



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

Module:
Introduction to Physiology
Assessment 1:
Practical Test

Topic:
Health-related lifestyle choices

Student Name: Elena Ruseva
Student Number: 2008341

Lifestyle and the risk of stroke

LIFESTYLE:

- Affects our behaviour, attitude, personality. (NHS Choices, 2019)
- Is the key to improving quality of life.
- Can prevent or even treat diseases. (Steyn and Damasceno, 2006)
- **An adjusted lifestyle can also reduce the risk of stroke.**



Image credit: N. Vinogradova

- Lifestyle is defined by the way a person lives. It guides our behaviours, attitudes, personalities and health. Even though medical services have improved greatly in the past years, lifestyle still plays a great role in improving health and quality of life, even greater than genetics. A healthy lifestyle can prevent and even treat certain diseases. For example, a person susceptible to obesity by genetic factors can control and improve their condition by changing their lifestyle, following a diet and exercising regularly. (Steyn and Damasceno, 2006)
- A healthy lifestyle has a different meaning, depending on the person's needs and environment, which is why a tailored approach to lifestyle management is important.
- This presentation will discuss how a patient's lifestyle can affect their risk of stroke. The patient's health information and background were collected using a questionnaire, in order to tailor and provide suitable recommendations and interventions to reduce their risk of stroke. (NHS Choices, 2019)

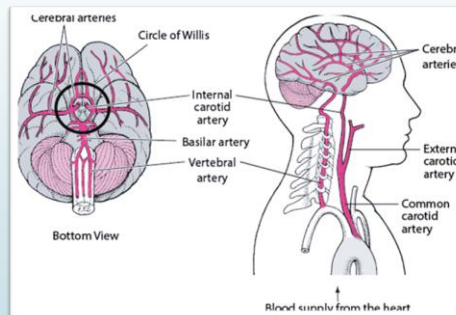
Anatomy and physiology Central nervous system

The brain:

- 2 % of our body mass
- Requiring 20% of the blood supply (Jauch and Al Kasab, 2020)

Supplied by:

- Anterior cerebral arteries
- Middle cerebral arteries
- Posterior cerebral arteries (Chawla, 2016)



ANATOMY AND PHYSIOLOGY

I would first like to provide some information about the anatomy and physiology related to strokes.

The brain and spinal cord are part of the central nervous system, while the nerves make up the peripheral nervous system, connecting the brain and the body (Chawla, 2016). The brain controls cognitive processes, vision, motor skills, breathing, and every other process that affects our bodies, by sending and receiving signals to and from the body's peripheral nervous system (www.hopkinsmedicine.org, n.d.). Even though the brain only represents 2% of the body mass, it uses up around 20% of the pumped-out blood in order to receive the necessary oxygen and micronutrients to function properly. (Jauch and Al Kasab, 2020)

Three main arteries carry blood to the brain – the anterior, middle and posterior cerebral arteries.

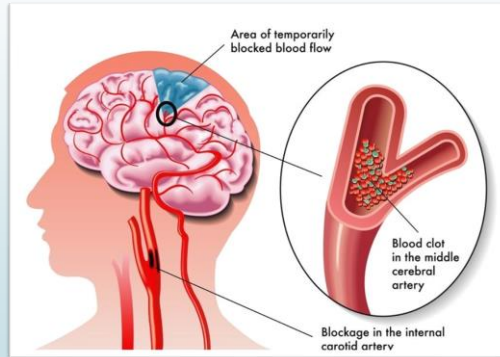
- The anterior and middle cerebral arteries branch out from the supraclinoid internal carotid arteries.
- They supply the frontal lobe, the anterior, medial and lateral portions of parietal and

temporal lobes, among others. The middle cerebral artery is the main supplier of blood to the hemispheres. (Jauch and Al Kasab, 2020)

-The posterior cerebral arteries branch out from the basilar artery and supply the posterior part of the brain, including parts of the temporal lobes, the occipital lobe, the thalamus and the brainstem.

