

MSc Public Health and Social Care in Practice

Component 1- 2 Blogs

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THE PUBLIC HEALTH BLOG

HOME>Diabetes and technology: Are Continuous Glucose Monitors (CGMs) the future to control the growth of the disease?

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Figure 1: Continuous Glucose Monitor (CGM). This is an example of a wearable device used by diabetic patients to track their blood glucose levels. The sensor is attached under the patients' skin causing a transmitter to send blood glucose readings to a mobile phone (Singh, 2024).

DIABETES AND TECHNOLOGY: ARE CONTINUOUS GLUCOSE MONITORS (CGMs) THE FUTURE TO CONTROL THE GROWTH OF THE DISEASE?

Diabetes: why is it a public health issue?

Diabetes is a chronic disease that occurs when the pancreas does not produce enough insulin due to destruction of beta cells or when the body cannot use the insulin it produces due to developed resistance (Antar *et al.*, 2023). Insulin is a hormone that regulates blood sugar levels to prevent hyperglycaemia which leads to health complications or fatality (Lee *et al.*, 2024).

The main symptoms include increased thirst, urination and appetite, fatigue, weight loss and frequent infections.

Diabetes has become a **global public health** concern as:

- It is one of the leading causes of death and comorbidities.

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- Cases are rising globally. In 1990 to 2022 cases rose from 200 million to 830 million. This is a **7% increase** in growth of the disease (WHO, 2024).
 - Diabetes is becoming a global economic burden. It is estimated that it will globally cost \$10.2 trillion (international dollars) (Chen *et al.*, 2026).
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In the UK this disease is a concern as:

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- In 2023-2024 there were 4.6 million cases diagnosed (NICE, 2026).
 - 90% of cases are type 2 diabetes.
 - 1.3 million people are likely to have undiagnosed diabetes. This means prevalence is most likely higher.
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CGM and diabetes management:

Kwon and Jun Sung Moon, 2025 CGM provides with constant blood glucose readings to patients (see Figure 1). This can be used by type 1 and 2 diabetic patients.

This device will cause patients to be more aware of their lifestyle choices which cause hyperglycaemia. If they observe high levels of blood glucose in the readings, they will be more cautious of their choices to keep healthy. This is beneficial for the healthcare system as it causes patients to be independent and aware. This awareness will cause better control of manageable risk factors that lead to increase of prevalence (see Figure 2).

The above occurs as:

- CGM creates urgency and more positive engagement towards health (Vallis *et al.*, 2023).
- CGM assists in therapeutic decision making (So Yoon and Sung Moon, 2025).



Figure 2: Diabetes modifiable risk factors. These are the most common causes of diabetes. These factors can be managed by patients to prevent them from developing hyperglycaemia. For non-diabetics or those at risk, these are the factors they need to control and make required changes to prevent from developing diabetes.

CGM: The advantages and disadvantages

CGM is utilised to promote health of diabetic patients and non-diabetic patients. This has shown to be revolutionary however it has areas of improvement. Below is a breakdown of main advantages and disadvantages of the device.

Advantages:

- ✓ No finger prick: This monitoring is painless providing comfort to users
- ✓ Assists in identifying trends in glucose levels for better care outcome (Manov *et al.*, 2023).
- ✓ Real time data sends alarms to device if glucose levels are too low or high

Disadvantages:

- × It is less reliable compared to finger prick test (Karakuş *et al.*, 2021)
- × Alarm fatigue: CGM might produce wrong data and send false alarms. There is risk of this happening frequently meaning that patients might ignore them leading to poor management (Oriot *et al.*, 2023).
- × Skin complications: This is due to constant contact with adhesive strip from monitor (Deeb *et al.*, 2018).

Addressing the setbacks

The disadvantages presented are related to data overload as the monitor analyses and reports glucose levels every few minutes.

