

CENTRAL NERVOUS SYSTEM: BRAIN AND SPINAL CORD

Macroscopic changes include

meningeal thickening, cerebral atrophy (brain weight down 10% between ages 30 and 70, and 20% by 90).

Histological changes include:

Deposits of lipofuscin in all cells, loss of RNA, mitochondria, enzymes in cytoplasm, decline in function and death of cell in neurones.

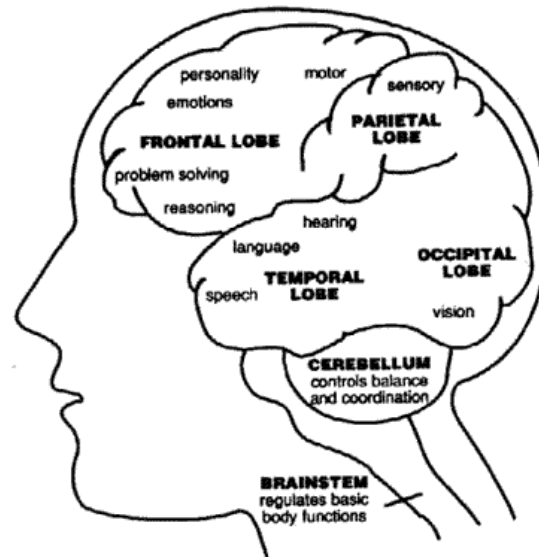
Neurofibrillary tangles and senile plaques occur.

Decrease in neurotransmitters can cause imbalance

Vascular changes include fibrosis and degeneration, atheroma that increases in extent with age, but pathogenesis is multifactorial.

Transient ischaemic cerebral episodes may progress to a complete stroke.

Although different degenerative changes occur with increasing frequency in people over 60, they have not been shown to be directly related with each other.



Reduced intellectual reserves predispose to acute confusional states. Sustained mental, behavioural and motor changes of dementia may include depression (in 10–15% over 65s), persecutory symptoms of paraphrenia plus defective appreciation or localisation of pain.

If the individual has an element of **low mood, depression or dementia**, motivation and participation may be a problem. The person or/and carer may need added emotional support plus teach the carer manual handling or specific exercise regimes. Counselling may form a large part of your role.

Conditions such as **acute confusion** may be a result of dehydration, infection or a stroke, especially if the individual is nil by mouth, so encourage fluid as appropriate. As the therapist, you will need to be aware of mood swings, and if the patient has a tendency to verbal or physical aggression, this will affect your manual handling and their understanding. Remember to assess the risk to yourself first in these cases, especially if working alone.

Sensorimotor performance is slower to achieve accuracy plus impaired sensory awareness to pain, touch, heat, cold and joint position sense. Impaired mechanism controlling posture, antigravity support, balance and moving equipoise (with nerve conduction velocity reduced 10% by the age of 75). Can be a major predisposition to falls and injury

Sleep pattern shortens, is lighter and more broken, with greater difficulty getting back to sleep again. Worst patterns are found in dementia where confusion increases in the evening or night (sundowning). **Impaired sleeping patterns** will affect the overall ability to concentrate and participate. Fatigue will also be an issue, so try and find the optimal treatment time.

Changes can result in variations of diminished intellectual responsiveness, perception, mental agility and efficiency, impaired memory and learning ability, but often not significantly so until the age of 75. Less resilient and more rigid in outlook, more self-centred, withdrawn and introverted.

Learning ability may be impaired and slower. Repeat instructions and supplement them with an exercise sheet or visual prompts and instructions. The number of new exercises may have to be limited and more time allowed learning them, with ample practice, as short-term memory may be shorter.

Conditions as TIAs, strokes and tonal changes may cause increased **anxiety or fear**, especially if the person's **balance** is affected; **falls and low mood** can be an issue. Be patient, yet firm. Initially provide more support and encouragement, acting to motivate. Visual impairment will add to the problem.