

Helpful guide for care to
implement from tomorrow

Positioning Practice Handbook



See the video!

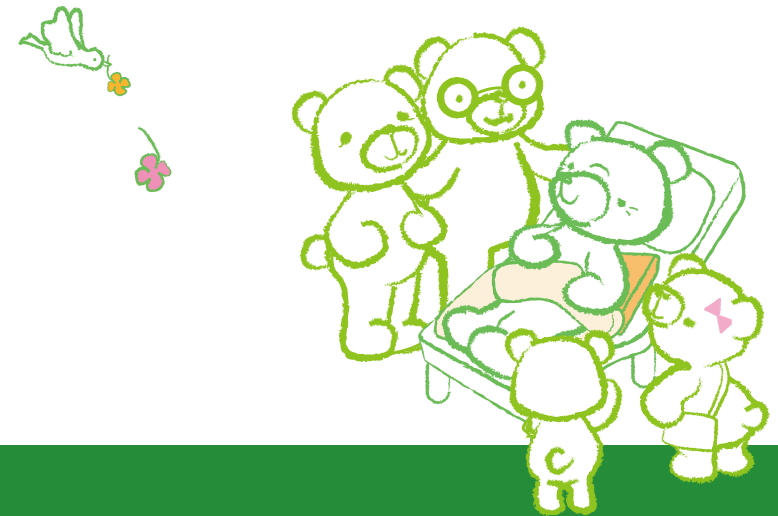
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Let's live in comfort.

Supervisor: Yoshinori Kitade



I Sonex Co., Ltd.

Why is positioning necessary?

Positioning, the cornerstone of care

Recently we often hear the word “positioning.”

“Positioning” refers to care of posture and activities in order to prevent bedsores, prevent and improve arthrogyriposis, promote safe ingestion/swallow and breathing, while enhancing comfort and ability of activities, for the people requiring nursing care.

If people engaged in caregiving and nursing learn about positioning and incorporate it into daily care, they can pay more attention to the function of the people they care such as posture, breathing and muscle tension, and also they can monitor and adjust the personal and physical environment of the people requiring nursing care.

Furthermore, positioning is useful for not only comforts and pleasant feeling of the people in need of care, but also bringing out their residual function and preventing advancement in severity.

We hope this pamphlet will be beside nursing care professionals and families who provide nursing care, helpful for daily care.



Yoshinori Kitade

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Manager of Rehabilitation Dept., Seiyu Memorial Hospital

Physical therapist, assistance planner, Bengt Engstrom concept certified master

After working in the emergency room of the hospital, He transferred to current position in home rehabilitation and daycare, engaged in research of the effect of position and wheelchair seating on human posture. He has been active in a wide range of roles including seminar instructor and part-time instructor at medical/assistance related schools. He has written a number of manuscripts including “Care of Bedsores for Cancer Patients” (published by Japanese Nursing Association) and “Illustrated Nurses’ Handbook of Positioning and Dietary Care to Prevent Accidental Swallowing” (Miwa Shoten).



Misako Funaki

CEO, I Sonex Co., Ltd.
Director, Funaki-Gishi Co., Ltd.

Occupational therapist, prosthetist, nursing care support specialist

After graduating from Kyushu Rehabilitation University, she worked in the Tokyo Metropolitan Disability Welfare Center and involved in rental and sale of assistive equipment at Funaki-Gishi, and later established a home repair business.

She founded assistive equipment manufacturing company I Sonex Co. in 2005, patented and developed a large number of products including Nasent Pad, Nasent Toilet, FC Cushion and Sky Lift.

design by Natsuko Katayama (I Sonex Co., Ltd.)

CONTENTS

Basics of Positioning

Learning basic Knowledge of positioning

What is positioning?	p4
Assessment of posture and environment	p5
Positioning to prevent bedsores	p7
Positioning patient in lateral position	p9
Positioning for back raising posture	p11
Positioning for patients with higher muscle tone and arthrogyriposis	p13
Enhancing results of positioning	p14
Tips for choosing positioning products	p15

Practice Positioning

Learning from practice examples of positioning

Case Study I : Case of hemiplegia	p17
Case Study II : Case of kyphosis	p19
Case Study III : Case of flexion contracture	p21
Case Study IV : Case of edema with pain on motion	p23
Case Study V : Case of cervical spinal cord injury kept in the same position for a long time	p25
FAQs	p27
Product Introduction -Nasent Cushion Series-	p29



Basics of Positioning

Learning basic Knowledge of positioning

This part provides fundamental knowledge and abilities of observation required for positioning. Fundamental knowledge of “pressure/shearing force”, “observation of posture”, “contracture and muscle tension” is essential for accurate understanding of conditions that occur in a person you care. Analyzing the causes responsible for the conditions requires ability to observe and assess human factors such as caregivers and the way care is provided, and physical environment such as beds, mattresses and wheelchairs; in other words, it requires an “ability to recognize.”

Let's take a first step toward learning the art of positioning.



What is positioning?



Objectives of positioning

By providing comfortable and stable posture that facilitates activities, preventing problems related to long-term bedridden people such as :

- Preventing bedsores
- Maintaining and facilitating swallowing function
- Maintaining and facilitating respiratory and circulatory function
- Relaxing muscle tone and preventing deformation/contracture of joints
- Providing relaxed posture

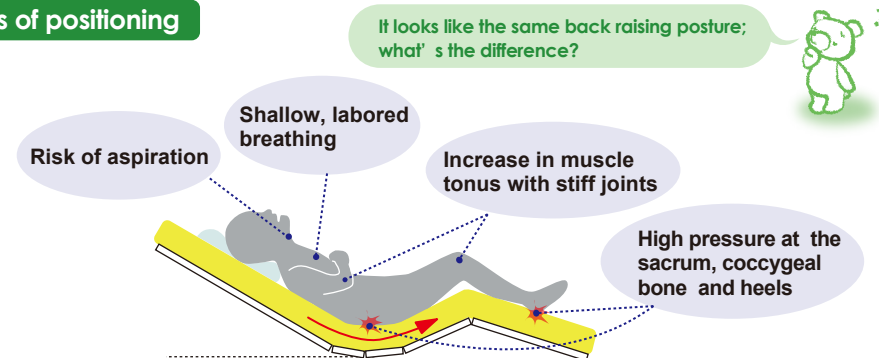
Definition of positioning

Setting relative positions of body parts for a person with motor impairments in order to maintain comfortable and safe posture (position) that suits the objectives of care by utilizing cushions etc.

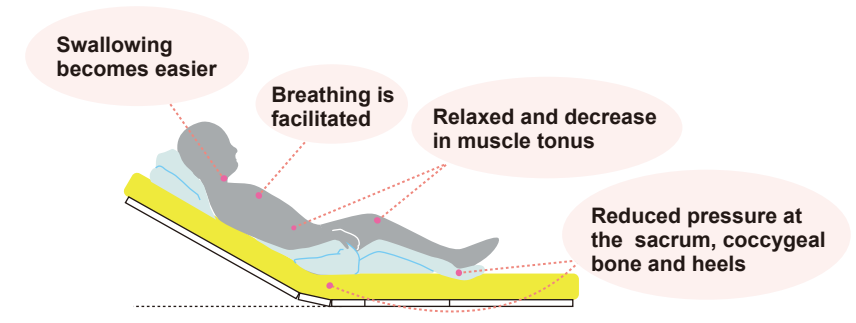
■ Taken from website of Japanese Society of Pressure Ulcers (JSPU)

Benefits of positioning

Before positioning



After positioning



Correlation of postural change and positioning

Postural change

Turning direction of the body towards the direction to which gravity works



Positioning

Aligning body parts such as pelvis, spinal column, cervix, head, upper limbs and lower limbs, based on objective of care.

Assessment of posture and environment



Carefully observe “what is happening” prior to positioning; assess and analyze the causes by carefully looking, listening and feeling.

✓ Assessment of the case

- General condition**
Diagnosis /anamnesis, bedsores, height/weight, BMI, blood pressure, pulse, respiration (SPO₂), edema, pain
- Disability condition and characteristics of posture**
Paralysis, range of motion (ROM), consciousness / cognition ability, muscle tone, alignment of posture and body pressure assessment
- Ability of movement**
Ability of moving body, maintaining sitting position, transferring, the degree of independence in daily living for the elderly
- Communication**
Conscious level, linguistic ability, facial expressions (pleasure, discomfort), motion, complain of pain, the degree of independence in daily living for the elderly with dementia
- ADL**
Dietary method (ordinary eating / nutrient infusion), excretion method (diapers, catheter), Bathing/cleaning Method, transfer method
- Living habits and preferred posture**
Posture required for daily living and medical treatment, posture to avoid pain, favorite posture

✓ Assessment of environment / assistive technology

- Bed / mattress**
Bed structure and function (electric/ manual operation, back raising / knee raising / height adjustment)
Mattress material and hardness (foam, polyester cotton, gel), structure (1 to 3 layers), thickness
- Body pressure dispersion bedding**
Static mattress, dynamic mattress (over lay type / high function type)
- Type of sheets and pajamas**
Sheets (cotton / elastic material), waterproof sheets, bath towel wrinkling, bed clothes wrinkling
- Positioning products / assistive technology**
Fixed shape type (primarily foam), type that adjusts to shape (primarily beans), gliding sheets, glide gloves for releasing pressure
- Assistive technology being used**
Wheelchair, wheelchair cushions, transfer equipment (lifters and hoist, transfer board)

✓ Assessment of assistance method

- Positioning method**
Type of postural change, daily postural change schedule, Habits to release pressure
- Main caregivers**
Family (single / plural member[s]), nurse (hospital, nursing home, home visit), care givers (hospital, nursing home, home visit)
- Efforts for positioning**
Capability to provide nursing care (physical strength, number of nurses, mental aspect, time allotment), positioning skill/understanding, ability to cooperate with others
- Consideration of shear and friction that occurs during assistance**
Method and frequency of correcting lying position, transfer method (number of caregivers / use of equipment), adjusting wheelchair posture

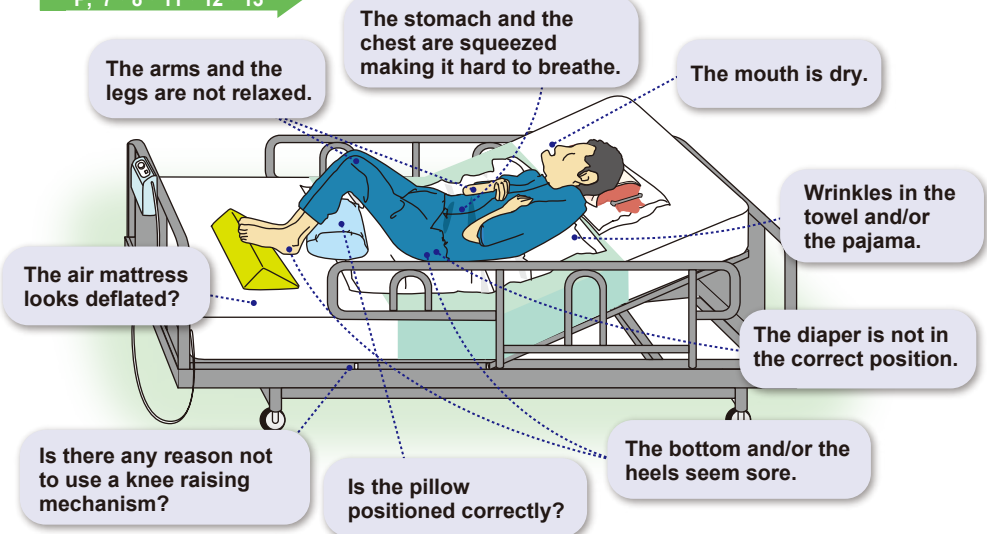
— Enhance awareness needed for positioning —



For clues to enhance your awareness, see page ___!

