SHERLOC

AI | EARLY DETECTION

Raj Jena | For the SHERLOC consortium

CANCER RESEARCH UK

SHERLOC aims

- Build an AI platform for the early detection of cancer using both clinical and non-clinical data

- Learn from clinical records, medications, loyalty card and search histories from patients diagnosed with lung, bowel, oesophagus, pancreas and brain

- Explore Ethical, Legal, Societal issues

- Pilot the study using the Greater Manchester Connected Health Cities initiative

SHERLOC motivation

- Reduce emergency presentation of these five cancer types
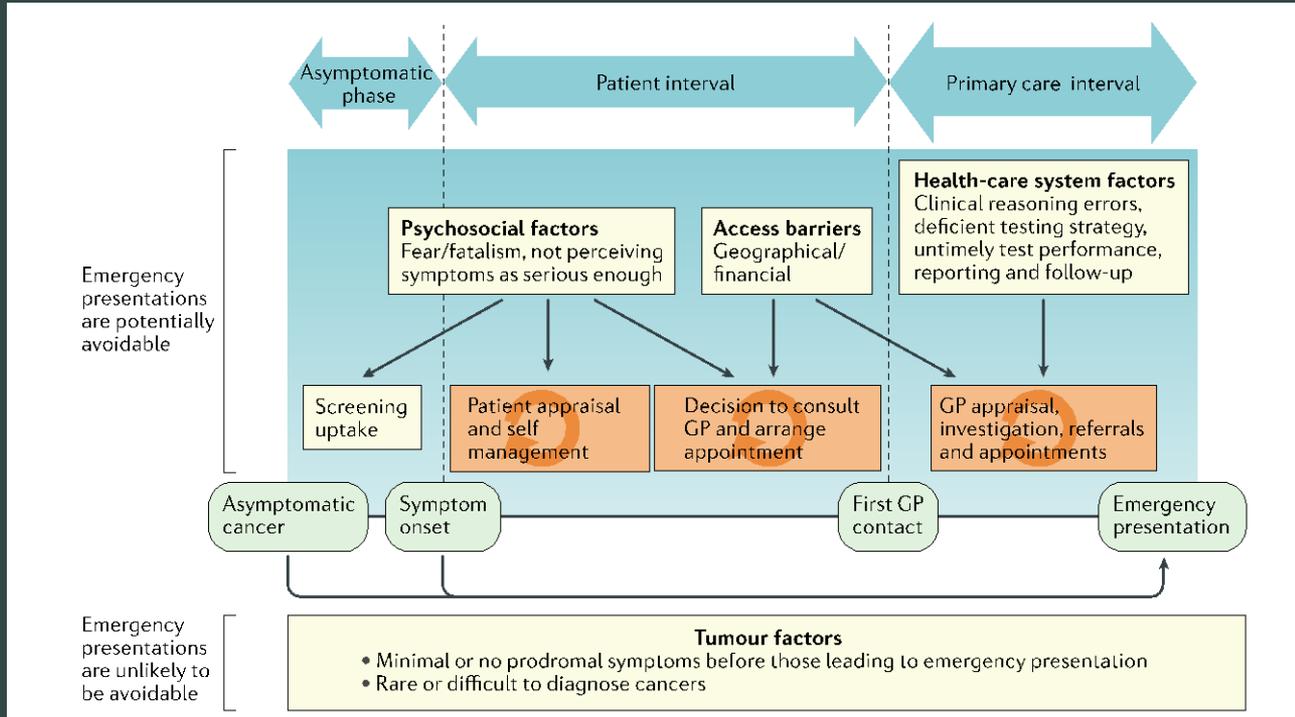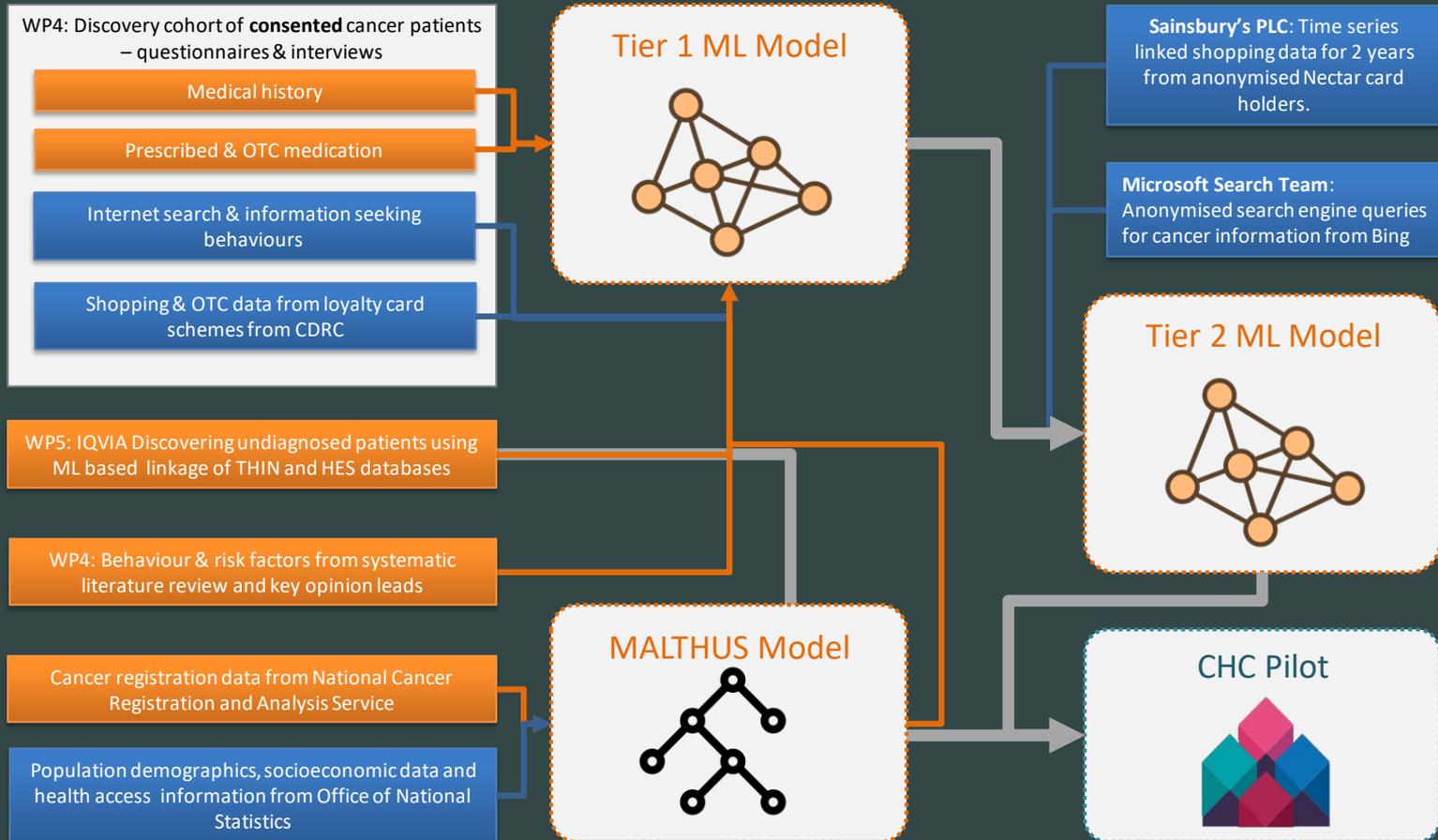
Output for pilot study