To **solve** these problems health authorities should:

- Programme CGM to take readings at specific times of the day
- Create a period of where patients should install the device, for example, when a patient goes out to socialise
- Create levels only when they should be alarmed to prevent false warnings

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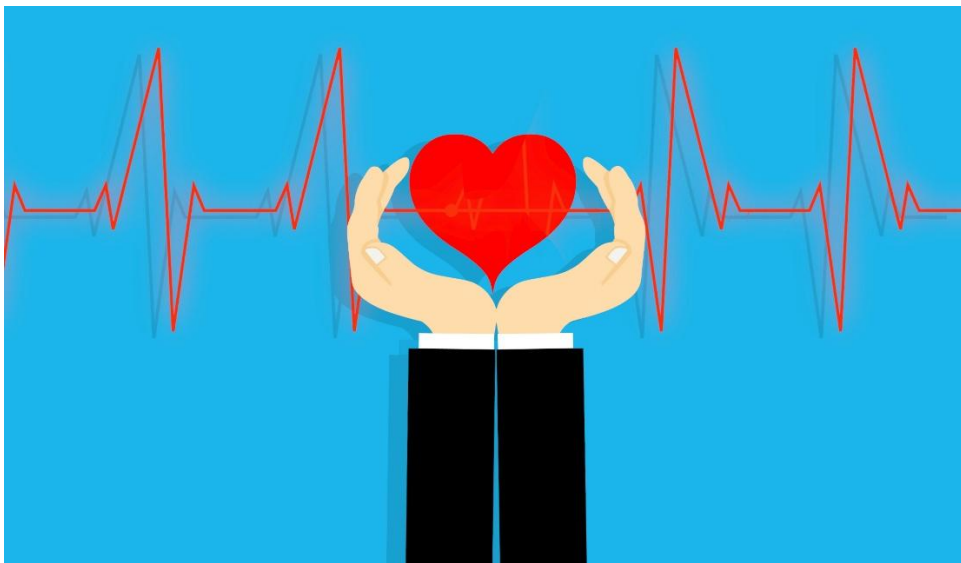
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Health and technologies

HOME> How are smart wearable sensors assisting in cardiovascular disease?

28 May 2026. Author: Cadi Salla. Estimate reading time: 5 minutes.

How are smart wearable sensors assisting in cardiovascular disease?



What is Cardiovascular Disease (CVD)?

CVD or heart disease are conditions that block or narrow blood vessels (British Heart Foundation, 2024).

Main conditions include:
-Heart attacks
-Angina
-Strokes
-Arrhythmias
-Heart failure

The risk factors of CVD are preventable factors linked to lifestyle choices meaning that reducing them will also reduce the risk of developing



For more information, watch the video above delivered by Doctor Randall Carrick (NHS England, 2026).

CVD (Stewart, Manmathan and Wilkinson, 2017).

Risk factors:

- Physical inactivity/sedentary lifestyle
- Smoking
- Poor diet
- Overconsumption of alcohol
- Stress levels

Why is CVD a public health concern in the UK?

CVD is affecting patients and healthcare systems affecting the outcomes of care. CVD is one of the **leading causes of death** in the UK (Cheema *et al.*, 2022) and there are currently 7.6 million patients living with the disease (NICE, 2025). This shows that healthcare systems are under pressure as cases are shown to be increasing (Lin, Banerjee and Lip, 2025).

This increase contributes to the economic burden that healthcare systems face. In 2021-2022, £29.021 billion (bn) was the total cost of CVD to the NHS (Shih *et al.*, 2025).