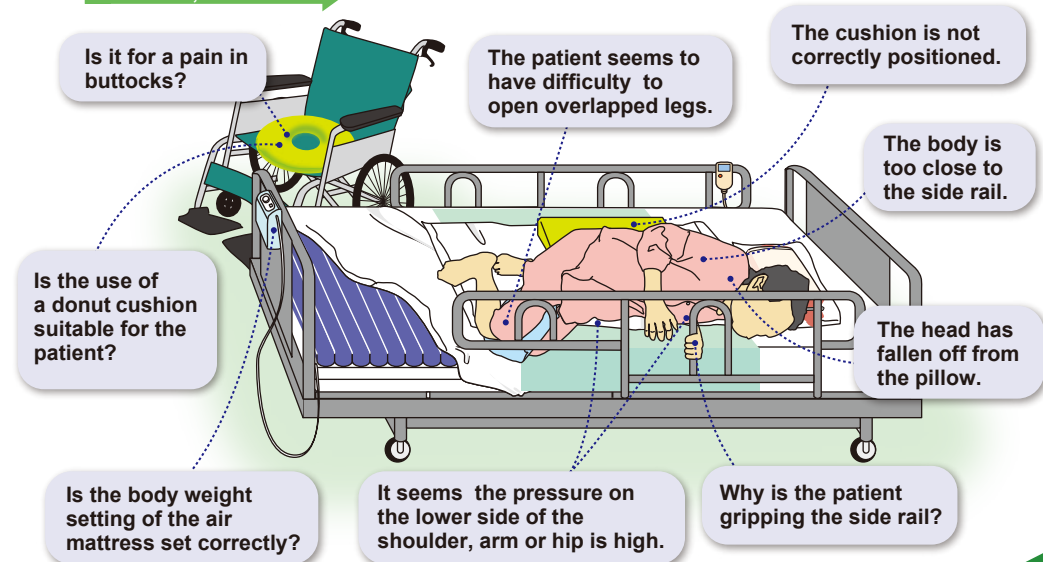
Awareness in back raising posture

P, 7 · 8 · 11 · 12 · 13



Awareness in side lying posture

P, 7 · 8 · 9 · 10



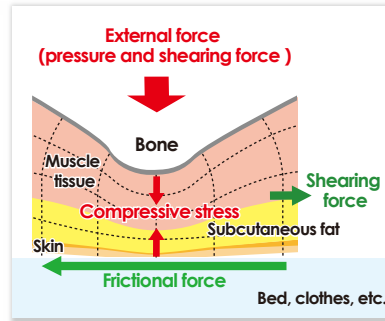
Positioning to prevent bedsores

What is bed sore?

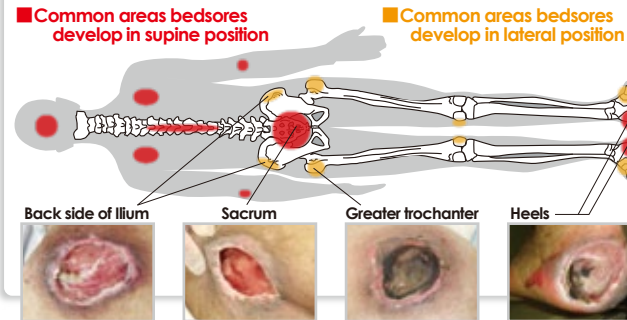
Bed sore is a lesion that causes necrosis of skin and soft tissue caused by limits of blood flow to the skin and nearby tissues due to continuous **external force** (pressure + shearing force) on body parts in contact with a bed or a wheelchairs for a over a period of time.

What are the causes?

The direct cause is sustained pressure on the same area (particularly bony prominences). Indirect causes include shear or friction that occurs when a body slips during back raising or transfer, malnutrition or edema, underweight, unclean skin, etc.



Common areas bedsores develop



Areas of bedsores classified by facility types

General hospitals

- No. 1: Sacrum (49.6%)
- No. 2: Heel bone (15.2%)
- No. 3: Greater trochanter (9.4%)

Nursing homes

- No. 1: Sacrum (49.2%)
- No. 2: Heel bone (9.8%)
- No. 3: Back side of Ilium (8.5%)

Japanese Society of Pressure Ulcers (JSPU) Edition: Taken from page 3 of Bedsores Prevention and Management Guidelines, 2009 Shinrinsha

Pressure dispersion by using body pressure dispersion mattress

For people who have a higher risk of bedsores, use body pressure dispersion equipment to distribute body weight effectively. It is important to **set correct body weight** with air mattress. If the mattress is too soft, the body sinks into the mattress and it negatively affects posture; if it is too hard, body pressure is not effectively distributed.

For people who are able to turn over on the bed without assistance

Static mattress (multilayered urethane laminated mattress)

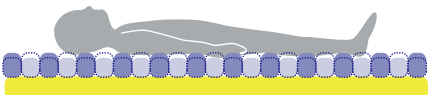


For people who are unable to turn over on the bed without assistance

dynamic mattress (air mattress)

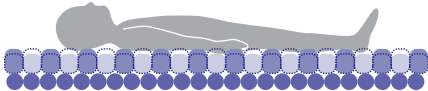
over lay type

For those with moderately evident bony prominences and already have bedsores.



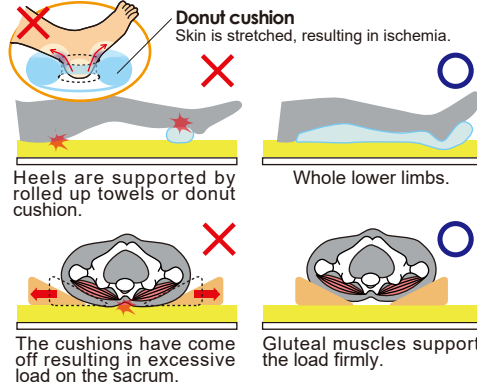
High function type

For those with multiple bedsores or bedsores of depth classification stage III/IV or more.



Body pressure dispersion using positioning equipment

Weight is supported by a wide surface rather than points

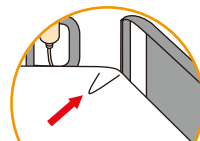


Frequency of Postural change

Ordinary mattress	Body pressure dispersion mattress
Position should be changed every 2 hours.	Position should not remain unchanged for more than 4 hours.



Select elastic sheets for air mattresses. In case of cotton sheets, set the sheet on the mattress loosely.



In case of cotton sheets, do not set it tightly.

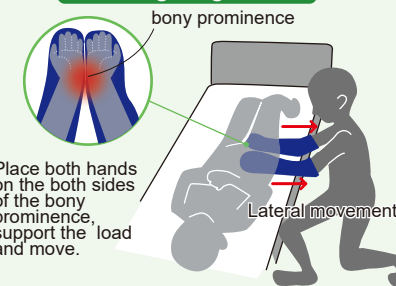
Situations in which shear or friction occur

When adjusting sleeping position and changing position

- Sliding up the body by pulling
- Pulling the body to the side
- ⇒ Pressure and shear occur at bony prominences

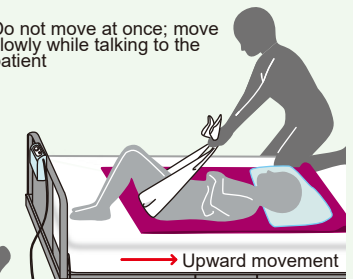
Method to provide assistance without causing shear and/or friction

Use of glide gloves



Use of gliding sheets

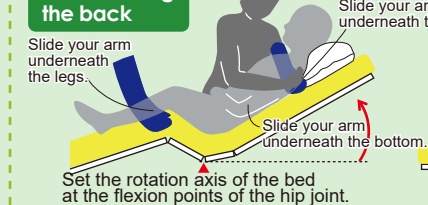
Do not move at once; move slowly while talking to the patient



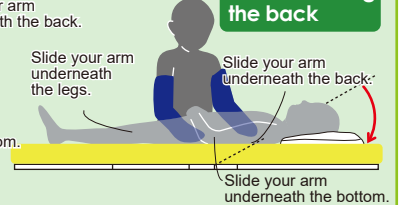
When raising or lowering the back of a bed

- Pressure or shear occur between a mattress and a body
- Pressure and/or shear tend to be increased when sitting slipped forward

When raising the back



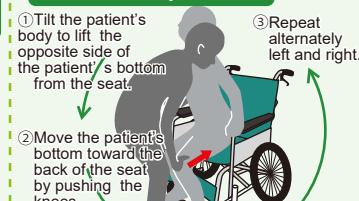
When lowering the back



When transferring or adjusting posture on a wheelchair

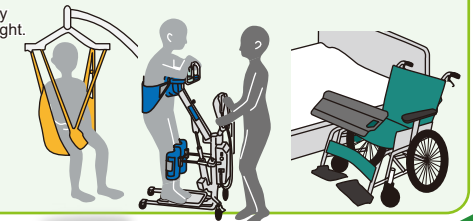
- Transferring by sliding a bottom
- Turning and lifting a body all at once.
- Lifting a body while shifting a bottom into a wheelchair seat

Method of adjusting wheelchair posture



Use of assistive technology

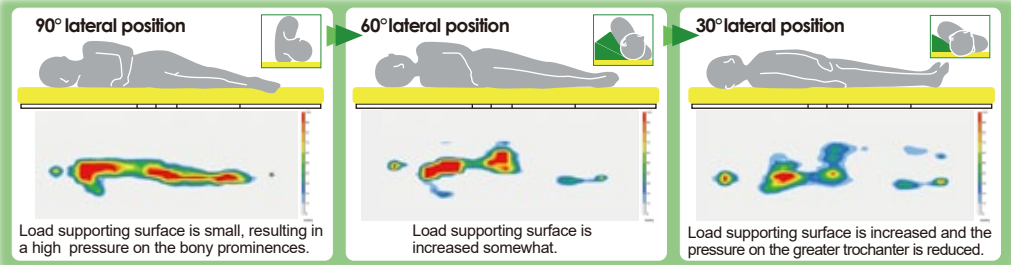
- lifters and hoist
- Transfer board



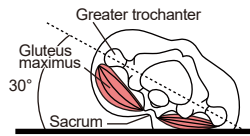
Positioning patient in lateral position

Load supporting surface and pressure

When positioning a patient in lateral position, because of the small load supporting surface, the load is concentrated on bony prominences (shoulder, greater trochanter, ilium, heels). It is important to set the patient's back at an angle that reduces pressure on the bony prominences while widening the load supporting area.



