Theme 2: Living Better

There is huge potential in how technology can help us live healthier lives.

How can we use technology to help catch illnesses earlier, enable us to recover more quickly or help us stay more healthy on a day to day basis?

In this pack you will find:

- An overview of the theme.

- Examples of the opportunities and challenges within this theme.

- Probing questions and sub-themes to help you think about how technology can be used within this theme.

- Case studies of real examples of how technology is helping issues within this theme

Living Healthier Lives

We have made huge progress in improving the health of people in society, but we also face new challenges everyday.

On the next page you will find some of the challenges we face as well as the opportunities in trying to improve our health.

You can also take a look at our other themes:

Theme 1 Living Longer

Theme 3 Living Together

Theme 4 Living Greener

In partnership with
amazon

Delivered by
nesta
Challenges

1

Better Mental Health

Challenges

- **1 in 10** schoolchildren have a diagnosable mental health condition
- **75%** of young people who experience a mental health problem aren't receiving treatment.[1]

How can tech help?

- How could tech be used to help people **find help & information** about mental health ?
- Can tech be used to help **detect** potential mental health issues early?

Diagnosis & Detection

Challenges

- For some diseases early diagnosis is a life saver - cancer survival is **3x higher** with early diagnosis. [2]
- There is room for improvement with some detection methods - standard image screening for signs of cancer return a **false negative 20 - 30%** of the time. [3]

How can tech help?

- How can we use tech's ability to **monitor, analyse**, and **learn** to better diagnose illnesses?
- What kinds of **data** do doctors use to diagnose patients?

Treatment

Challenges

- There are many challenges that come with treating illnesses, disorders, or disabilities, including **cost, access** to treatment and **workload** for medical workers.
- Tech is already being used in surgical procedures today, helping surgeons reduce error during surgery, and in the creation of prosthetics.

How can tech help?

- What can we do with tech that will improve treatment of various diseases?
- How can tech help health care workers meet changing health needs?
- Can tech be used to help people with disabilities live move independent lives?
- **Assistive technology** - is technology that helps people with disabilities to perform activities that would otherwise be difficult for them.

Physical Activity

Challenges

Less than **10%** of British teenagers meet the recommended guidelines for screen time, exercise and sleep. Obesity is a common problem with **20%** of year 6 children being classified as obese. [4][5]

How can tech help?

- How can tech be used to help get and keep people active?
- Is there any information that would help people stay active? Can tech be used to analyse and share that information?
- How can tech be used to help people recover from injuries that leave them with physical challenges or disabilities?

Physical activity

Pathfinder

Path Finder is designed to enable people suffering from Parkinson's to walk with confidence on their own. It is a laser shoe attachment that provides visual cues that have been shown to help with walking.

Watch this 1:42 min video

What are the problems Smart Homes is trying to solve?	How is tech being used to help?
Some of the symptoms of Parkinson's are difficulty initiating walking, shuffling, freezing, and slow gait. These issues make people less confident in walking and significantly increase the risk of falls.	Laser shoes - These are shoes that are designed to project a green line in front of the opposite foot as a person is walking. These green lines act as sensory cues. Sensory cues in Parkinson's treatment are external signals which help people with diagnosis to initiate or continue movement. They can be visual, auditory or haptic. Visual cues are lines on the floor while auditory cues can be a beat or a rhythm. Haptic cues involve touching. Researchers conducted several studies to compare and evaluate the most effective type of cueing. Results assessed the visual cues as the most effective to help with mobility issues for people living with Parkinson's.

Are there any risks?

As a relatively simple technology the risks are quite low, but it is important to consider that these devices are being used by people with significant health challenges, and you would need to consider:

Safety: Have the shoes been properly and ethically tested? Have they been assessed and approved by healthcare professionals?

Mental Health

Woebot - and other therapy bots

▶ Watch this 5:50 min <u>video</u> on Woebot and chat-bots in therapy

Chat-bots are a term used for **AI powered chat services**.

While everybody agrees that chatbots are not going to replace real mental health care professionals, they can be a **quick** and **accessible** source of information.

Everyone has mental health, and anyone can experience challenges like depression or anxiety. Below are two recent examples from the news of how mental health can impact a person. Visit <u>https://woebot.io/</u> for more information.

▶ ● Jessy Nelson's experience with online trolling and depression <u>video</u>
  ● David Cox's experience with depression <u>video</u>

What are the challenges therapy bots are trying to solve?	How is technology being used to help?
Quick and easy access to mental health resources and/or services.	**Machine Learning - Natural language processing** Understanding human text or speech is how chat-bots work, combining this with data from experts and machine learning.

What are the risks?	
Responsibility It is important that people have access to mental health care, AI chat bots should not be a replacement for standard mental health care. How can we ensure that chat-bots are used as an extra tool and not a replacement?	**Data Security** Mental health data is very confidential. How can we ensure that the data is always kept safe? How do we make sure that people are well informed and know what the algorithms are doing with their data?

Some other examples you can check out:

- **Toilabs**
  - TruLoo, developed by Tiolabs is a smart toilet seat installed in minutes, and remotely flags issues and recommends early interventions, adding a layer of safety. It also provides health and wellness insights.
  - **Watch this video**

- **NEURO REHAB VR**
  - Provides virtual reality and augmented reality physiotherapy sessions
  - **Watch this video**

References
1. https://www.childrenssociety.org.uk/news-and-blogs/our-blog/mental-health-statistics
2. https://www.theguardian.com/society/2015/aug/10/cancer-survival-rates-higher-early-diagnosis
3. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3667799/
4. https://digital.nhs.uk/data-and-information/publications/statistical/statistics-on-obesity-physical-activity-and-diet/statistics-on-obesity-physical-activity-and-diet-england-2019#key-facts
5. https://www.theguardian.com/society/2019/aug/26/uk-teens-exercise-screen-time-guidelines
6. https://www.forbes.com/sites/charlestowersclark/2019/04/30/the-cutting-edge-of-ai-cancer-detection/#5cc0b6973363