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BHUMA



Founded in 2011, we want to create a world where every person lives their life to the fullest.





The potential of data & digital

We continually collect terabytes of digital data on ourselves every day. Successfully harnessing this information could revolutionise Life Sciences.



90%

of all data created in the last two years

> 2.5 Quintillion

bytes of data created per day globally





The potential of data & digital

We continually collect terabytes of digital data on ourselves every day. Successfully harnessing this information could revolutionise Life Sciences.

Foundation

- Digital architecture and infra-structure
- Data management and standards
- Data safety and integrity
- Collaborative interfaces

Opportunities

Business Model Innovation

- Patient-centric solutions
- Real-world outcomes
- Consumerisation of healthcare
- Non-molecular revenue streams • Health apps and lifestyle "smartisation"

R&D Acceleration

- Real-world evidence
- Precision medicine
- Translational medicine
- Adaptive (pre) clinical trials

New Commercial Models

- Multichannel apps & tools
- Caregiver relationship mgmt
- AI caregiver decision support

Smart Operations

- Digital factory
- Batch of one
- Prescriptive analytics
- Machine learning





The potential of data & digital

Beyond the immediate commercial opportunities, data can also help us to better manage patient care and improve outcomes



ACTIVITY PROGRAMS

HEALTH GOALS

ADHERENCE PLANS

REMOTE MONITORING

99%

The percentage of time patients with chronic and rare diseases spent outside of care

Ob

The amount of data and information collected while patients are outside the care system







Our software

Built on a flexible, modular infrastructure which enables us to develop and launch different versions tailored to specific indications. Patients access the app via the App / Google Play store, and access their deployment via a unique registration code.

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	120/80 mmHg Today 15:35 • Two times a day	Add
	Temperature	√ Seen
biobeats	38 ℃ Yesterday 12:08 • Once a day	Add
•	Heart Rate	
	67 bpm Today 13:23 • Once a day	Add
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Huma has a library of many different core and a growing list of 3rd-party modules that can be configured to support projects

Device agnostic with the ability to connect to and capture data from 400+ connected devices, wearables, and sensors.







Learn and education section for the delivery of content to drive patient empowerment and self management

Only requires smartphone, but can integrate external devices / wearables



Configured to monitor patient safety & flag deterioration in COVID-19 patients



Our software

Our web-based data dashboard provides an overview of individual patient data and progress, functionality for tele-medicine visits, rules-based prioritisation and HCP data entry. Data is securely hosted on the cloud and can be anonymised / exported to .csv file.

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Configured to monitor & flag deterioration in COVID-19 patients



Web-based portal enabling secure multi-device login via password



ADDRESSING THE UNMET NEED IN **HEALTHCARE**:

There is a need for greater access to care outside of a conventional setting, that helps to both ease pressures on healthcare systems, and empowers patients to better manage and understand their own health.

OUR SOLUTION:

EPISODIC CARE

Connecting clinicians with patients to provide care at home through virtual wards, preventing avoidable hospital visits, supporting discharge and rehabilitation

Better care



CHRONIC DISEASE MANAGEMENT

Providing continuous monitoring and education to help those living with chronic/long-term conditions to better understand, and manage their health

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EPISODIC CARE

CHRONIC DISEASE MANAGEMENT





COVID-19 remote patient monitoring (RPM) solution

Huma is live with a COVID-19 RPM Virtual Ward solution across ten NHS sites in London and the South East (supported by NHSx), as well as a national deployment in Germany (across multiple hospitals and GPs), and are supporting the COVID-19 response in the UAE.

Remote care for people living with Type 2 Diabetes

Huma & Discover-NOW have partnered to offer remote care for people living with high risk Type 2 Diabetes. Through video consultation and remote monitoring, patients are seen more regularly, and their data is reviewed more frequently, to reduce cost and improve patient satisfaction.

EPISODIC CARE



Supporting patients undergoing knee/hip replacement surgeries

Huma and Smith & Nephew partnered to remotely support patients before and after knee/hip replacement surgery. The solution allows surgeons to assess pre-op readiness, monitor for complications and measure outcomes of the surgery, while optimising and supporting patients throughout the pathway.



EPISODIC CARE



COVID-19 remote patient monitoring (RPM) solution

Huma is live with a COVID-19 RPM Virtual Ward solution across ten NHS sites in London and the South East (supported by NHSx), as well as a national deployment in Germany (across multiple hospitals and GPs), and are supporting the COVID-19 response in the UAE.

94%

Patient adherence*

Solution shown to double capacity

1 million **Devices shipped**

*During 94% of patient days, patients reported oxygen saturation and heart rate data. Data collected between 20 April - 18 August 2020 (n=274)



ADDRESSING THE UNMET NEED IN LIFE SCIENCES:

There is a need for more accurate, comprehensive real-world data, to support all areas of Life Sciences including clinical trials, post-approval research, real-world monitoring, and companion products.



DECENTRALISED CLINICAL TRIALS

Accelerate recruitment and timelines, enhance data collection to better inform critical decisions. Reduce patient burden to deliver more accessible and patient-centric research

OUR SOLUTION:

Better research

COMPANION PRODUCTS, RWE & DTx

Improve adherence, provide education and enhance overall patient experience while collecting valuable real-world data.

