Using technology for decision science and patient benefit

21 February 2018
University of Manchester Research IT

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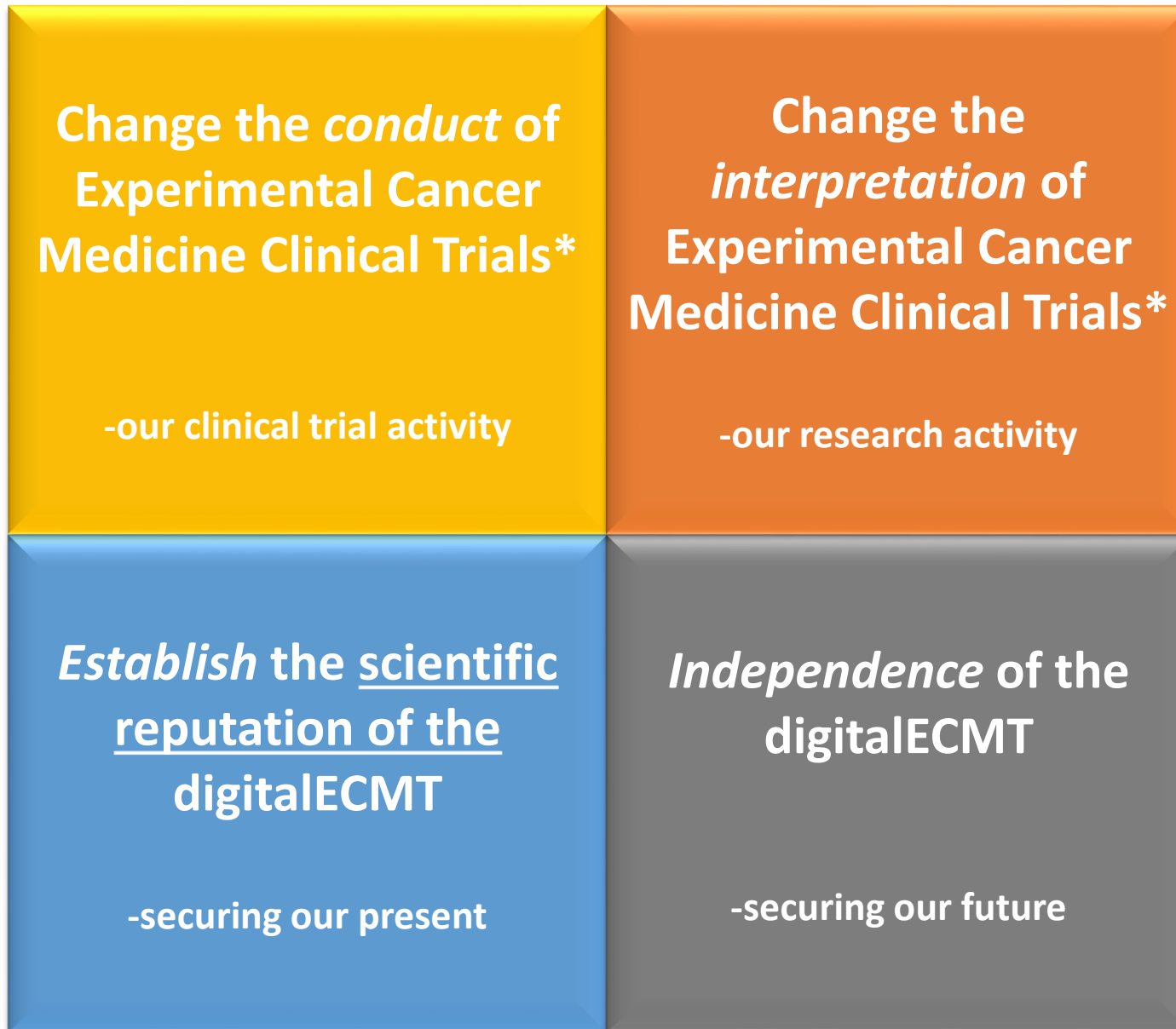
digitalECMT Mission statement

Mission

"We innovate and apply digital science to transform early clinical trial decision-making and the patient's role"

How is this achieved?

