

UNIT NO. 4

DISEASES THAT RESULT IN DISABILITY IN ADULTS

Dr Chan Kin Ming

ABSTRACT

The common types of disabilities in adults are those of the locomotor system which affects mobility, those affecting activities of daily living (ADL), hearing and sight. These disabilities may be caused by a variety of diseases. Diseases of musculoskeletal, neurological, eye, ear, and psychiatric origin, as well as cancers, may lead to impairments which when severe lead to disability in mobility as well as in performing essential self-care activities. Important impairments to consider with regards to mobility and dependency are lower and upper extremity impairments, visual/ hearing impairment, affective disorders and poor balance. Ambulation is not only affected by impairments to lower limb but also by compromised cardiopulmonary status.

Keywords: disability, activities of daily living (ADL), impairments, locomotor disabilities, hearing loss, vision loss

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INTRODUCTION

The 4 common types of disabilities found in adults are those affecting the locomotor system, activities of daily living, hearing and sight. Among adults reporting disability, the most common is difficulties in climbing stairs (about 10%) and walking 3 city blocks (10.3%). The number of people reporting disability increases with age. Women tend to have a higher prevalence than men at all ages. Given the size of baby boomers, the number of adults with disabilities is likely to increase dramatically¹.

Older people tend to have more disease and disability than younger adults. They often have many diseases at the same time and most of the diseases are chronic. Disease and disability can greatly limit independence and increase the need for support. How well a person functions is determined by the ability to perform essential self-care activities (usually called activities of daily living), such as eating, dressing, bathing, transferring between bed and chair, and using the toilet. In a community study done in Singapore to assess the functional status of those 60 years and older, 17% were dependent in at least one area of ADL and 10.4% had at least one IADL that they could not perform². How well a person functions is also determined by

the ability to perform additional important activities (usually called instrumental activities of daily living), such as preparing meals, performing housework, taking drugs as instructed, going on errands, managing finances, and using a telephone. While many elderly people have the strength to perform these tasks, they may not have the volition to do so, as seen in many with dementia or depression. Hence, it is not just important to assess their musculo-skeletal and neurological system for ability, but also their mental status for volition.

DISEASE, IMPAIRMENT, DISABILITY AND THE ENVIRONMENT

Disability of a person can be affected by diseases. The WHO conceptual framework proposes a stepwise process by which disease may lead to disability³:

- Disease is an intrinsic pathology or disorder which may or may not be manifested, that is, disease may be clinical or subclinical.
- Disease that becomes clinical may lead to impairment. Impairment is the loss or abnormality of structure or function at organ system level. A disease like diabetes may cause renal and visual impairment. When the impairment becomes more severe, a disability may result.
- Disability is a restriction or lack of ability to perform an activity, usually a daily task, in a normal manner. A single disability may be caused by a number of different impairments, e.g. walking disability may be caused by visual impairment, peripheral nerve impairment (peripheral neuropathy), and joint impairment (arthropathy).

Along the path of disease to impairment and then disability, other factors come into play to influence it, e.g. cognition, education and culture, psychological factors (gender, race and age), physical environment, financial, etc. Someone with DM retinopathy may have a visual impairment, but may not be disabled by it because of a bright environment. In the night or dark room, he may become disabled. Similarly, a person with a stroke may be able to walk in the flat flooring of his own home, but outside, he can be disabled by stairs and the uneven pavement beside the road.

Important impairments to consider with regards to mobility and dependency are: lower extremity impairment, upper extremity impairment, visual/ hearing impairment, affective disorders. Someone with 3 impairments has a 60% likelihood of developing disability in the next one year compared with 7% likelihood among persons with no impairments.

CHAN KIN MING, Senior Consultant Geriatrician, Chan KM Geriatric & Medical Clinic

DISEASES THAT CAUSE DISABILITY

Diseases that result in disability can be categorised into:

Musculo-skeletal disorders – arthritis, fractures, myopathy, contractures, and amputations. Among these, arthritis is the most common cause of disability in adults⁴. It is quite obvious that any disorders in the musculoskeletal system will affect mobility. The lower limbs serve as a prop to keep the body upright. If there is a breach in that prop, like a painful joint, a fractured bone, joints that are bent (contractures); it would be difficult to maintain that posture. Weakness of muscles can result from disuse atrophy or myopathy (from diabetes, steroid induced, hyponatremia, hypokalemia, hypocalcemia, or osteomalacia). While these are common causes and should be first thought of, there are less common conditions which must be considered e.g. polymyalgia rheumatica, giant cell arteritis, which if not treated, can cause serious disabilities including blindness.

Neurological disorders – peripheral neuropathy, stroke, Parkinson's disease and deconditioning.