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COMPANION PRODUCTS

DECENTRALISED CLINICAL TRIALS



BreeConnect[®] app to support PAH patients

Huma is working with Bayer to support Pulmonary Arterial Hypertension (PAH) patients track their Breelib® dose intake, adherence, health and activity. The patient app provides insights into effectiveness of medication delivery, if adjustments need to be made, and provides information on measures associated with deterioration in PAH.

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Temperature 38.5 -		
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Blood Pressure		_

Decentralised clinical trial in Atrial Fibrillation

Huma is working with Bayer, in collaboration with Stanford Medicine, conducting a decentralised clinical trial in Atrial Fibrillation. Integrated with a 6-lead ECG device and BP cuffs, the solution enables recruitment, consent, data collection, follow-ups and data analytics, all done virtually, The study is generating evidence for Bayer to conduct

REAL WORLD EVIDENCE



RWE collected from patients undergoing knee/hip replacement

The data collected from patients undergoing knee/hip replacement surgery helps clinicians and Smith & Nephew to better understand the outcomes of this surgery, and the effectiveness of medical devices/implants. The data also helps Smith & Nephew's R&D division develop improved technologies to deliver better outcomes.









Data capture & analytics to power predictive capability



Early detection of Alzheimer's

In partnership with Johnson & Johnson, Huma are developing and validating a digital biomarker focussed on early detection and monitoring of Alzheimer's disease, through assessing verbal recall via voice recognition technology.



Parkinson's severity biomarker

Huma and Tencent partnered in developing a digital biomarker that quantifies the motor fluctuations of Parkinson's disease in a more objective and accessible way, enabling improved monitoring of progression and response to treatment. The technology has the potential to reduce cost, allow real-time adjustment of therapy, reduce long-term complications and improve overall disease management.



Breathing rate

Huma is developing a technology that allows a patient to capture their breathing rate utilising the motion sensors of the smartphone. Tracking changes in breathing gives patients and their clinicians a chance to spot early warning signs of deterioration in a range of conditions, including COVID-19.



TARGETED TREATMENT

Lookingto the future



MENTAL HEALTH MANAGEMENT



VACCINE DEVELOPMENT



In Development COMPANION APP: COVID-19 VACCINATION



VACCINE DEVELOPMENT



Identify

Determine if participant has had / been tested for COVID-19 infection

Complete COVID-19 Severity Risk score (jointly developed with John Hopkins)

Record COVID-19 test results and determine eligibility



What vaccination treatment will you be undergoing? ines are one of the most important ols in combatting infectious disease. But ey come at a cost – development is a nt illness, so the rigour to which

Educate

Provide information on treatment to help build grassroots advocates

Share e-PIL for therapeutic and capture consent

Provide information on potential side effects and how these can be managed





Treat

Participants find out how and where to get treatment and schedule an appointment

Record batch number, date of therapeutic and location and other information

In-app notifications provide reminders for top-up doses



Monitor

Patients able to selfmonitor symptoms post vaccination, with companion app symptom tracker



Reassure

Up-to-date information on COVID-19 & what to do if you have symptoms

If symptoms deteriorate patient can be follow-up via Huma's RPM solution (incl. telemedicine) used by national governments incl. Germany, UK)



In Development biobeats: **mental health**

BioBeats is a validated wellbeing programme for predictive and preventative mental health support.

Through an app and wearable device, health data such as heart rate, sleep patterns, activity, and mood are collected in real-time. This allows BioBeats to calculate your baseline wellbeing score and provide personalised support.

BioBeats recommends relevant tools to help people feel better, such as evidencebased therapies within the app, known as digital therapeutics and forms of biofeedback therapy, such as deep breathing exercises and mindful meditation.

Throughout the day BioBeats follows your health data and notifies you when something doesn't look right – e.g. heart rate is above average.

16.5% decrease in anxiety*



MENTAL HEALTH MANAGEMENT





In Development ECOG 2.0: ONCOLOGY



Novel Performance Measurement

The ECOG performance scale is an integral part to the MDT discussion at every aspect of patient care. However, it is a broad and discrete categorisation score which aims to encompass a spectrum of functional ability. Although its simplicity is part of its advantage, it means that we lose some of the vital information required in assessing a patient's suitability for treatment regimes. We hope that by combining the results of a number of clinically validated outcomes collected via a mobile device (e.g. steps) into a new score, we can provide the resources for a more informed HCP led decision regarding treatment initiation, treatment cycles, change of treatment, and initiation of palliation.



TARGETED TREATMENT



Harnessing data & digital to improve outcomes

By interacting with patients and better understanding their lives and conditions, we are creating novel ways to quantify health.

At Huma we imagine a world in which each of us has a series of digital biomarkers; unique signatures created from our health, care and behavioural data that enable people to intervene at the earliest possible moment to prevent cancer, Alzheimer's or heart disease. In short, a unique individual health, care and behavioural signature, one that enables each of us to receive truly personalised healthcare.

We hope that by harnessing the potential of data and digital we can achieve our vision - creating a world where every person lives their life to the fullest.



Our vision

Creating a world where every person lives their life to the fullest.

