may not be aware of a decline in their health. Thus, it is important for NMCP, PHN, or CSW to be aware of elderly persons' health conditions as well as the whereabouts of subjects who require support and/or nursing care.

If an elderly person shows some of the more severe symptoms of functional inactivity listed below, call medical staff and/or shelter staff.

- Being isolated, with no attempt to communicate
- Narrow range of activities and staying indoors
- Lying down all day long

Measures to prevent functional inactivity in shelters

- Encourage subjects to greet each other and make small talk in the shelter.
- Exercise regularly.
- Bend and stretch your arms and legs often, even in the narrow living space in the shelter.
- NMCP, PHN, or CSW should evaluate the reserve capability of elderly subjects with functional inactivity promptly.

18. Decubitus

Signs and symptoms of decubitus

NMCP, PHN, or CSW should actively survey the onset of decubitus ulcer, particularly on the hip, the backbone, the heel, and the back of the head, in bedridden subjects. Since this illness needs long-term management, contact medical staff and arrange transport to the hospital.

Measures to prevent decubitus in shelters

- Change bedridden subjects' position every 2 hours a day.
- Keep the skin clean.

19. Heat stroke

Signs and symptoms of heat stroke

In summer, pay special attention to heat stroke in elderly people in shelters. The main features are hot skin (body temperature $\geq 40^{\circ}\text{C}$) without sweat and drowsiness. Call medical staff immediately as this condition will cause fatality.

Measures to prevent heat stroke in shelters

- Keep cooling the neck or under the arms.
- Do not restrict water intake.

II. Signs of acute diseases in elderly

If any of the following symptoms is encountered in the elderly, they may be severely ill due to acute disease.

These signs of acute diseases are sensitive enough to rapidly detect a severe state in elderly evacuees. NMCP, PHN, or CSW should consult attending medical staff immediately. Asterisks denote signs indicating the need for emergency transport.

1. Disturbance of Consciousness (Japan Coma Scale [JCS] Scoring)

- Rousable by being spoken to but reverts to previous state if stimulus stops (JCS II-10)
- Rousable with loud voice but reverts to previous state if stimulus stops (JCS II-20)
- Rousable only by repeated mechanical stimuli (JCS II-30)
- * Unrousable using any forceful stimuli but responds to avoid the stimuli (JCS III-100 to III-300).

2. Shock

- * Anemia (e.g. pallor of lips and/or nails)
- * Bleeding due to external injuries
- * Disturbance of consciousness (JCS III-100 to III-300)
- Abnormal skin turgor, a physical sign of dehydration
- Dry tongue
- * A decline in BP: systolic BP < 90 mmHg
- * An increase or decrease in pulse rate (i.e. resting pulse rate of more than 120 beats/minute or less than 50 beats /minute).

3. Dyspnea

- Shallow and rapid respiration, puffing (shallow breathing)
- Shoulder breathing (accessory muscle use)
- Flaring of wings of the nose and dilated nostrils (nasal alar breathing)
- Violet color to lips and nails (cyanosis)
- Wheezing or whistling while breathing (wheeze/stridor)
- Sleeping with the upper body raised in order to breathe (orthopnea)
- Weak breathing, suspended on occasion (apnea)
- Pursing the lips when exhaling (pursed lips breathing)
- * Collapse of supraclavicular or intercostal spaces when inhaling (inspiratory retraction)
- * Distension of the abdomen/shrinking of the chest when inhaling, and shrinking of the abdomen/ distension of the chest when exhaling (seesaw breathing)
- * Obvious asymmetric movement of the chest during respiration
- * Respiratory rate less than 10/minute or more than 30/minute.

4. Acute abdomen

- * Uncontrollable abdominal pain

- * Hematemesis, vomiting blood
- * Tarry (black) stool, visibly bloody stools not due to hemorrhoids
- * Frequent vomiting
- * Abdominal swelling, abdominal distension
- * Severe anemia (pallor of face or lips).

5. *Neurological abnormalities.*

- * Motor disturbance including hemiparesis/hemiplegia/numbness, muscle weakness of the face (central facial palsy), eyelid drooping (ptosis)
- * Aphasia (difficulty with verbal expression, auditory comprehension)
- * Sensory or vibratory disturbance (unilateral)
- * Visual field defect/hemianopia, double vision/polyopia
- * Loss of balance when sitting, standing, or walking; loss of coordination
- * Pupils not isocoric
- * Convulsions or cramps.

6. *Chest pain*

- * Chest pain, oppression, burning, or choking sensation in anterior chest
- * Increasing frequency and worsening angina attacks compared with 2 weeks earlier
- * Chest symptoms even at rest or at night
- * Continuation (without improvement) of these symptoms in spite of aspirin or nitroglycerine use
- * Duration of chest symptoms: more than 20 minutes.

7. *Hypertensive emergency*

- * Hypertension (systolic BP \geq 200 mmHg).

8. *High fever*

- Shivering (shaking chills) coinciding with high fever and potential severe infectious diseases (i.e. bacteremia)
- Burning forehead and poor response to being called.