Anatomy and physiology Stroke

- A blockage of the brain's blood supply
- 33% of cases result in death
- 33% of permanent disabilities
- Many risk factors can be controlled by lifestyle changes (NHS, 2017)



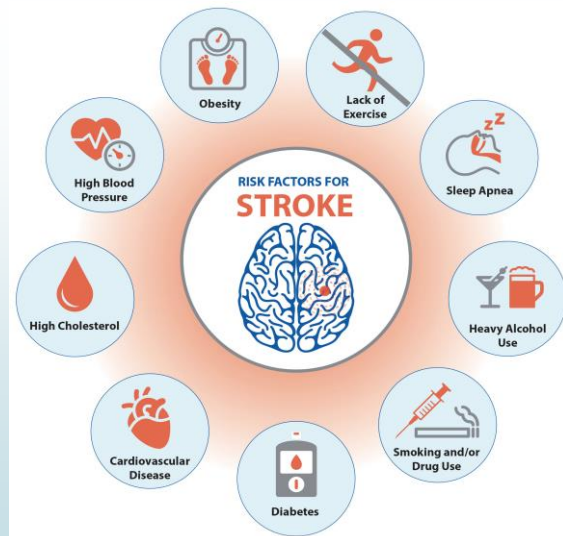
(Stroke Association, 2016)

A stroke happens when the blood supply to the brain is disturbed or stopped, which damages the neurological function of the affected area. (Jauch and Al Kasab, 2020)

Most often, during a stroke, a clot blocks the flow in a blood vessel, cutting off the supply to the brain. In some rare cases, a blood vessel in the brain will tear, causing a hemorrhage. Strokes can lead to brain injuries, long-lasting disabilities and death. (NHS, 2017)

According to the World Health Organization (WHO), about 15 million people in the world per year suffer a stroke. Of these cases, 5 million results in death, and another 5 million result in permanent disabilities. (World Health Organization, 2021)

Questionnaire and Risks



(Stroke Association, 2016)

Age - the risk of stroke increases with (Jauch and Al Kasab, 2020)

Gender – men are more likely to suffer from stroke (Jauch and Al Kasab, 2020)

Smoking – a known risk factor – increases blood pressure and reduces blood oxygen levels, can lead to irregular heartbeats (arterial fibrillation) and can increase the risk of clots. (Stroke Association, 2016)

Alcohol – is high in calories and sugar – can contribute to diabetes and obesity. Increases blood pressure. (Stroke Association, 2016). Can trigger irregular heartbeats, which increases the risk of stroke 5 times. Can cause liver damage, disturbing the blood's ability to clot.

Family history – a close family member suffering a stroke increases your risk of getting one. (Jauch and Al Kasab, 2020)

Medical history – high blood pressure, diabetes, heart disease, obesity, migraines and certain medications significantly increase the risk. (Stroke Association, 2016)

Ethnicity – some ethnicities are more susceptible to strokes (Jauch and Al Kasab, 2020)

Physical activity at work and General physical activity – lack of physical activity can worsen the risk of medical conditions such as obesity, heart disease, diabetes.

Walking pace – can help determine fitness levels

Our Mr A.:

- 45 years old
- White
- Male
- Ex smoker
- Social drinker
- Office work
- No known medical conditions
- Father had a stroke
- Takes regular walks
- At a steady pace



Mr A.

Age-45 years old, male, white

Stopped smoking 5 years ago

Alcohol per week – 1-2, social drinker

Family history – father – stroke

Medical history – clean

Ethnicity - white

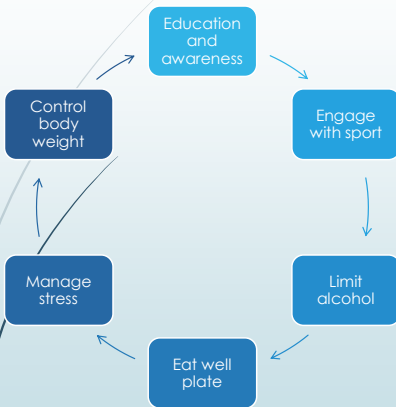
Work pattern – sitting in the office

Physical activity - Walking, including walking to work, shopping, for pleasure – between 1-3 hours