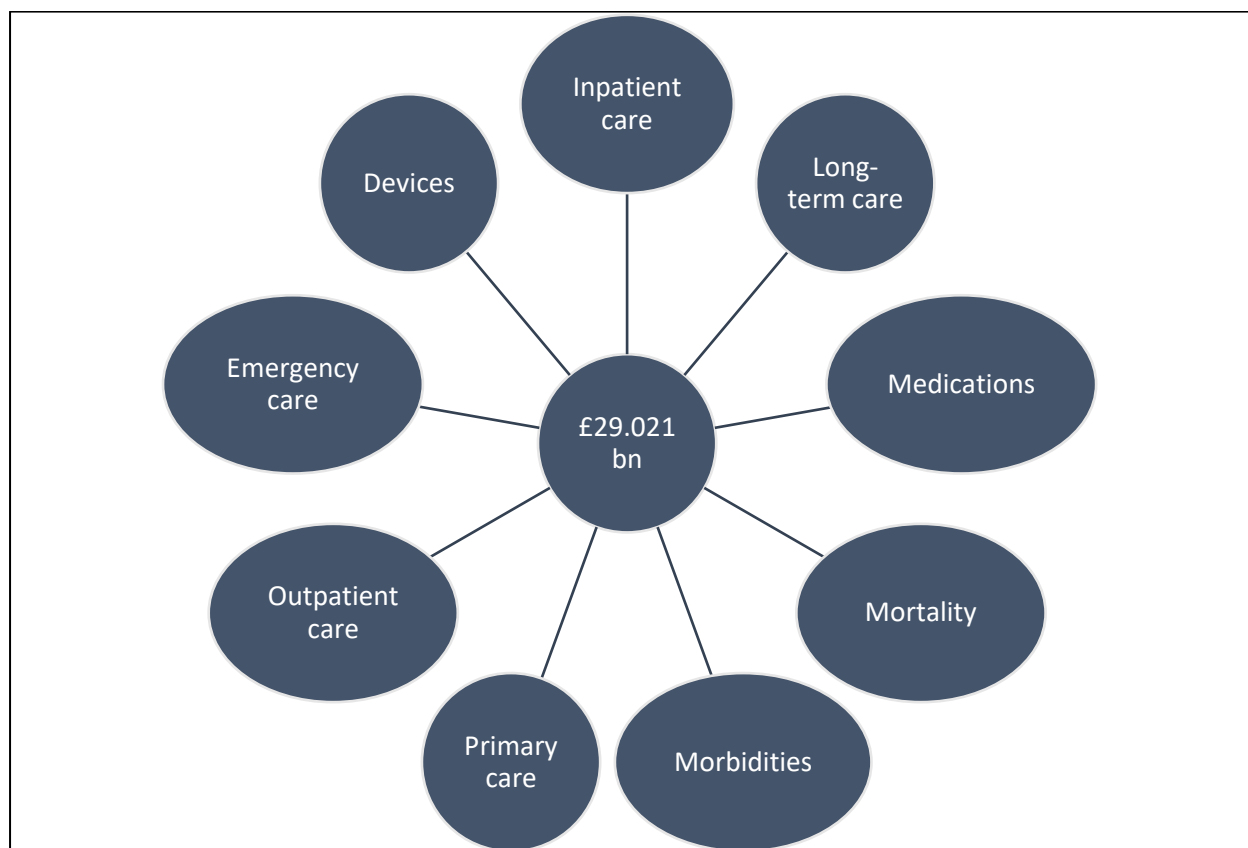


Figure 1: Cost breakdown. These are the indirect and direct costs of CVD that the NHS faces annually broken into different sections.

What are smart wearable sensors?

Smart wearable sensors are electronic devices worn on the body to collect, process and send readings related a range of physiological information (Tao *et al.*, 2023).

The information collected can include:

- Heart rate
- Body temperature
- Respiratory rate
- Blood oxygen
- Glucose levels

Physiological information can be collected by the following smart wearable sensors:

- ✓ Smart watches
- ✓ Medical patches
- ✓ Smart clothing
- ✓ Electrocardiogram (ECG) sensors
- ✓ Continuous Glucose Monitor (CGM)
- ✓ Smart rings

Smart wearable sensors in CVD

Wearing smart wearable sensors while suffering from CVD, will allow real-time tracking, personalised and non-invasive monitoring of the disease. These devices promote health and well-being by being part of monitoring and prevention leading to empowerment of patients to change their unhealthy habits (Sultana *et al.*, 2025).

An advanced medical patch: many sensors in one

Creating an advanced and improvised medical patch containing features of other sensors and Artificial Intelligence (AI).