Lateral position 30° rules



Lateral position under 30° enables avoiding putting pressure on the ilium and the greater trochanter, as well as enabling the body to be supported by the buttocks where bones are covered by muscles and fat.

Patients for whom lateral position 30° is not applicable



Lower inflation pressure air mattress is an option for emaciated patients and those for which lateral position 30° is not comfortable, as well as those who return to their favorite or preferred position.

How to make lateral position comfortable

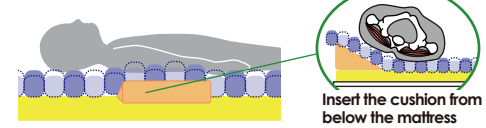
● Make an embankment on the opposite side (embankment method)

Place a small pillow or a cushion underneath the opposite side of the mattress to reduce a gap and an unstable feeling caused by the inclined surface.



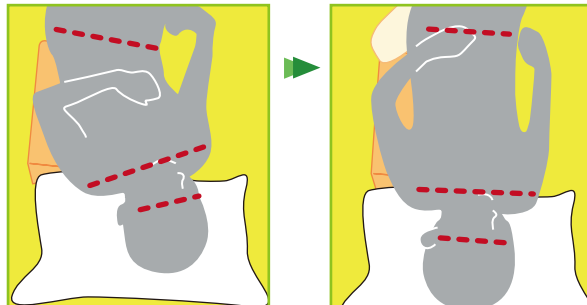
● Performing postural change from below a body pressure dispersion mattress

For people who feel discomfort or pain when directly being touched, insert a cushion underneath the mattress and make use of the performance of a body pressure dispersion mattress.



Correct posture alignment

It is important to correct entire body alignment at the final stage of positioning. Especially, attention to upper limbs (head, chest, pelvis, upper limbs) is required as improper alignments may increase muscle tone, causing discomfort and breathing difficulties.



The lines that connect ears, shoulders on both sides and top/front iliac spine are twisting

Adjust the lines that connect ears, shoulders on both sides and top/front iliac spine so that the lines parallel each other.

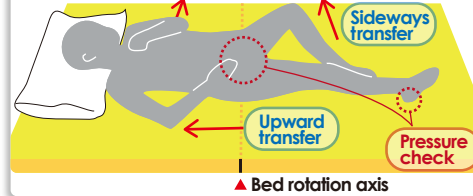
This part is important!



Lateral position process

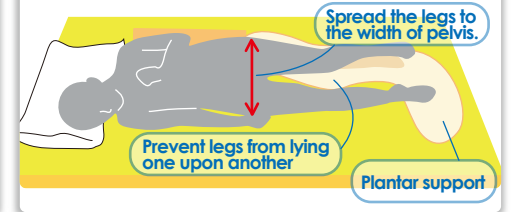
1 Preparation stage: Correcting the lying position and checking pressure

Put on a pair of glide gloves. Adjust lying position and check pressure at bony prominences, muscle tone, facial expression and breathing, etc.



2 Performing postural change and supporting load

Place cushions or pillows beneath the upper and lower body to ensure the load is supported properly.



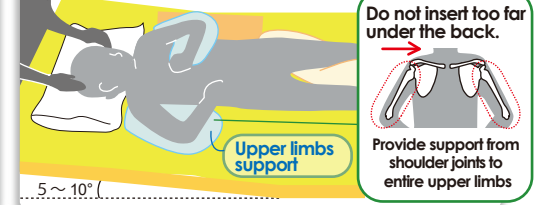
3 Releasing pressure and adjusting posture

Release pressure of the entire body, especially make sure to release the pressure on the lower shoulders, pelvis, greater trochanter, where load is applied.



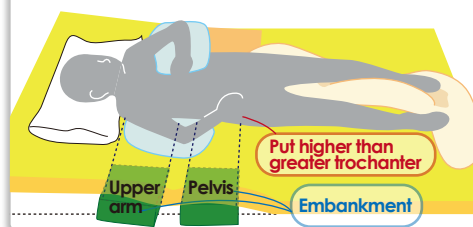
4 Adjusting posture of the upper body

Place a pillow beneath the upper limbs to support. Lift the back to the degree for easy breathing (approximately 10°); adjust the position of the head.



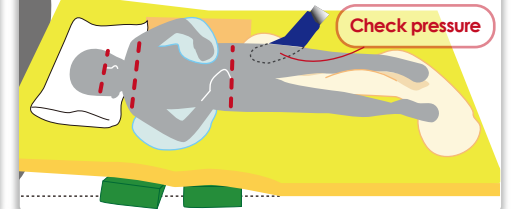
5 Enhancing comfort

In order to relieve instability, hold the upper arms and pelvis and create an embankment.



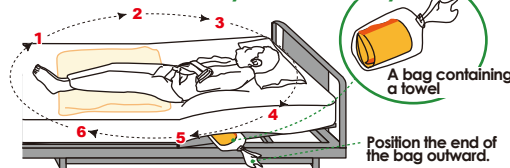
6 Final stage: Aligning body posture

Check pressure at the bony prominences and adjust alignment of the each part of the body while observing the breathing, facial expressions and muscle tone.



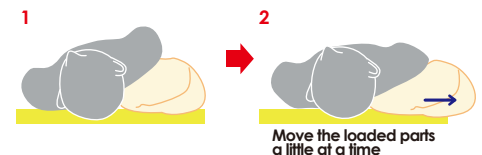
Small shift without significant postural change

● Method of using a small pillow that does not directly touch the body



Place a small pillow underneath the mattress and move each body part in sequence to avoid a risk of fracture or intensifying pain.

● Small shift to move loaded parts a little at a time

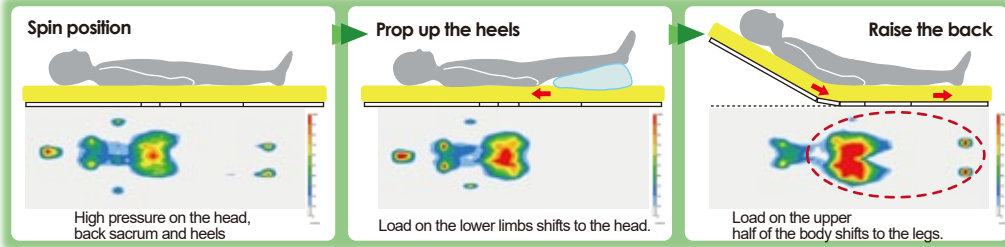


To ensure a good sleep at night and reduce burden on caregivers, change loaded parts by moving the positioning pillow a little at a time.

Positioning for back raising posture

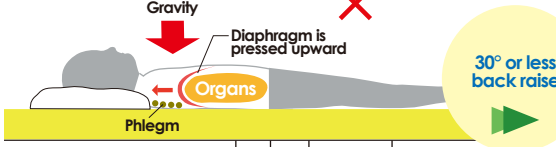
shift of pressure points

When you relieve pressure from one point, it always moves to another point. Pressure points shift when raising or lowering a back of a nursing bed and performing positioning. Observe changes in pressure on the sacrum, coccygeal bone and heels when positioning a patient.



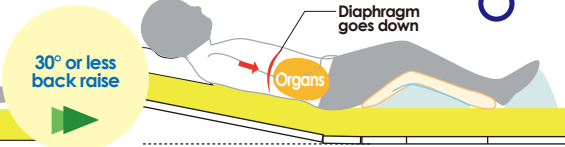
How to help patients respire more easily

Spine position



- ① Organs press the diaphragm upward thereby restricting movement of the lungs.
- ② The back is immobilized by gravity, making it difficult to expand the thorax.
- ③ Phlegm builds up in the back of the chest and becomes difficult to expel.

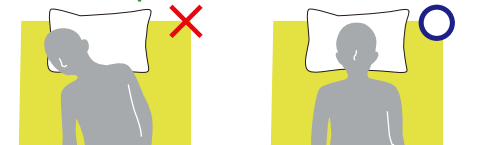
Back raised posture



- ① Organs go down thereby allowing movement of the diaphragm
- ② Thorax expands making it easier to breathe.
- ③ Back is raised making it easier to expel phlegm.

How to help patients swallow more easily

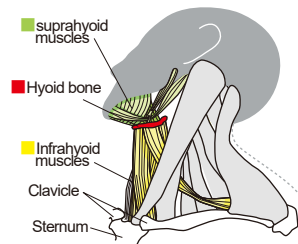
Place head and body trunk in neutral position.



If the head and/or trunk are laid downward, the infrahyoid muscles are pulled, making it harder to swallow.

The head and trunk are kept in neutral position, thereby making it easier to swallow.

Muscles used for swallowing



The muscles used for swallowing (infrahyoid muscles, etc.) are anatomically connected to the clavicle, sternum and shoulder blades, so they are easily affected by relative positions of the head, trunk and upper limbs.

Support weight of the arms with cushions.

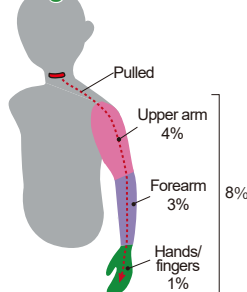


The head and trunk are pulled backward by the weight of the upper limbs, thereby making it difficult to swallow.

Weight of the upper limbs is supported by cushions, thereby making it easier to swallow.

Arm weight by percentage

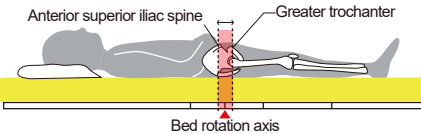
Weight of an upper arm, forearm and hand accounts for approximately 8% of the body weight. If not supported, the infrahyoid muscles are pulled upward via the shoulder blades and clavicle, thereby inhibiting movement of the larynx, impeding swallowing.