Working pace - Steady average pace

Drinking - monthly 8 drinks

My recommendations



Stroke prevention care interventions from health and social care services:

- Enjoy educational events such as **STROKE UK's Stroke Prevention Day** (Stroke Association, 2020).
- Attend Stroke Association events to learn more about stroke, its symptoms, and how to avoid it. (National Stroke Service Model, 2021)
- Take part in **Charity challenges such as Stride for Stroke** (walking 1 step for each of the 1.3 mil. Stroke survivors in the UK). (Stroke Association, 2020)

-Mr A. is at an increased risk of a stroke because of his family history, social drinking and an inactive lifestyle. First of all, it is extremely important that he educates himself on the risk factors and how to minimize them. It is recommended that he seeks the required information from a reliable source, such as his doctor. Educational events such as STROKE UK's Stroke Prevention Day might also be helpful, as it is organized specially for people at risk, and with the goal to encourage them to make changes to their lifestyle in order to reduce their risk (Stroke Association, 2020)

-Mr A. already has some physical activity in his life – walking to work and leisure, and shopping. However, to improve his cardiac health, he needs to increase his physical activity, for example by incorporating sports into his lifestyle. Another option is to take part in Charity challenges such as Stride for Stroke (walking 1 step for each of the 1.3 mil. Stroke survivors in the UK) or Spin for Stroke (cycling challenge), organized by STROKE UK which not only can increase his physical activity but also help fundraise for the organization (Stroke Association, 2020).

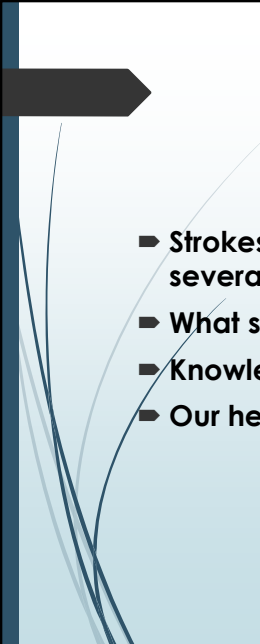
He has already eliminated one of the risk factors, by quitting smoking, but he must abstain from ever smoking again.

He is, however, a regular drinker, on social occasions, which could in the long term increase his risk of high blood pressure, diabetes and heart conditions, which can lead to a stroke. It is recommended for Mr A. quit drinking altogether, to minimize his risk of a stroke.

Additionally, it is recommended that he tries to follow a healthy diet to control his cholesterol and blood sugar, as well as drink plenty of water to promote health. One way to do that would be to follow the NHS healthy recipes list, also recommended by STROKE UK (NHS.uk, 2021).

It is important for Mr A. to get regular health checks to control for risk factors such as high blood pressure, heart health irregularities, cholesterol and diabetes.

Furthermore, stress-management courses might be of interest, in the case of identified high-stress levels, as they can worsen many health conditions and increase the risk of stroke. (NINDS, 2019)



Conclusion

- **Strokes are avoidable in nine out of ten cases and are linked to several potentially modifiable risk factors.**
- **What steps can we take to avoid a stroke?**
- **Knowledge is a powerful tool.**
- **Our health is in our hands.**

- Many stroke risk factors can be treated, and some of them can be managed quite successfully. Although there is no such thing as 0% risk, you can reduce your risk of stroke death or disability by starting early and minimising your risk factors. Stroke risk could be retained at lower than that of incidental injury or death in most age groups with effective control.
- **Having a mother, father, or another close relative who has had a stroke makes us more susceptible to having one. Although we can't turn back the clock or change our family history, we can control many other stroke risk factors if we're aware of them.**
- We can take actions to mitigate the impact of a risk factor that is damaging your health and predisposing you to a higher risk of stroke if you are aware of it

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