**Pharmacotherapy while ageing**

My name is Jitka Vseteckova, and I'm a Senior Lecturer in Health and Social Care at the Open University.

There are many age-related changes that affect our body and play an important role when it comes to our ageing.

We will focus today on discussing the most important changes that affect the drug journey throughout the body by aligning the preventive steps to the Five Pillars of Ageing Well - these are nutrition, hydration, physical activity, social and cognitive stimulation.

The most important age-related changes for us to highlight today, are decrease in basic metabolic rate, and decrease in blood flow naturally occurring with ageing, as well as kidney and liver mass decrease, which further slows down the metabolisation and elimination of the medication we take.

We know that as we grow older, we are at high risk of having multiple long term health conditions, what we call polymorbidity. This often leads to the need to take several different medications to treat each condition, what we call polypharmacy. Polypharmacy, in addition to all age-related changes, may be something our body finds really difficult to deal with as we age. This is closely linking to what effect medications have on our bodies, pharmacokinetics, and the way the body affects the drug journey, pharmacodynamics.

The way our body deals with medications follows the cycle of absorption, distribution, metabolism, and elimination. Absorption is usually not hugely affected by ageing. What we need to be mindful of though, is how the drug is supposed to be taken. Whether it's on an empty stomach, with foods in the morning, afternoon, evening, and whether or not it can be taken with other drugs. Distribution may be slightly affected by age-related processes, and our already slowed metabolic rates and our decreased blood circulation. Metabolism is very much affected by age-related changes on our metabolic rate, and age-related changes on liver, which is the main organ responsible for processing the medication we take.

We need to be mindful that the ability of liver to withstand overload stress trauma, for example relating to shock state, acute illness and or injuries, decreases as well with ageing, which can make our liver more prone to not functioning optimally.

Elimination of medication via the kidney is a very much affected part of the drug journey in our body as we age. The kidney tissue tends to decrease - less of a kidney means even more slow down elimination of the drug from our body, and more of a risk of severe drug side effects due to possible toxicity, that may further affect functions of our organs, including our brain.

The big risks are that we may feel dizzy, drowsy, sedated, weak, and not keen to go out and walk, as we might be rightfully afraid of falling over and getting injured. Unfortunately when we lack exercise, we might be dehydrated. We're even at higher risk of suffering side effects of medications, so the vicious circle continues.

It is crucial to discuss with your GP, pharmacists and health visitors, how the medication you have been prescribed makes you feel, and whether the dose could be reduced or medication changed, if it doesn't make you feel well. To sum up, the main aspects of taking medications as we get older is that ageing changes result in different responses to the same amount of the same medications we might have been taking already over our lifespan.

Drugs take longer to act. If we take for example a painkiller for a headache, we may need to wait for a bit longer for the medication to take effect compared to what we were used to when younger. We should always wait for the effect though before we take more medication, because we may think this one isn't just working. It is just taking longer to work. Drugs take longer to get out, eliminated, from our body as described before.

Dehydration makes our basic metabolic rate even slower in addition to all age-related changes, prolonging the negative effect medication has on our body, if the medication stays in our bodies longer than strictly necessary.

So, what do we need to do to prevent side effects and toxicity resulting from the effects of medication on our body? The Five Pillars for Ageing Well. Keep an eye on regular nutrition, hydration, physical activity, social and cognitive stimulation.

We need to make sure we're well hydrated. Six to eight cups of water every day are close to ideal. Eat a healthy, balanced diet, and exercise regularly.

Exercise doesn't need to be strenuous or long. Every little helps. We can exercise five times a day for five to 10 minutes, if we feel we cannot exercise 20 minutes in one go - it really all adds up.