9. *Hematuria*

- Red and/or tea-colored urine.

III. Symptoms of anxiety in elderly in shelters

If an elderly person is showing some of the symptoms listed below, immediately ask medical staff to assess the presence of serious diseases.

1. *Dysphagia, difficulty in swallowing*

- Coughing or breathing in food while swallowing

- Aspiration (i.e. escape of food or liquid into the lungs) or labored breathing while swallowing
- Recurrent pneumonia, respiratory infections, or choking experiences
- Wet vocal quality (“gurgly” voice) after swallowing
- Irritability during feeding or failure to thrive
- Prolonged feeding times (more than one hour)
- Unexplained weight loss.

2. *Diarrhea*

- Subject has diarrhea and a fever.
- Similar symptoms (diarrhea) are observed in surrounding evacuees.
- If diarrhea persists for two days or more, ask medical staff to assess, in order to avoid dehydration.

3. *Constipation*

- Change in bowel habit
- Constipation with abdominal pain
- Constipation for 2 or more days.

Discussion

On 11 March 2011, an earthquake with a 9.0 magnitude occurred off of Japan’s Pacific coast and hit northeast Japan. The earthquake was followed by huge tsunamis, which destroyed many coastal cities.^{11,12} A total of 14 841 people died in these events, and 10 063 persons are still missing as of 6 May 2011.¹³ In addition, 109 086 homes were completely or partially destroyed, and 3970 roads were damaged.¹³ There are still 119 967 displaced people (down from approximately 470 000 on March 14) living in shelters because of disrupted community utility services and/or health risks related to the nuclear power plant accidents in Fukushima.^{13–15} Specifically, 37 482, 35 923, and 25 501 persons took refuge into the 357, 403, and 157 evacuation centers located in Iwate, Miyagi, and Fukushima prefectures, respectively.¹³

There were several reports concerning medical needs following the 2011 earthquake off the Pacific coast of Tohoku. For instance, reports have highlighted the importance of managing the exacerbation of chronic illnesses (e.g. hypertension, cardiac disease, DM, and chronic pulmonary disease) as well as dehydration in elderly evacuees, especially as it was difficult to source enough medication for their chronic illnesses.^{16,17} Health workers should pay attention to the possible spread of acute diseases such as gastroenteritis, diarrhea, and other illnesses associated with dirty water.¹⁶ In addition to physical health problems, it is important to rapidly detect long-term mental problems in the elderly (e.g. PTSD, depression, BPSD, and delirium) triggered by the disaster.^{16,17} Medical specialists have indicated

that thousands of victims will be in need of long-term counseling to cope with the loss of their relatives, friends, and homes.¹⁶

There were some cases that previous guidelines failed to cover because of the unexpected phenomena following the Tohoku earthquake. Therefore, it is essential that we are mindful of the difficulties in establishing general guidelines that can cover a wide (and unexpected) range of disasters. Feedback regarding the booklets will need to be collected from NMCP, PHN, or CSW to assess the guidelines' usability. We further need to investigate the morbidity and mortality from disaster-related illnesses among the elderly in order to clarify efficacy of these guidelines.

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Conflict of interest

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V. 全国都道府県・市町村・都道府県医師会
配布ガイドライン

医療者用
高齢者災害時医療ガイドライン
—2011—

厚生労働省 長寿科学総合研究事業
「災害時高齢者医療の初期対応と
救急搬送基準に関するガイドライン」研究班

社団法人 日本老年医学会

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はじめに

【本ガイドライン作成にあたっての経緯】

本国は地震、台風、津波などの様々な災害が多い国である。その災害時において、被災高齢者に対する医療は非常に重要である。

そこで厚生労働省・厚生労働科学研究費補助金を受け、長寿科学総合研究事業の一環として、平成 22 年度から「災害時高齢者医療の初期対応と救急搬送基準に関するガイドライン」を作成する研究班が立ち上がった。本ガイドラインの作成にあたり、平成 23 年度内の完成を目標に準備を進めてきた。

今回、東北地方太平洋沖地震が発生してから、被災された高齢者の方々に対する医療現場の厳しい現状が数多く報告されている。よって、本ガイドライン作成に当たった研究班および日本老年医学会は、今回、本ガイドライン「高齢者災害時医療ガイドライン」および「一般救護者用・災害時高齢者医療マニュアル」を現段階では試作版ではあるが、被災地の高齢者医療の現場で一刻も早く役立てていただきたく、今回公表に踏み切った。本ガイドラインを現在行われている被災地での高齢者災害時医療の一助にして頂ければ幸いである。

厚生労働省 長寿科学総合研究事業

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【 I 災害発生時の経時的な医療需要予測・評価】

1. 災害時の医療需要の経時的変遷

【急性期(災害発生から3日以内)】

死者：6,434名 行方不明者：3名 負傷者：43,792名 という我が国に未曾有の大被害をもたらした阪神淡路大震災において、地震発生から3日以内の急性期の犠牲者のほとんどは自宅における死亡であり、戦前の木造住宅が比較的多く残存していた地域での死者が多かったとされる。高齢者、低所得者、外国人などが多く犠牲になったとされており、年齢別では高齢者の死亡数が多く、死亡率としても80歳以上の死亡率が高くなっているが、一方で20歳代の死亡率の高さも指摘された。