Back raised posture process

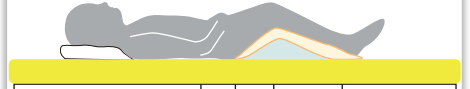
1 Preparation stage: Checking environment and adjusting lying position

Check a bed mechanism and a type of mattress; correct patient's lying position and adjust bed rotation axis with flexion points of the hip joint.



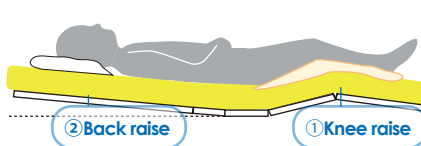
2 When bed does not match the points knees flex

If the rotational axis of the bed does not match the knee joints of small patients or those with deformation/contracture of lower limbs, place a cushion under the lower limbs to match the knee flexion points.



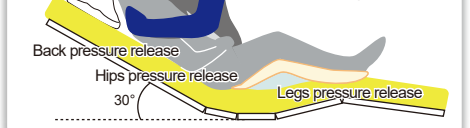
3 Raising the back

In order to avoid slipping of the buttocks, raise the knees before raising the back and lower the knees so as not to put pressure on the abdomen.



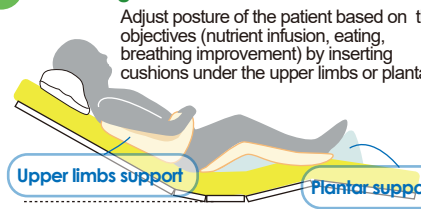
4 Relieving pressure

While wearing glide gloves, relieve pressure and slippage by pulling up the back, hip and legs.



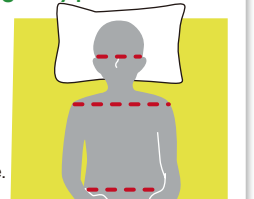
5 Enhancing comfort

Adjust posture of the patient based on the objectives (nutrient infusion, eating, breathing improvement) by inserting cushions under the upper limbs or plantar.



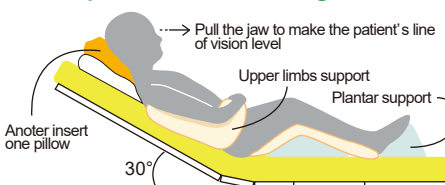
6 Final stage: Aligning body posture

Check pressure at the bony prominences and adjust alignment of the each part of the body while observing the breathing, facial expressions and muscle tone to complete adjustment of the posture.

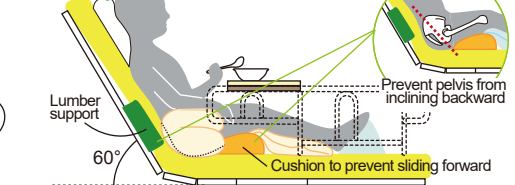


Back raising posture for eating/swallowing

If the patient has swallowing disorders



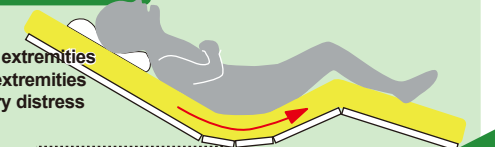
If the patient is able to feed himself



- ① In the case of patients with swallowing disability, start from 30 degrees back raising position.
- ② Gently pull out the jaw so the head tilts slightly forward; adjust by stacking pillows till the patient's eye level becomes horizontal.
- ③ Raise the back of the bed to 40 to 60 degrees, depending on the severity of the swallowing disorder and the patient's motor ability to eat.

Harmful effect of slipped forward sitting position

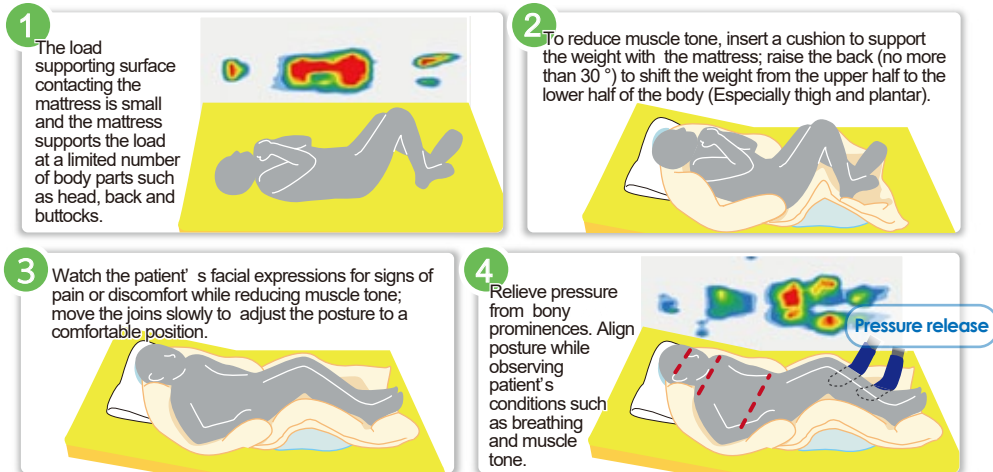
- ① Local increase in pressure and shear
- ② Decrease in the mobility of head, trunk and joints of extremities
- ③ Excessive muscle tone of head, trunk and joints of extremities
- ④ Increase in accidental deglutition risk and respiratory distress
- ⑤ Increase burden for caregivers



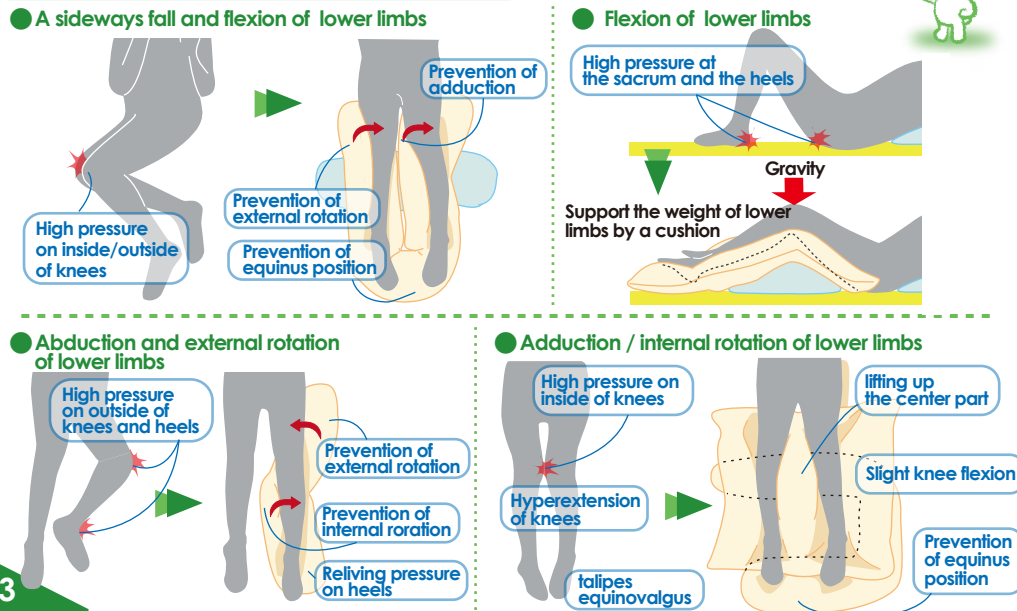
Positioning for patients with higher muscle tone and arthrogyposis

In the case of patients with higher muscle tone and arthrogyposis (joint contractures), muscle tone is aggravated by pain and uncomfortable stimulation when you try to force the patient's arms and/or legs to correct the posture; it makes positioning more difficult against your intention. It is important to understand the process to avoid increasing muscle tone before trying to position the patient.

Muscle tone relaxation process



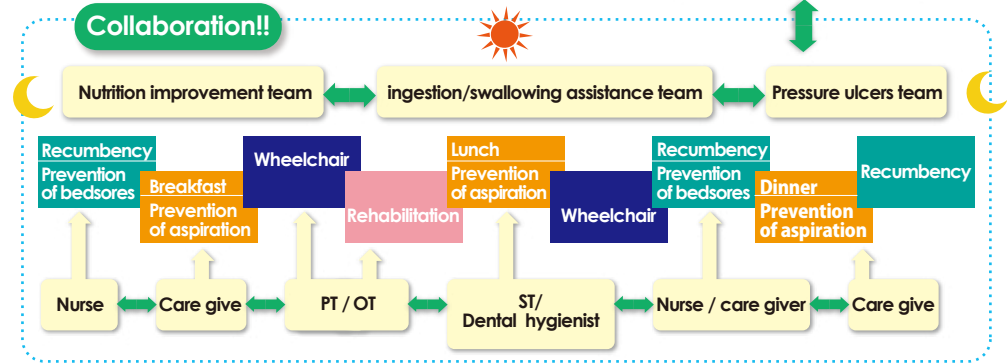
How to adjust cushions for deformation/contracture of lower limbs



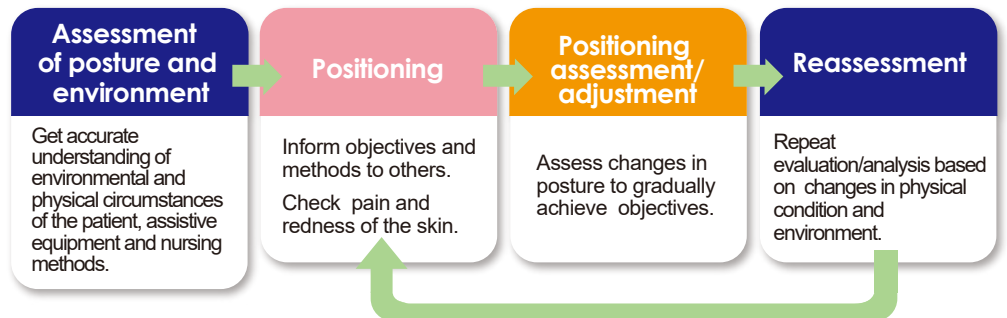
Enhancing results of positioning

Collaborate with other professionals

Positioning not only involves raising a bed, but rather requires considering what sort of posture is used for activities such as transfer, locomotion, eating, rehabilitation and so on. If objectives and/or methods of positioning vary, it is important to determine priority and share objectives with other professionals in a team.



