Literature Review Plan

# 2.1 Introduction

There have been many studies into the need for an upgrade in the way which data is collected and displayed within the NHS, whether this be using Artificial Intelligence, IoT devices, Mobile Phones etc.

# 2.2 NHS and data collection

Talk about the way in which diseases like Parkinson’s is managed and how there’s need for upgrading.

# 2.3 IoT (in general)

Discuss how the devices are used to collects lots of data by sending the data to a server.

# 2.4 Something about mobile applications and their benefit

The mobile devices are widely used and carry a vast array of sensors and processing power. With the ability to connect to the internet and send data constantly.

# 2.5 Summary - what you have learnt for 2.2, 2.3, 2.4 and take forward to Chapter 3.

Learned that the devices can be used to manage patients and a web app can be used to collate all the data and display it for analysis by a medical professional.

This chapter will investigate the work that has been proposed already to help ensure effective care is given to patients who either live in rural areas and struggle to get to see their Doctor. Or are unable to due to their health (elderly, disabled etc).

Care for these patients is usually made up of patients either; being funded to visit their nearest Hospital/General Practitioner, A division of Nurses being used called District Nurses who make house calls or specialised Ambulance crews being sent out to collect the patient and deliver them to their appointment. This can be criticised for taking up too many of the NHS’s resources while causing unnecessary risks for the patients, nurse and ambulance crews, if the problem the patient is suffering with turns out to be of no concern. Within the clinical investigation ‘Residents: Frequency, Causes, and Costs’ it is suggested that the unnecessary hospitalisation of patients is likely to cause their health more issues due to the stress of being transferred to a hospital. The study then goes onto state that 67% of hospitalisations are avoidable and take up a great deal of NHS resources. As previously suggested, each of these methods can be time consuming for the NHS and new ways of implementing this type of care have been suggested.

The first of which is within the book ‘Stop Saving the NHS and Start Reinventing it’ by Colin Jervis, the author first goes onto explain that ‘the price of computer chips continues to fall as their power increases. It will soon be possible to chip everything’ (Jervis, 2013) Within this quote the author is using this to state computer chips can be used to tackle issues like, regional care, as well as many other issues within society and free up other resources, like Ambulance crews. Within the book, the author then goes onto state that ‘Remote devices have a lot of advantages like removing physical dependency’ (Jervis, 2013). The devices the author is referring to hear are called IoT devices or Internet of Things Devices and suggests that these could be used to take basic readings from a patient, things like a patient’s; Heart Rate, Blood Pressure, Blood oxygen etc. Readings that are hard to get wrong and can be taken simply. These readings would be sent to a server to store in a database (previously mentioned in chapter 8). From the database a medical professional can analyse the data and decide if the patient is at a high risk and needs to be seen urgently or is not of a concern.

The NHS has been sceptical with the use of IoT devices within the United Kingdom, because of this they have been going through an intensive phase. This involves “As part of an initiative to set up testbeds to pilot new technologies in the health service, NHS England and the Department of Health has awarded £10m in funding to two 'test bed' projects that it describes as "IoT-led".” (Best, 2020). One of these projects is called, TIHM or Technology Integrated Health Management. This system is used to monitor patients with Dementia, reduce the need for hospital admissions and relieve the stress on carers (Sabp.nhs.uk. (2020)). The devices used are IoT devices, they send a signal to clinicians when they detect an issue with the patient such as; falls, turning on things they shouldn’t and long-term periods of idleness. This system is an effective system; however, long periods of idleness also include; sleep, watching television etc, the devices cannot pick up on these states for a person meaning that clinicians can be misled due to these facts. Also, if a person is early on in their Dementia and are constantly getting phone calls asking why they are turning the oven on for so long it can irritate them and become an annoyance. This is a problem because the devices cannot track the progressiveness of a patient’s Dementia, meaning there is no way to combat this issue.

To tackle this, mobile phones could be used, as they are able to record the same quantity of data and have a vast array of sensors already built into them to track a person’s health. If these were used in tandem with the IoT devices a method to track a person’s vital signs. A method of tracking a patient’s progression of their disease could be created as well as measuring their vital signs, giving a more in-depth view of their state of health as compared to the TIHM system.

The use of tele diagnosis has been used in rural countries in Africa to initially diagnose a disease and then suggest appropriate methods of treating the disease. This usually occurs with a patient sending a photo of the affected area and the medical professional trying to diagnose it.