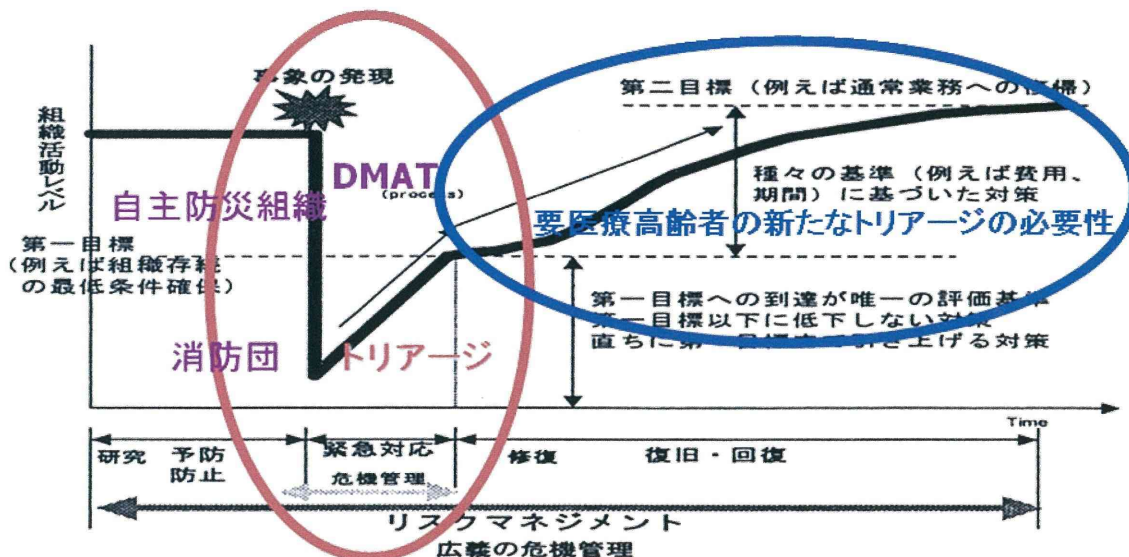
【亜急性期(災害発生から4日～3週間)】

一方、地震発生後4日～3週間の第2期とよばれる亜急性期において、避難所生活は、特に高齢者にとって困難が多く、避難所肺炎などの健康上の問題が数多く発生した（内閣府：阪神・淡路大震災教訓情報資料集）。たとえば、避難所肺炎、衰弱、脱水症状の多発、車椅子の被災者の避難所生活困窮、インフルエンザの蔓延、高血圧、糖尿病など慢性疾患の悪化、栄養管理の必要性 などである。特に高齢者においては、従来もっていた心血管系疾患、高血圧などの慢性疾患の悪化、胃潰瘍、肺炎などの呼吸器感染症など、ストレスや生活環境の悪化による疾患の増加が起こり、「震災後関連疾患」と呼ばれた。また、これらによる死亡等は「震災関連死」として位置づけられ、死亡は数百～千名とも言われており、震災の死者の1～2割は亜急性期以降に発生することを示した。このことから、避難所の亜急性期（地震発生後4日～3週間）において、特に高齢者では、すでに罹患している慢性疾患、ストレスや劣悪な生活環境によるこれら疾患の早期発見・早期治療を的確に行える医療体制をいかに速やかに構築するかが「震災関連死」を最小限に抑える要因となると考えられる（図1）。

【慢性期(地震発生後4週間～5年)】

また阪神・淡路大震災教訓情報資料集では慢性期（第3期：地震発生後4週間～5年）に対応すべき高齢者の諸問題として、1）若い人たちは避難所を離れ、高齢者ばかりが残っていくため、避難所にたちまち「超高齢社会」が出現し住民による自治的な運営は難しいこと、2）女性および高齢者が強いストレス反応を示すこと、3）震災後約5年を経ても高齢者が被災した場合の復興は様々な困難を伴うこと、4）高齢者の仮設住宅における孤独死、閉じこもり、などの問題を挙げている。

図1. 災害時亜急性期(4日~3週間)における要医療高齢者の新たなトリアージの必要性



2. 災害時「亜急性期」の医療需要の種類

平成19年3月25日の能登半島地震発生後、輪島市門前町の避難所で行われた医療支援の内容につき、医療支援が開始された3月27日から4月24日まで調査されている。避難者の延べ人数1,474のうち、65歳以上の高齢者は969人(65.7%)であった。

総避難者数のピークは地震発生翌日の1,125人でその後減少し、3月27日は1,075名、地震発生から5、10、15、20、25、30日目の避難者数はそれぞれ875、455、310、286、268、248名であった。1ヵ月後には244人となった。(図2)

図2. 能登半島地震(平成19年3月25日)後の総避難者数の推移