Review based on changes in posture or lifestyle



Sharing experiences is the best way to understanding positioning



It is difficult to understand and practice positioning by just reading textbooks. Long term bed ridden patients understand the position of their body, pain and pressure applied to body parts using deep sensation and skin sensation with a lack of visual information. By actually experience of a role as a patient being positioned, you can experience the pain, discomfort, muscle tone and uneasiness from the standpoint of the patient receiving care. Learning in a group with other professionals is strongly recommended.

Tips for choosing positioning products

Views to choose positioning products

When selecting positioning products, it is important to consider mental and physical impacts of the equipment on mental, physical, physiological functions and choose products that makes a patient feel "comfortable" and "relaxed." Look, feel and experience to select the best products to provide comfortable life as much as possible when positioning.



What are the features of positioning equipment?

	Shape/application	Content material / characteristics	Cover	User-friendliness	Ease of maintenance
Can be formed freely	 <ul style="list-style-type: none"> Can be adjusted to conform to body shape Multipurpose 	Polyester cotton chips (Soft) Can be shaped by moving chips	<ul style="list-style-type: none"> Has a pleasant feel 	<ul style="list-style-type: none"> Takes space to some extent There is a need to learn how to use 	<ul style="list-style-type: none"> Can be washed in a washing machine ; can be a dried in a cloths dryer Can withstand high temperatures up to 135°C
Fixed shape	 Primarily lateral position	Special medium density, low resilience foam (Soft) Shape is predetermined so it can be used in the same manner by anyone.	<ul style="list-style-type: none"> Polyester front surface with laminated waterproof rear surface 	<ul style="list-style-type: none"> Compact 	<ul style="list-style-type: none"> Cover can be washed in a washing machine or dried in a cloths dryer
	 Relief of pressure at bone prominences				
	 Prevention of slipping forward when raising back	<ul style="list-style-type: none"> Easy to use; doesn' t require special training or skills 	<ul style="list-style-type: none"> Equipment and cover can be washed together in hot water in excess of 100°C 		
Fixed shape	 Primarily spinal position / lateral position	Special high density, low resilience foam (Somewhat hard) Shape is predetermined so it can be used in the same manner by anyone.	<ul style="list-style-type: none"> Polyester material offering superior ventilation and perspiration absorption 	<ul style="list-style-type: none"> Easy to use; doesn' t require special training or skills 	<ul style="list-style-type: none"> Cover can be washed in a washing machine.
	 Multipurpose equipment applicable to spinal position / lateral position/semi sitting (back raised) position				
	 For adjustment of lying and sitting posture	<ul style="list-style-type: none"> Wash equipment with a neutral detergent. After spin drying, dry in the shadow. 			

Practice of Positioning

Learning from practice examples of positioning

This part contains case studies to help to apply the knowledge and the skills of positioning you learned in the basic part to nursing and care practice. In order to put a positioning plan into action in your practice, we should take into account restrictions in medical management, burden on caregivers, provision of positioning and assistive equipment, and impact on other ADL, while obtaining understanding of other professionals.



Cooperators who provided the cases

Hakwai Okayama Social Welfare Corp., Okayama Hakwai Hospital

Dr. Mutsumi Satake, Nursing Supervisor

Head of Rehabilitation Dept., Tomita Hospital Medical Corp.

Hiroshi Tsuji, Physical Therapist

Hiroshima Prefecture Posture/ Activities Healthcare Research Association

Yosuke Sato, Occupational Therapist

Koji Takamoto, Occupational Therapist

Yohei Tsuchiya, Assistive Equipment Consultant



Case Study I : Case of hemiplegia

Basic information:
Female, 65 years of age

Height: 148 cm, weight: 46.6 kg (BMI 21. 2). She was admitted to hospital suffering from left hemiplegia due to encephalorrhagia. Independence degree of daily living was B2, being able to hold sitting position with assistance, communicate in spite of hoarseness. Due to ingestion/swallowing difficulty, gastrogavage and ingesting/swallowing training of a jerry food has been conducted. Spasticity on the paralytic side is strong; shoulder adduction, elbow flexion, finger bending contracture, hip flexion, talipes equinus have been observed. Also knee hyperextension on the non-paralytic side have been observed. She constantly grips a side rail with her right hand, resulting in increase in muscle tone and she complains uneasiness and pain when changing posture. Position is changed every 2 hours including lateral position and 30 degree back raised position. Assistive equipment before the intervention is a static mattress, a beads pillow and one nasent pad.

Assistive equipment used for the case

Nasent Ex Roll 100 Nasent Ex Wide



Beads pillow for upper limbs



Medical pads 50



Soft cushion for back

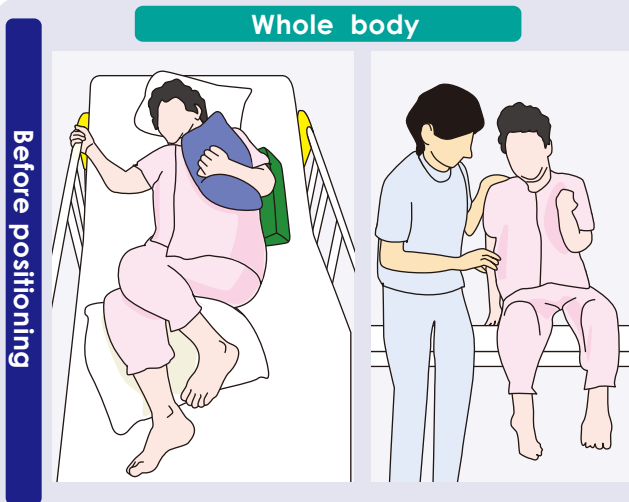


Insert

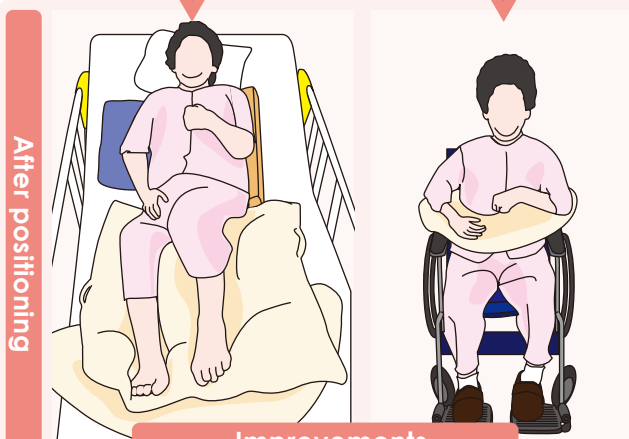


Gel First

Lumbar vertebra support



Before positioning



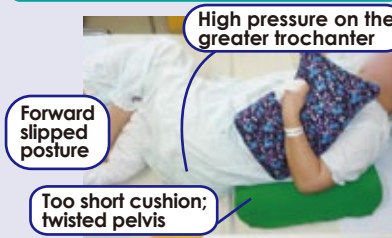
After positioning

Whole body

Head/ neck Trunk

Upper limbs

Lower limbs

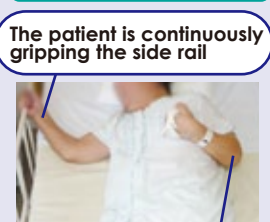


Forward slipped posture

High pressure on the greater trochanter

Too short cushion; twisted pelvis

- 1 The wedge-shaped cushion is too short to support the pelvis and the lower body, making the pelvis twisted, giving high pressure on the greater trochanter.
- 2 The lying position is not appropriate, resulting in forward slip, increase in muscle tone.
- 3 The patient has poor sitting balance, lying in bed all day.



The patient is continuously gripping the side rail

Left shoulder adduction, elbow flexion / finger flexion

- 1 The patient does not let go of the side rail due to the unstable posture.
- 2 The upper limbs of the paralytic side are placed on the chest due to lack of support.



Right lateral position

Both lower limbs falling to the same side

Left lateral position

High pressure on the inside/outside of the knees

Left talipes equinus/ right talipes equinovagus

- 1 In right lateral position, both lower limbs have laterally fallen, resulting in high pressure on inside/outside of the knees and the greater trochanter.
- 2 In left lateral position, left talipes equinus and right talipes equinovagus are observed.

- 1 The long wedge-shaped cushion supports the pelvis and reduces pressure on the greater trochanter. The posture is stabilized by placing a small pillow underneath the opposite side of the mattress.



Spread the cushion underneath up to front of the ischial bone

Opposite side

Small pillows

- 1 The stabilized posture relives uneasiness, making the patient release the grip on the side rail.
- 2 Placing a cushion under the upper limbs to support the weight makes the position of the chest more comfortable and decreases muscle tone.



Support the weight of lower limbs by the cushion to expand the chest.

- 1 Weight of the whole lower limbs is supported by the wide cushion, preventing the limbs from turning sideways, to reduce pressure on the inside/outside of the knees.
- 2 Supporting the plantar with the roll cushion improves left talipes equinus and right talipes equinovagus.



Plantar support

Improvements

- 1 Improving forward slipped posture by increasing supporting surface for the whole lower limbs reduced muscle tone, which can be confirmed by a facial expression of the patient and the fact that the patient can let go her grip of the side rail.
- 2 Placing the patient in semi-lateral position by using a long wedge-shaped cushion improved the torsion of the pelvis and reduced pressure on the greater trochanter.
- 3 By supporting the plantar and holding the both legs in neutral position, conditions such as both legs laterally falling, left talipes equinus and right talipes equinovagus have been improved.
- 4 The patient spending most of the day in the bed was encouraged to leave the bed, thereby she is now able to spend approximately an hour a day sitting in a wheelchair at a day room.



Case Study II: Case of kyphosis

Basic information: Female, 87 years of age

Height: 144 cm, weight: 23.4 kg (BMI 11.2). She was admitted to the hospital due to chronic renal failure and cerebral infarction sequelae. Independence degree of daily living was C2, being unable to communicate. The patient currently does not have bedsores, but has strong kyphosis and bony prominences are evident due to emaciation.

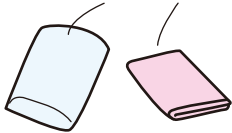
Internal rotation, adduction and flexion contracture of the upper limbs, internal rotation, adduction and flexion of the lower limbs are observed, and flexion contracture of the elbow and knee are gradually progressing. Her position is changed every two hours and nasoenteric feeding with back raised 30 degrees has been used. Assistive equipment before the intervention is a dynamic mattress, a Nasent pad, a beads pillow on the market (1 each).