The features that the medical device would include:

- CGM- To monitor blood glucose levels
- Heart rate- To monitor heart health
- Photoplethysmography- To detect changes in blood volume

AI would allow human-like analysis of the data collected and provide better understanding of patterns assisting patients and healthcare professionals (Moshawrab *et al.*, 2023).

This advanced medical patch which would be attached on the chest, would allow patients to receive readings on their mobile phones or other devices available every hour to ensure that they are not overwhelmed with data and to reduce risks of false alarms. Depending on the reading and AI analysis received, patients would require adjusting in their lifestyle.

Impacts of the advanced medical patch:

Below is a breakdown of the main advantages and disadvantages of the advanced medical patch:

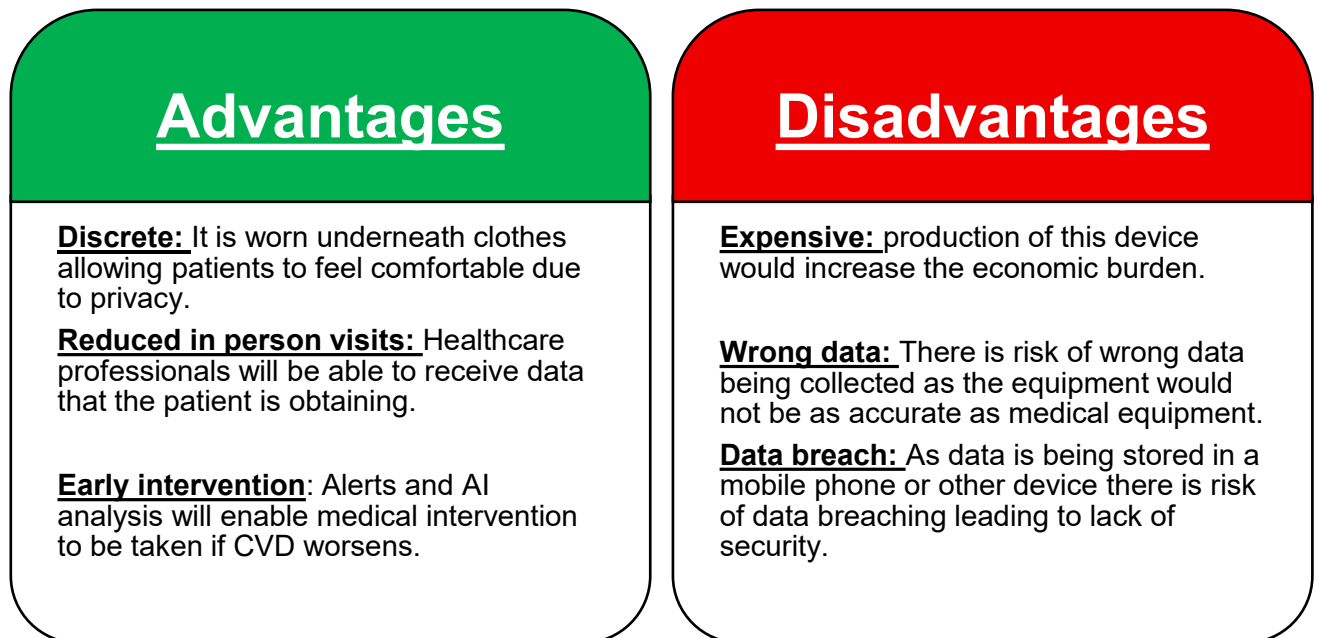


Figure 2: Advantages and disadvantages of the advanced medical patch. This is a breakdown to understand how the device would work and what aspects need to be improved.

Addressing the disadvantages

To address the disadvantages health authorities **must:**

- Invest in high security: This can be done through often updating the app to ensure that there is no data breach
- Set time intervals for data collection: This is to prevent lack of inaccuracy on readings
- Raise funds: This can be done through public events where people can share their contributions to the development of the advanced medical device.

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