ALS/MND varies between individuals:
- Site of onset of symptoms
- Age of onset
- Progression rate
- Impact on cognition

Some gene mutations directly cause ALS/MND, and influence the type of symptoms present, while other mutations increase the risk of developing ALS/MND, and modify the symptoms present.

Some gene mutations are associated with increased risk of developing other diseases as well, such as frontotemporal dementia (FTD) or ataxia. This is called pleiotropy.

This is called gene penetrance.

Penetrance is the risk that you will develop ALS/MND if you carry an associated gene mutation.

Most ALS/MND gene mutations have incomplete penetrance, meaning there is a chance that symptoms may never develop.

Both genetic and other factors (environment, lifestyle, ageing) contribute to the development of ALS/MND symptoms.

Individuals who all carry the same ALS/MND gene mutation

Complete penetrance

Incomplete penetrance

Penetrance is the risk that you will develop ALS/MND if you carry an associated gene mutation.

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