Assistive equipment used for the case

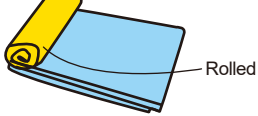
Nasent Ex Roll 200



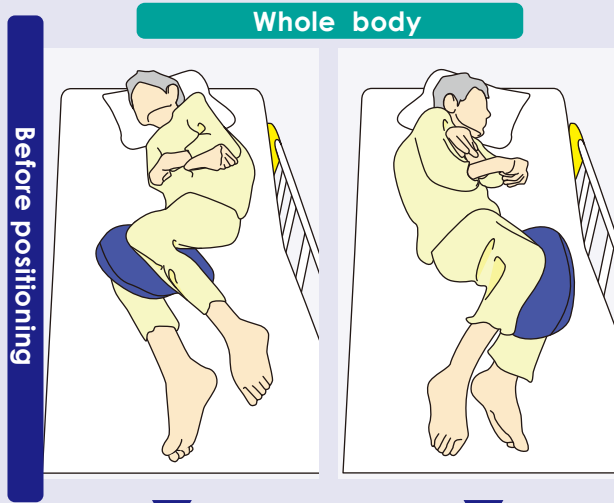
Pillow and towel for upper limbs



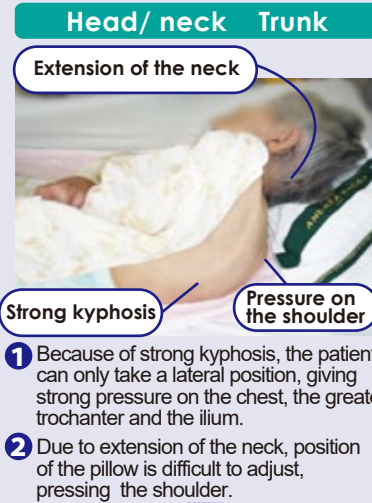
Towel for pillow



Mouse shaped cushion



- 1 Pressure on the shoulder and the greater trochanter has been reduced and the load supporting area has been expanded by switching from a full lateral position to a half lateral position.
- 2 By spreading the upper limbs folded on the chest and supporting the weight of the arms on a cushion, the thorax is expanded, facilitating breathing and comfortability.
- 3 Keeping the hip joints spread to the width of the pelvis prevents internal rotation/adduction of the hip joints and reduces pressure on the inside of the knees.



- 1 Because of strong kyphosis, the patient can only take a lateral position, giving strong pressure on the chest, the greater trochanter and the ilium.
- 2 Due to extension of the neck, position of the pillow is difficult to adjust, pressing the shoulder.

- 1 Pressure on the thorax, the greater trochanter and the ilium is decreased by keeping a semi lateral position with a long cushion.



The cushion is placed along the curvature of the spine.

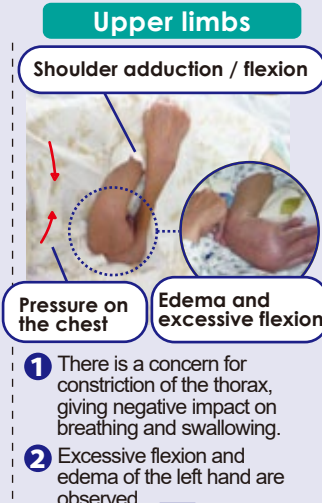
- 2 A long cushion is used to keep the head being raised to relieve pressure on the shoulder. A rolled towel is placed on the incline to stabilize the head.



Pressure on the shoulder is relieved

Measures devised to prevent the head from falling

Rolled towel Propped up by the towel



- 1 There is a concern for constriction of the thorax, giving negative impact on breathing and swallowing.
- 2 Excessive flexion and edema of the left hand are observed.

- 1 Open both upper limbs outward and support the weight of the arms with a cushion to expand the thorax.

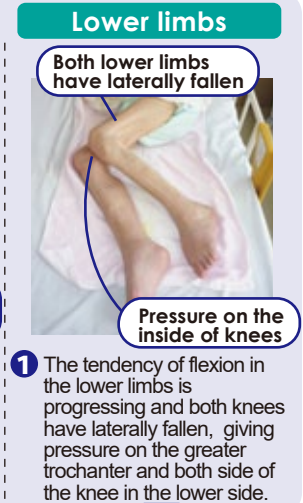


Support the weight of arms by a cushion to expand the chest.

- 2 Prevent excessive flexion of the left hand with a mouse shaped cushion.

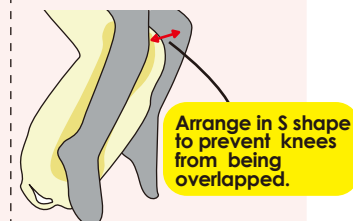


Pressure on the shoulder is relieved



- 1 The tendency of flexion in the lower limbs is progressing and both knees have laterally fallen, giving pressure on the greater trochanter and both side of the knee in the lower side.

- 1 Open the lower limbs to the width of the pelvis and arrange the long cushion in the shape of "S" to prevent the legs from being overlapped.



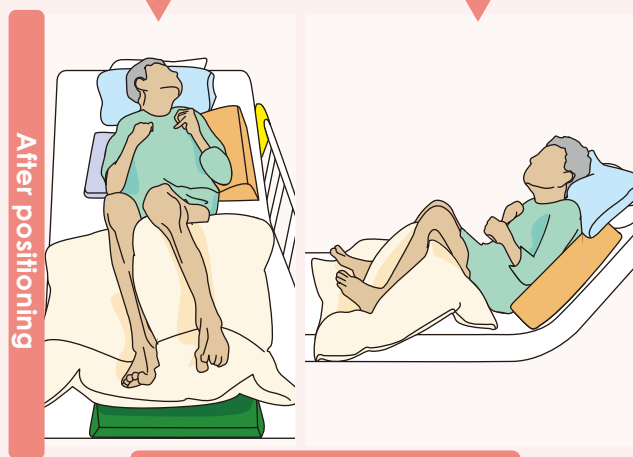
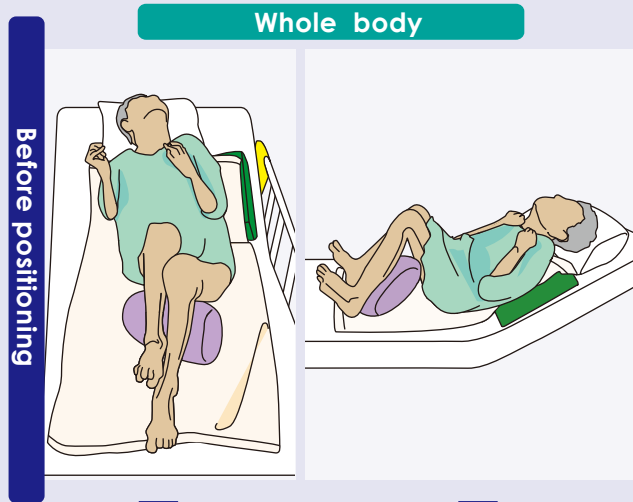
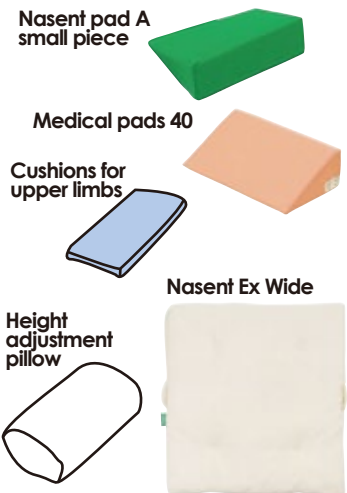
Arrange in S shape to prevent knees from being overlapped.

Case Study III: Case of flexion contracture

Basic information: Female, 92 years of age

Height:153 cm, weight:41.2 kg (BMI 13.4). She was admitted to the hospital due to diabetes, heart failure, and multiple cerebral infarctions. Independence degree of daily living is C2, being not capable of changing a position without assistance and communicating with others. Patient's her position is changed every 2 to 3 hours. Nasoenteric feeding is conducted at a 40 degrees back raised position. Muscle tone of the whole body is extremely high; neck extension, shoulder adduction, elbow flexion and hip/knee adduction/flexion have been gradually progressing since admission. Shoulder joints, hip joints and knee joints are stiff, making it difficult to change clothes and diapers. Assistive equipment before the intervention is a three-motor-powered bed with a dynamic mattress laid on top a hard bed mattress, a wedge-shaped urethane cushion and 2 beads pillows on the market.

Assistive equipment used for the case



- ### Improvements
- 1 By inserting a cushion that supports the entire lower limbs and keeping 20 to 40 degrees back raised position, the load supported only by the upper body got additional support by the femur and the plantar, relieving muscle tone of the whole body.
 - 2 For the purpose of reducing burden of caregivers when changing diapers, the joints of the lower limbs are kept in a neutral position as much as possible to prevent deformation and contracture.
 - 3 In order to make the patient breath easier and more steadily, the arms are prevented from being pressed firmly against the chest by supporting the weight of the upper arms with cushions.

Cervix / Spinal column Trunk

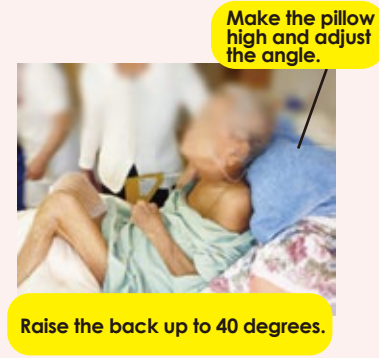
Extremely high muscle tone

High pressure on the head and the back

Neck extension

- 1 Muscle tone is extremely high and the upper body is supporting most weight of the body.
- 2 Because the arms are pressed firmly against the chest, respiration is shallow and patient is breathing hardly.

- 1 Raising the back 20 to 40 degrees shifts some weight to the lower limbs, reducing muscle tone of the upper body and ameliorating extension of the neck.
- 2 Supporting weight of the arms with cushions to decrease the pressure on the chest and help steady breathing.



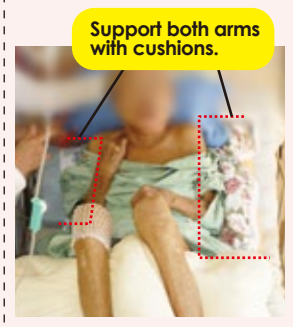
Upper limbs

The patient bends both arms, tries to put them on the chest

1 The both arms are pressed against the chest to be stabilized.

2 It is difficult to change pajamas due to shoulder adduction / elbow flexion.

- 1 Flexion tendency of the both arms is reduced by supporting the weight of the arms with cushion.
- 2 Decreasing muscle tone makes changing pajamas easier.



Lower limbs

Almost no load on the lower limbs

Hip flexion/adduction, knee flexion

Strong knee adduction, pressing the inside of the knees strongly

- 1 The lower limbs provides little weight support surface (just slightly by the plantar)
- 2 Knee adduction is strong, giving strong pressure on the insides of the knees.