These causes affect muscle strength, proprioception and balance of the person, as well as reaction of the person to falls. The inability of the person to stretch out their hands (fast enough) to grab a nearby object or to break the fall can lead to higher incidences of fractured hips rather than fractured wrists (Colles fracture). This explains the higher incidence of fractured hips in older persons (> 80 years) compared to fractured wrists in the young old. In deconditioning, while all of us suffer from it as a result of inactivity, the older person seems to be affected by it more quickly. For every 24 hours of bed rest, the person loses 5% of muscle tone and this is translated clinically into weaker muscles. In addition, the longer he lies in bed, his sense of position and posture is also affected, and we often see these patients having a tendency to fall backwards when they get up. Deconditioning not only affects muscle strength and tone, it also causes muscle atrophy and joint contractures, further delaying the recovery process^{5,6}.

Psychiatric disorders – Dementia and Depression.

Dementia is a condition of global degeneration of the brain, affecting first the memory (recent memory), and later the other cognitive domains (language, executive function and visual spatial cognition). Changes in executive function and visual spatial cognition may lead to apraxia – an inability to perform a function even though muscular function is adequate⁷. Moderate or severe dementia may be associated with frequent falls, which in turn lead to the psychological fear of falling, immobility, deconditioning and contractures. They are also more frequently associated with falls related injuries (due to lack of safety awareness).

Depression is often a comorbidity of any chronic disease⁸. In any of these, it tends to worsen the condition. In chronic painful conditions, it makes the pain even more unbearable, adding sleep disturbance, poor appetite, social withdrawal and apathy to the other chronic disease symptoms. In short, the disability of the underlying chronic disease is made worse than what it actually is. For example, a stroke patient cannot walk because he does not want to try, and not because he is not able to (from the neuromuscular point of view). This should be recognised and treated early.

Both dementia and depression can lead to loss of volition for the person to do anything. They may be just contented to sit and do nothing. Even when advised to exercise, they do not see the need to do so, sometimes even insisting that they are well. Such loss of drive accelerates deconditioning.

Visual impairment

Visual impairment, from cataract, retinopathy (e.g. diabetic retinopathy), glaucoma or macular degeneration, is a common cause of ADL disabilities⁹. The disability worsens when the environment is dark or cluttered, obstructing the path of the person. Having bright lights and clutter free will lessen the disability of the person. Treating the retinopathy, maculopathy, glaucoma or cataract surgery will help to improve the condition.

Ear disease

Ear disease causing giddiness and vertigo can also cause imbalance, falls and immobility. Common causes of hearing impairment include impacted ear wax, perforated tympanic membrane, Meniere's disease or just age-related hearing loss or presbycusis⁹.

Cancer

Cancer, a common disease in older persons, causes disability through the site of primary tumour (e.g. brain, bone, and lung), secondary deposits (spinal metastasis, lung or brain secondary), complications of the tumour (bleeding causing anemia, general cachexia, pulmonary effusion, pain, non metastatic manifestations, e.g. myopathy) or complications of treatment.

AMBULATION IS NOT JUST A LOWER LIMB PROBLEM

Ambulation is not only affected by impairments limited to lower limbs – like muscle weakness, joints, and nerve problems – but also cardiorespiratory status. Walking on level ground, BK amputee uses 9-20% more energy than someone without; while AK amputee uses 45-70% more energy than the non-amputee. Those with bilateral AK amputations use 300% more energy¹⁰. So by varying walking rate, the person can compensate for the

impairment. Hence, someone with only heart problem has twice the risk of developing difficulty in walking; with arthritis, a four-fold increase, but with both, 14-fold increase.

Cardiovascular conditions include heart failure (severe enough, may become 'cardiac cripple'), and severe coronary arterial disease (unstable angina or angina with mild activity), and cor pulmonale (right heart failure secondary to a chronic lung condition). Respiratory conditions like chronic obstructive airway disease, emphysema or cancer of the lungs will also limit the functional ability of such patients through effort related breathlessness.

CONCLUSION

One should not just look at the upper and lower limbs integrity in assessing functional ability or disability, but also beyond that, to the mental and cardiovascular and respiratory status of the person.

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LEARNING POINTS

- **Disability is a restriction or lack of ability to perform an activity, usually a daily task, in a normal manner. A single disability may be caused by a number of different impairments.**
 - **Important impairments to consider with regards to mobility and dependency are: lower extremity impairment, upper extremity impairment, visual/ hearing impairment, affective disorders.**
 - **People with 3 impairments have a 60% likelihood of developing disability in the next one year compared with 7% likelihood among persons with no impairments.**
 - **Diseases that result in disabilities may be categorised into: musculo-skeletal, neurological, psychiatric, visual, ear diseases and cancers.**
 - **Ambulation is not only affected by impairments limited to lower limbs – like muscle weakness, joints, nerve problems, but also cardiorespiratory status.**
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