LHS such as Manchester Connected Cities

SHERLOC Data Network

Commercial Data

Cloud based analytics engine

SHERLOC Research Platform
Azure | Power-BI | Ethereum | ML

Primary Care

Secondary Care

Linked data curation

Decision Support

Care Quality Reports

Research Engine & Reporting Interface

Authorisation Gateway

Mandatory audits

Health avatar

FAIR Station

Malthus discrete event simulation engine

NCRAS / ONS data

Authorisation Gateway

Shopping / OTC Rx data

Prescribing data

Search

Engagement with patients and citizens
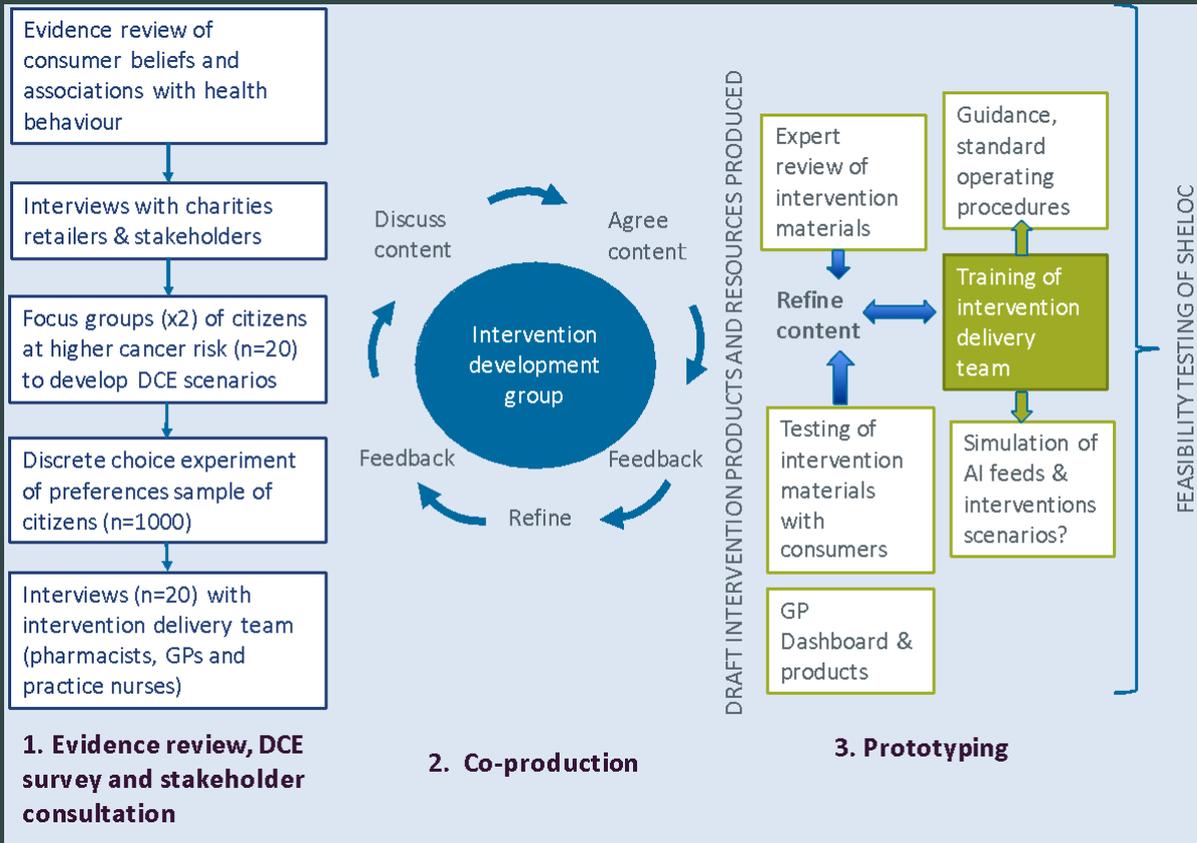
DCE for 1000 patients and citizens

5.6 A Patient has been diagnosed with Lung cancer (non-small-cell lung cancer). His doctor asks him to decide between treatment A and treatment B. Which treatment would you choose?

Characteristic	Treatment A		Treatment B	
Time without tumor progression	Medium	11 months w/o progression — 2 years overall survival	Medium	11 months w/o progression — 2 years overall survival
Side effect of Skin	Moderate		None	
Nausea and Vomiting	Mild		Severe	
Diarrhea	Moderate		Moderate	
Tiredness/Fatigue	Mild		Severe	
Tumor related symptoms	Severe		Mild	
Mode of Administration	Infusion		Tablet	
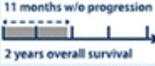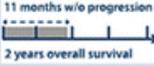
SHERLOC consortium

- NPL / University of Surrey : Sara Faithfull, Rebecca Nutbrown

- University of Stirling : patient approach and questionnaires

- University of Cambridge : ML development

- Microsoft : Search queries and cloud integration

- Sainsbury's : Loyalty card data

- Maastricht : Open data, interoperability, ELSI