- 1 With a wide cushion, forming a weight support of the whole lower limbs and planta pedis
- 2 Piling up chips of the wide cushion to keep the left and right knees separated.



Case Study IV: Case of edema with pain on motion

Basic information: Female, 86 years of age

Height:144 cm, weight:34.6kg(BMI 16.6). She was admitted to the hospital due to post-hepatic encephalopathy disease syndrome. The patient has hyperammonemia, lumbar compression fracture, etc in her medical history. Independence degree of daily living is C2, being incapable of changing position without assistance; position is changed every 2 to 3 hours. Muscle tone of the whole body is high; flexion and adduction of upper limb, extension, adduction / internal rotation / plantar inversion of lower limb are observed. Since the admission to the hospital, body tone, pain and arthrogyrosis have been progressing, and the patient strongly complains about pain when changing diapers. The patient is losing an ability to feed on her own gradually; at the moment, total assistance for eating is required. Assistive equipment used for the case is a dynamic mattress, a wedge-shaped urethane cushion and a beads pillow on the market.

Assistive equipment used for the case

Commercially available cushions



Nasent Ex Roll 200



Nasent Ex Wide



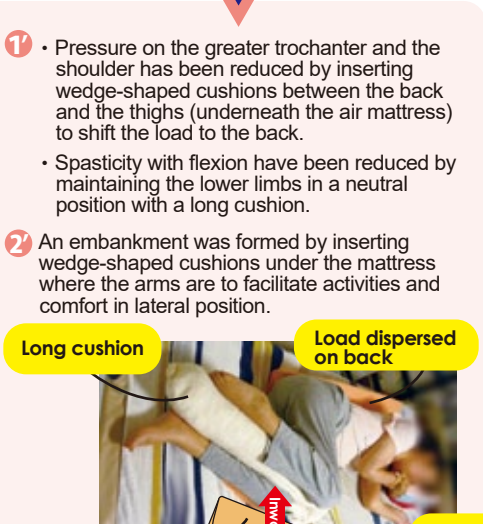
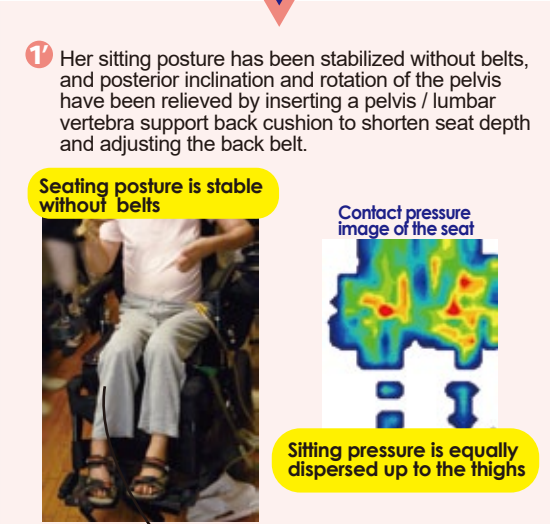
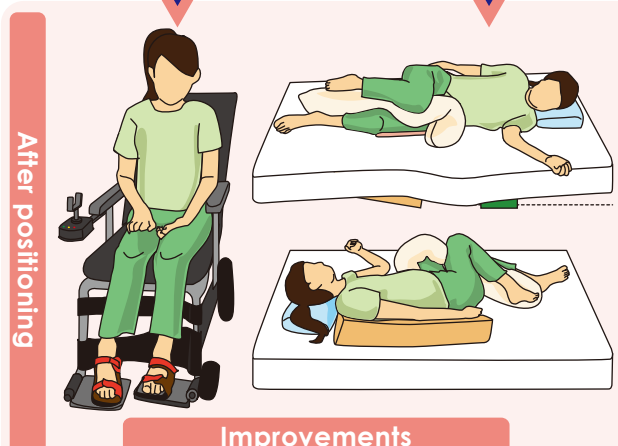
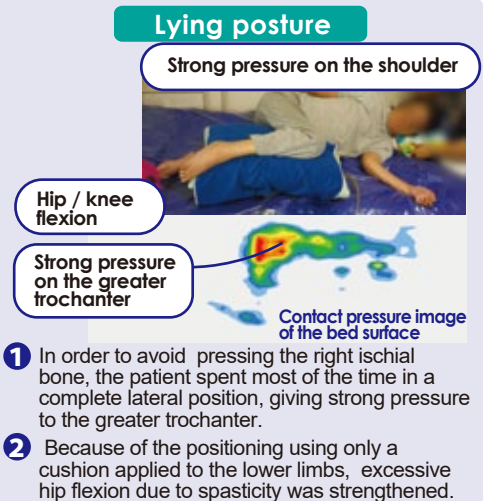
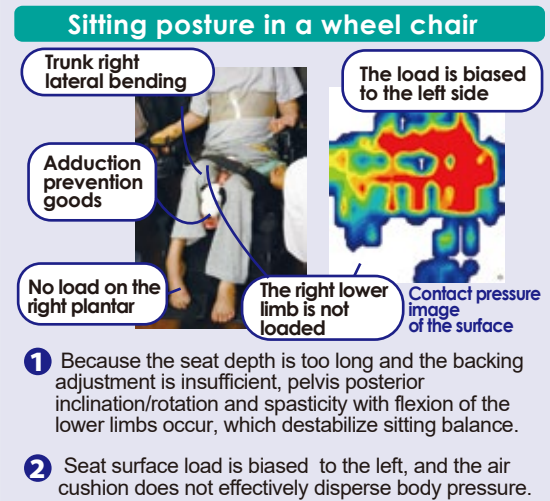
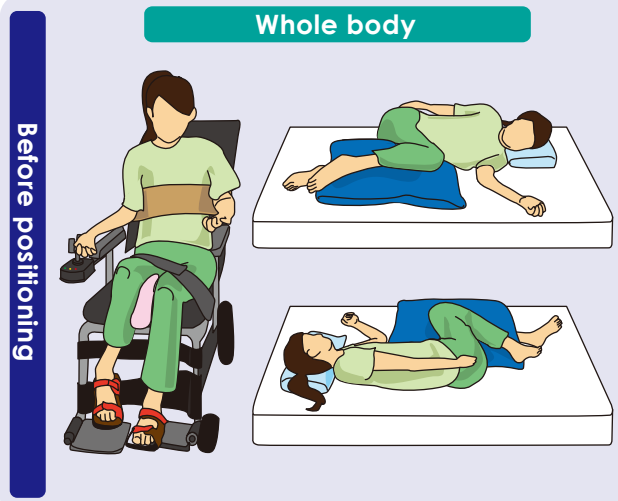
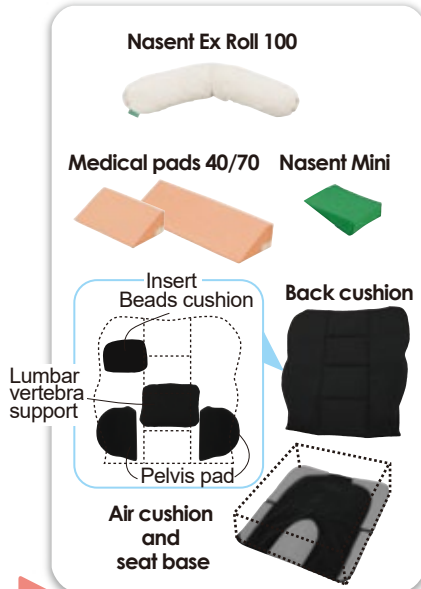
	Whole body	Head/ neck Trunk	Upper limbs	Lower limbs	
Before positioning			<p>1 Shallow, fast breathing SPO2/HR/RR: 89-91/68 - 74/23</p> <p>2 Eating in the forward slipped sitting posture.</p> <p>Neck flexion</p> <p>Forward slipped sitting posture</p>	<p>1 Muscle tone is extremely high; shoulder adduction and elbow flexion make shoulder abduction difficult.</p> <p>High muscle tone</p> <p>Pain is caused by touching</p>	<p>1 Internal rotation is extremely strong</p> <p>2 Edema of foot</p>
After positioning			<p>1 Muscle tone was relieved and movement of the chest when breathing was improved by setting the patient in the semi-lateral position with a long cushion and supporting the entire lower limbs with a wide cushion. SPO2/HR/RR:93-95/68/16</p> <p>Place the arms on the cushion and expand the chest.</p> <p>2 Slippage during feeding has been resolved by spreading a wide cushion up to the ischial bone to support the soles.</p> <p>Supporting the soles.</p> <p>Spread up to the ischial bone</p>	<p>1 Muscle tone decreased and the complaints about pain decreased as well. The arms were managed to be placed on the cushion.</p> <p>Supporting the soles.</p>	<p>1 Improvement of hip adduction/internal rotation is observed; particularly tendency of the right lower limb toward internal rotation at the back raised position has reduced.</p> <p>Reduced internal rotation tendency</p> <p>2 Edema of foot has been ameliorated.</p>
Improvements	<ol style="list-style-type: none"> The pain has been reduced and relaxed facial expression was observed. Improvement of the slipped forward sitting position relieves pressure on the chest and the abdomen, stabilizes respiratory condition and stimulates feeding. The pain on motion was reduced, making the diaper change easier. The hip extension, adduction and medial rotation were improved; particularly the internal rotation tendency of the right lower limbs is reduced when the back is raised. The edema of the legs are improved. 				

Case Study V: Case of cervical spinal cord injury kept in the same position for a long time

Basic information: Female, 52 years of age

A cervical cord injury (C5) patient due to an automobile accident at age 19 that left her quadriplegic has been living at home for 5 years. There is a history of bedsores on the sacrum and the left ischial bone, and newly developed bedsores on the right ischial bone (depth III) ten months ago. Except going out for medical examinations using an electric power wheelchair, she stays in a lateral position on bed all day. Body position is changed twice a day by home visits. She spends 16 hours from morning to bedtime in left lateral position; sleeps in a right lateral position. There is a need for support to obtain an ability to manage her posture independently collaborating with home care workers. Assistive equipment used for the case is a reclining electric powered wheelchair, a nursing care lift, a 2-motor electric bed and a dynamic mattress.

Assistive equipment used for the case



- Setting a rear cushion and a seat base on the electric powered wheelchair improved sacral sitting; Sitting posture was stabilized even without belts fastened.
- The patient has obtained an ability to shift the load by swaying trunk from side to side in order to relieve pressure while sitting in the electric powered wheelchair.
- Switching posture from the original complete lateral position to a semi-lateral position has reduced pressure on the greater trochanter, stabilized the upper body and increased mobility.
- Making contact pressure visible by the pressure distribution measuring system has given the patient and home care professionals (home nurses, caregivers, etc.) an opportunity to understand positioning better.

