The power of together

“If you’re talking about what you can feel, what you can smell, what you can taste and see, then ‘real’ is simply electrical signals interpreted by your brain.”

What is reality?

Morpheus, The Matrix

VR/AR - Dr Tim Ringrose

#FourHealthEmergingTech

@fourhealthmedia
VR/AR: the latest hype or a revolution for healthcare?

Dr Tim Ringrose
What is good health?

What is good healthcare?
“Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”

The World Health Organisation, 1948
What’s the matter with you?

What matters to you?
Life expectancy

![Graph showing life expectancy trends for different regions from 1960 to 2010. The regions include North America, Europe & Central Asia, Latin America & Caribbean, East Asia & Pacific, Middle East & North Africa, World, South Asia, and Sub-Saharan Africa. The graph illustrates the increase in life expectancy over time for each region.]
3.3. Life expectancy at birth and health spending per capita, 2015 (or nearest year)

StatLink: http://dx.doi.org/10.1787/888933602272
Figure 2.3. Life expectancy gains associated with a 10% change in the main determinants of health

Analysis based on 35 OECD countries for the time period 1995-2015

<table>
<thead>
<tr>
<th>Determinant</th>
<th>Gain in Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>↑ Health spending</td>
<td>3.5</td>
</tr>
<tr>
<td>↓ Out-of-pocket spending</td>
<td></td>
</tr>
<tr>
<td>↓ Smoking</td>
<td>1.6</td>
</tr>
<tr>
<td>↓ Alcohol</td>
<td>1.0</td>
</tr>
<tr>
<td>↑ Healthy diet</td>
<td></td>
</tr>
<tr>
<td>↑ Income</td>
<td>2.2</td>
</tr>
<tr>
<td>↑ Education</td>
<td>3.2</td>
</tr>
<tr>
<td>↑ Unemployment</td>
<td></td>
</tr>
<tr>
<td>↓ Air pollution</td>
<td></td>
</tr>
</tbody>
</table>

Note: ◦ stands for a contribution near zero.

StatLink: http://dx.doi.org/10.1787/888933602158
Chronic disease and age
Healthcare services are being stretched to the limit

- Increased public expectations
- Mass shortage of doctors and nurses
- Growing and ageing population

We are spending more and more on health:

20% US GDP | 10% UK GDP
The power of together
Solve a problem

Improve patient experience

Save costs
Virtual reality (VR) immerses users in a fully artificial digital environment.

Augmented reality (AR) overlays virtual objects on the real-world environment.

Mixed reality (MR) anchors and connects virtual objects to the real world.
Solving a problem
✓
Improved patient experience
✓
Cost saving ✓?
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Knowledge

Behavioural skills

Situational awareness
Use of VR for HCP training

**LIFE**: Life-saving Instruction for Emergencies

Developed by the University of Oxford to train healthcare workers across Africa

Reducing infant mortality - potential to save 1m lives

*The power of together*
LIFE: Life-Saving Instruction for Emergencies

Solving a problem ✓
Improved patient experience ✓
Cost saving ✓

www.oxlifeproject.org
Health information for patients

A high proportion of patients don’t understand their condition, their treatment and how to manage their health. Online information is often confusing and unhelpful.

Doctors & HCPs don’t have time to provide comprehensive information and training.

In Europe, non-adherence to medication contributes to over 200,000 deaths per annum and costs the economy €125 billion each year.¹ It also contributes to 23% of admissions to nursing homes and 10% of hospital admissions.

¹ https://social.eyeforpharma.com/column/adherence-and-patient-support-programs
Medication Adherence – 5 dimensions

- Social & Economic
- Healthcare team & system-related
- Condition-related
- Therapy-related
- Patient-related

键入

EDUCATION

World Health Organisation
Prescribed interactive health information

Immersive content prescribed by doctors/HCPs to enable patients to understand:
- their condition
- the reason for their medication
- how they can manage their health most effectively

Data from patients provides highly valuable real world insight into compliance issues, unmet needs and patient satisfaction.
An introduction to cardiovascular disease
Example curriculum

• Why is my doctor prescribing this new treatment?
• How do biologics work to treat my Arthritis? (3D animation)
• How do I use the treatment? (Administration training, storage, delivery, disposal etc)
• What do I need to be aware of when I am on this treatment? (Vaccinations, interactions, monitoring, intercurrent illness etc)
• Frequently asked questions, e.g what do I do if I want to go on holiday?
• What do I do if I have a question or need help?
• Options:
  • Pain/stress relief games
  • Patient diary (pain scores etc)
Accessibility

**VR headsets** such as **Oculus Rift** and **HTC Vive**

Full rich experience and interactivity

**VR-capable smartphones** (Daydream/Google Cardboard)

Retains 3D features and majority of interactivity

**Smartphones**

Content seen in 2D but retains “immersive quality”

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