

SUPPLEMENTARY MATERIAL

Supplementary Appendix 1. Six health states in accordance with major fractures

Osteoporosis

You are a postmenopausal woman with osteoporosis. Your condition in osteoporosis is as follows. Your bones are very fragile and more easily breakable compared to women in their thirties. In particular, the vertebral, hip, and wrist bones are weak and have at least 5 times more fractures than women of the same age who do not have osteoporosis. You have to be careful not to fall on everything, and even a minor falling accident can break your bones. Avoid behaviors such as lifting heavy loads (2 shopping carts or 3- to 4-year-olds), and avoid strenuous movements that can cause vertebral fractures. You should also avoid exercises that require intense activities such as aerobics, jogging, and golf. It does not affect other daily life.

Wrist fracture

You are experiencing a wrist fracture and being treated. The pain at the time of fracture was relieved by the pain medication, and now you feel almost no pain. You sleep well enough and do not suffer from pain. Daily life (hair washing, bathing, showering, dressing, toilet using, etc.) can be done without any problems, and no help is needed. Your wrist fracture experience does not make you feel your health has worsened. However, fear of fall accidents and additional fractures remains.

Hip fracture

You had a hip fracture. You were hospitalized for about 3 weeks after your surgery and were discharged. Your condition due to the hip fracture is as follows. It is difficult to move your legs during about 3 weeks of hospitalization. The pain is very strong, and you cannot endure without analgesics. This pain often causes you to get little or no sleep. You can use the toilet alone, but you need someone's help when you put on your clothes or take a shower. Meal preparation and housework are not possible. It is also impossible to carry or lift heavy luggage or shopping carts. It is very difficult to be alone when you are lying in bed or sitting on a chair after you have been discharged. You need a walking stick or walker to walk. Because of the hip fracture, it is impossible to bend, stretch, and walk. Even if you take painkillers, you can hardly sleep because of the pain, fear of falling, and fear of fracture. In addition, you feel frightened and depressed in situations in which your dependence on others can persist. In general, the mortality rate is 17% within 1-year due to hip fracture in patients over 50 years old.

Hip fractures after 6 months (post-hip)

Six months have passed since you experienced a hip fracture. You are limited in activity and are going to the hospital every month for a regular check-up. If you had no problems walking before your hip fracture, you can walk 6 months after the hip fracture, but about 73% of hip fracture patients will have limited activity. If walking was a little uncomfortable due to problems such as old age or joints before the hip fracture, normal walking is almost impossible after the hip fracture.

Vertebral fracture

You had a vertebral fracture and were hospitalized for 2 weeks without surgery. In the early stages, you feel a lot of pain every time you move. You cannot sleep because of the pain. Even with pain medication, you feel pain every time you move. However, within 2 weeks, the pain will be substantially reduced. Because of the vertebral fracture, you should stay in the hospital for about 2 weeks and walk with a hard brace for about 3 weeks. In daily life (washing hair, bathing, dressing, using the toilet), you can function by yourself with a little help if you endure the pain that you feel when you move. Meal preparation and housework can be done with a little help, but you can't carry heavy loads or carts. Standing up from or lying down in a chair or a bed is very difficult and requires the help of others. You can move with a hard brace that wraps around your entire abdomen. It is impossible to bend and stretch your waist. There is fear of falling accidents and other fractures. In ad-

dition, there is a concern about dependency and the need for help from others. In general, mortality within 1-year due to vertebral fracture is 7.0% in patients older than 50 years.

Vertebral fractures after 6 months (post-vertebral)

Six months have passed since you experienced a vertebral fracture. You have recovered from the fracture. You have regular monthly visits to the hospital to check for osteoporosis and fracture sites. Spinal fractures are characterized by multiple occurrences. Approximately 6.6% of patients with vertebral fractures are known to experience additional vertebral fractures within 1-year. If you have had a vertebral fracture for the first time, your condition after 6 months allows you to live daily life, and there is no other discomfort. However, after the second fracture, there is pain and difficulty in daily life even after recovery. There is fear of falling accidents and additional fracture.

Supplementary Appendix 2. Person trade-off (PTO)^{1,2}

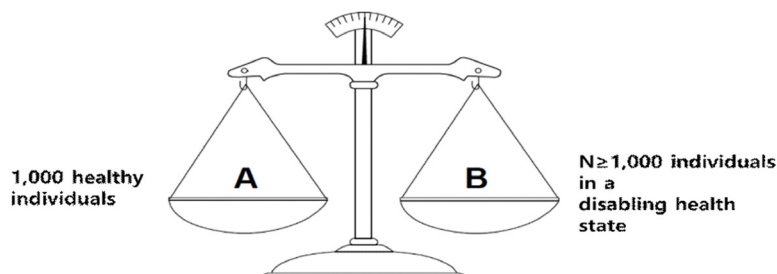
PTO 1: A thought experiment in which you trade-off life years of healthy people for life years of individuals who are not in perfect health

Imagine the following: You are a decision maker. You have exactly enough funds for a single health intervention. You have a choice between 2 mutually exclusive health interventions. If you opt for intervention A, the life of 1,000 individuals will be extended by exactly 1-year. After that year they will all die. If you do not choose this intervention, these people will all die immediately.

Alternatively, your scarce funds may be used to purchase health intervention B. Opting for B means that the life of N individuals in the less than perfect health state X would be extended by exactly 1-year. After that year, they will all die. Not choosing intervention B means that the persons in health state X will all die immediately.

Example: The choice is in the first instance between 1-year of life extension for 1,000 healthy individuals (intervention A) and 1-year of life extension of 2,000 blind people (intervention B). If you opt for B, you will be faced with a new choice in which the number of blind individuals whose life can be extended with intervention B is reduced to, i.e., 1,500. If you decide to purchase A, the number of blind individuals will be raised. This process of choosing is continued until you are no longer able to make a choice between the 2 interventions: your indifference point.

In summary: PTO 1: the number of individuals in health state X for whom 1-year of life extension is equal in your eyes to 1-year life extension for 1,000 healthy individuals. The number is always bigger or equal to 1,000.



¹We refer to the PTO 1 and 2 form in the following paper and translate it into Korean (Stouthard MEA, Essink-Bot ML, Bonsel GJ, et al. Disability weights for diseases in the Netherlands. Rotterdam, the Netherlands: Department of Public Health, Erasmus University Rotterdam, the Netherlands; 1997).

²Six health statuses including osteoporosis and hip, vertebral, post-hip, post-vertebral, and wrist fractures used the same PTO form above.