Spasticity of the right leg has decreased, making it possible to support the weight with the plantar

- Alignment of sitting posture has been improved by inserting a seat base underneath the air cushion.

Pressure on the greater trochanter and the shoulder has been reduced by inserting wedge-shaped cushions between the back and the thighs (underneath the air mattress) to shift the load to the back.

Spasticity with flexion have been reduced by maintaining the lower limbs in a neutral position with a long cushion.

- An embankment was formed by inserting wedge-shaped cushions under the mattress where the arms are to facilitate activities and comfort in lateral position.

Q How can muscle tone be relieved?

A Do you consider alignment balance of the whole body when performing positioning?

Is there any case such as relieving pressure on the heels and the sacrum resulted in making the upper body support the whole load or inserting wedge-shaped cushions behind the back to keep lateral position resulted in making the body axis twisted in an unnatural posture? Muscle tone may be an expression of discomfort from an unnatural posture. Assess and analyze causes of increased muscle tone.



Q Only lower limbs fall sideways, pressure on the greater trochanter and the hips is concerned.

A Is the load of the lower limbs well supported by positioning pillows?

In the position that lower limbs are turned to the same side, pelvis tilts along with the weight of the legs, twisting the body and giving pressure on the chest. This not only gives pressure on the greater trochanter and the inner side of the knees, but has a negative impact on respiratory and swallowing function as well. To improve this condition, return the pelvis to the neutral position and prevent the legs from falling sideways by firmly supporting the weight of the lower limbs with a cushion. After doing so, try raising the back of the bed 10 to 15 degrees to shift the weight to the lower limbs.



Q The patient holds a side rail and do not release the grip

A Is the current position making the patient feel uneasy or uncomfortable?

For example, is there anything that comes to your mind such as the mattress is too soft, the lateral position or the back raised position is making the patient almost falling out of the bed, postural change or transfer assistance that does not go with the self-motion perception of the patient or the patient is trying to avoid pain/pressure?

Provide a patient a comfortable positioning with a sense of security by a comprehensive assessment of a mental and physical condition, surrounding environment and assisting techniques applied.



Q An air mattress has been introduced due to bedsores on the greater trochanter on the right side, but they are not recovering.

A Do you raise the back of the bed with the patient in a lateral position?

Bedsore tend to occur on the right side greater trochanter if the back is raised with the patient in a lateral position in order to prevent aspiration when nutrient is being infused. Check if there is pressure on the greater trochanter due to the excessive inclining of the pelvis when the back of the bed is raised, or if there is friction or shear due to forward slippage. In the case of intense pressure, position the patient in a semi-half lateral position to decrease inclining of the pelvis to prevent pressure on the greater trochanter. In addition, insert a pillow from the front of the ischial bone to the lower limbs to prevent forward slippage when the back is raised.



Q Using positioning pillows in summer caused miliaria.

A Don't you surround the patient's body with a lot of positioning pillows?

Surrounding the patient's body with a lot of positioning pillows in a hot season stores heat inside and could cause miliaria. Particularly beads cushions that change its shape along to the shape of the body tend to store heat. In this case, it is necessary to consider forming a space or lifting a body to let the heat to escape. The temperature around the beds near a window can be higher than around an exit, so it is important to adjust the direction of the wind from the air conditioner or provide skin care to prevent miliaria.



Q Each caregiver performs positioning differently. How can the skill of all the caregivers be enhanced?

A Have positioning pillows been selected from a standpoint of the cared person?

Caregivers may be confused if there are too many different types of assistive equipment. Try to minimize the types of assistive equipment used. In keeping with this, select simple types that are widely applicable and easy to use for caregivers in experiential learning. Experiential learning is essential for enhancing skills as it can offer experiences of discomfort, pain, tension and uneasiness from a standpoint of a cared person.



ナセントメディカルシリーズ Nasent® Medical Series

ナセント®メディカルパット Nasent® Medical Pads

Provide comfort comfort
by merit of superior
body pressure
dispersion



Medical Pads 70
70×22×12.3cm



Medical Pads 50
50×22×12.3cm



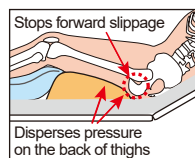
Medical Pads 40
40×22×12.3cm



Medical Pads 20
20×22×12.3cm

ナセント®メディカルスワロー Nasent® Medical Swallow

Prevention of bedsores
when back is raised



Nasent Swallow
50×25×10.5cm

ナセント®Ex ロール・ナセント®Ex ワイド Nasent® Ex Roll / Nasent® Ex Wide

Soft to touch;
irresistible comfort



Ideal cushion material
for positioning



Equipped with a handle
that can be used to
change position



Perspiration-absorbent cover
that offers pleasant feeling



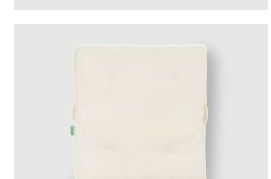
Nasent Ex Rolls 200
200×24×7cm



Nasent Ex Rolls 150
150×24×7cm



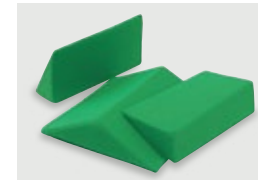
Nasent Ex Rolls 100
100×24×7cm



Nasent Ex Wide
70×80×5cm

ナセント®パット Nasent® Pads

Compact size pads can be used for
wheel chairs, combined freely;
applicable to all kinds of positioning



**Nasent Pads A
Set of 3**
Large×1 : 40×40×10cm
Small×2 : 40×20×10cm



**Nasent Pads A
Set of 2**
Small×2 : 40×20×10cm



Nasent Pads L50
50×20×10cm



**Nasent Min
Set of 4**
26.5×21×8cm



**Nasent Min
Set of 2**
26.5×21×8cm

Waterproof cover available for all Nasent Pad products

- Waterproof laminated rear surface
- Aqua-dry construction offers perspiration absorbency and quick drying
- Sterilized



Color : Peppermint Green

Comfortable long cushions fit
body snugly



Nasent Rolls L
168×φ20cm



Nasent Rolls M
150×φ15cm

Keeps both knees in correct position
Knee positioning pillow



**Nasent Knee Supports
Set of 2**
W23×D31×H22cm

Facilitates turning over
Waterproof rear surface



**Light Turn
Standard Type**
W43×D13×H39cm



● Lateral position

Based on the height, please choose a suitable size



Medical Pads 40 or 50 or 70

● Lateral position (to distribute the pressure on the sacrum)



Medical Pads 40

Medical Pads 40

● Spine position (to distribute the pressure of sacrum)

Insert to avoid compression on the greater trochanter



Medical Pads 40



Insert a hand to check if pressure on the bony prominences is released

● Spine position (distribute pressure on the spine and the sacrum)



Medical Pads 40

Medical Pads 20

● Bed bath when changing a diaper



Medical Pads 50x2

● Lateral position



Ex Rolls 200

● Lateral position + upper limbs support



Ex Rolls 150

Ex Rolls 100

● Prone position



Ex Rolls 150

● Back raising posture for kyphosis



Ex Wide

Ex Rolls 200

● Lateral position in consideration of the pressure dispersion of pelvis and lower extremities



Ex Wide

Ex Rolls 150

● Holding good functional position of lower limbs



Ex Rolls 200

ナセント®メディカルスワロー Example of use
Nasent® Medical Swallow



Correct patient's lying position and adjust bed rotation axis with flexion points of body. (5cm below the anterior superior iliac spine)
When rotational axis of the bed does not match the knee joints of small patients, release the knee-up mechanism of a electric bed

Insert "Medical swallow" to the base of the thigh.

Put a pillow so as to support the entire lower limbs, to reduce the pressure of the heels.

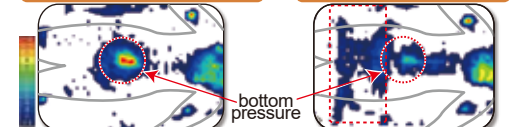
Raise the back to angle to fit the purpose. After raising the back and lowering the back, make sure to release the pressure.

Medical Swallow Q & A

● Is it only applicable when the back is raised?

It can provide pressure dispersion effect for a bottom in supine position as well, so it is fine to be left inserted after lowering the back.

without Medical Swallow With Medical Swallow



● To what degree of back raising the pressure dispersion effect can be provided?

The pressure dispersion effect for a bottom is provided in the range of 60 degrees back raised position to supine position. However, the effect is reduced at more than 60 degrees.

● 30° lateral position



● spine position



● Prevention of subluxation and pain on shoulder joint



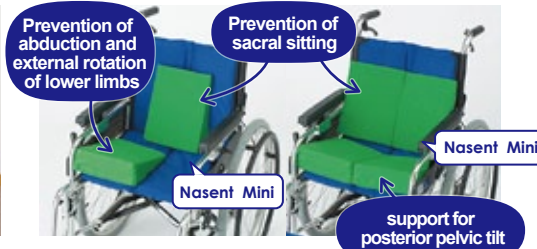
● position to be cleaned after changing diapers



● Prevention of laterally fallen position



● As a wheelchair cushion



● Prevention of slipping forward in bed



● Prevention of pelvis from inclining backward



After raising/lowering the back, make sure not to forget to relieve pressure.

Release pressure and shear by pulling up the back, buttocks and legs with glide gloves.

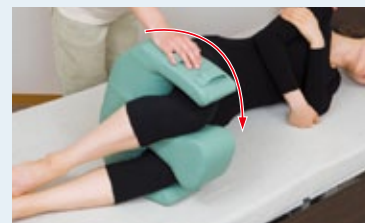
1 Tilt the convex part of "light-turn" toward the foot, put the legs on the dent.



2 Turning up "light-turn" and put the knees in the dent.



3 Push the "light-turn" and the patient's shoulder to turn over.



4 It keeps the legs open, being able to reduce a burden of excretion care.



It keeps your hands being used freely!

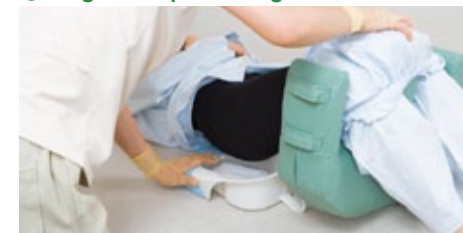
When the handle of "light-turn" fixed by s-hook or a string, excretion care is easily performed.



● Diaper change that using a "light-turn"



● Using the bedpan with "light-turn"



● To hold posture when performing disimpaction