- *Through innovation and the application of digital science we enable better clinical trial decision-making and we change the patient participation in early clinical trials*

Four important strategic objectives

Change the *conduct* of Experimental Cancer Medicine Clinical Trials*

-our clinical trial activity

Change the *interpretation* of Experimental Cancer Medicine Clinical Trials*

-our research activity

***Establish* the <u>scientific reputation of the</u> digitalECMT**

-securing our present

***Independence* of the digitalECMT**

-securing our future

*Defined by CRUK/NIHR as Phase I and non-randomised Phase II

# Engaging patients, driving decisions

- Digital Experimental Cancer Medicine Team (ECMT) delivers iDecide

- iDecide research programme – an innovative 5-year collaboration between AstraZeneca, the University of Manchester Institute of Cancer Sciences, the Centre for Cancer Biomarker Sciences and the Christie NHS Foundation Trust

The Manchester collaboration… brings together AstraZeneca and clinicians at Europe's largest cancer hospital, University of Manchester scientists and Cancer Research UK."
Professor Andrew Hughes, Clinical Lead for Manchester Experimental Cancer Medicine

Manchester Cancer Research Centre (MCRC)
United Vision: Driving cancer research and personalised medicine

| The Christie NHS Foundation | Experimental Cancer Medicine Team (ECMT) | CRUK Manchester Institute (MI) | The University of Manchester |

digitalECMT
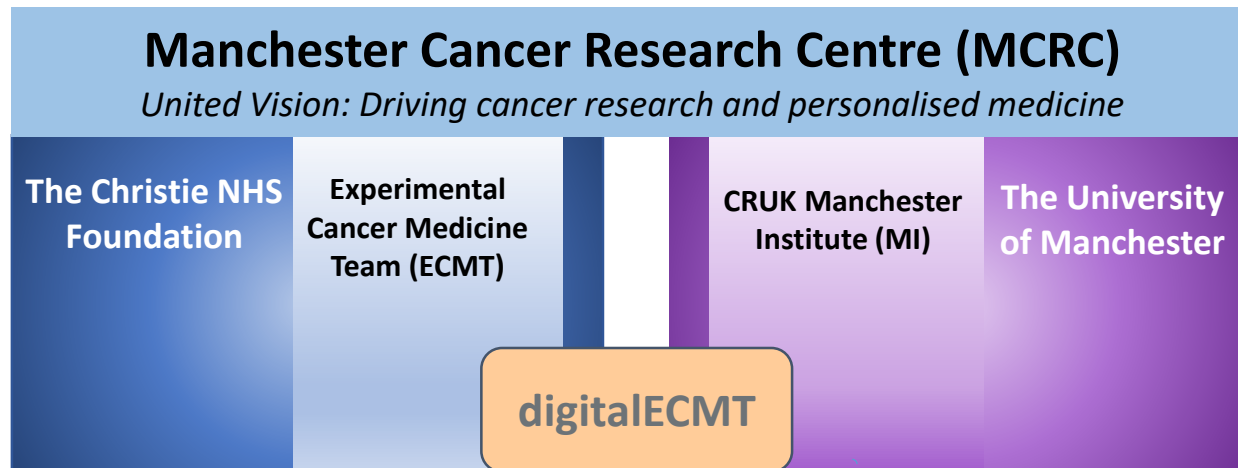
Innovation and application of digital science to transform early clinical trial decision-making and the patient's role
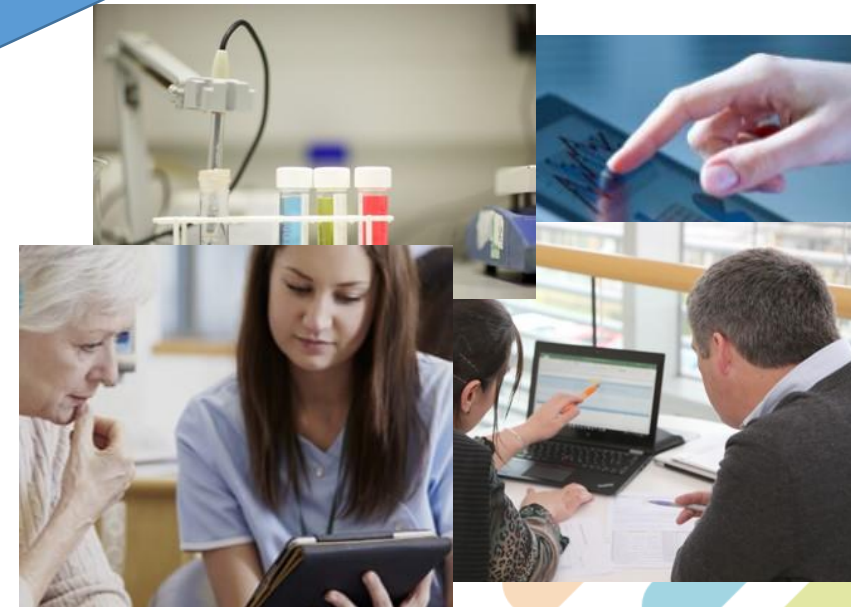
Engaging patients – PROACT (Patient reported outcomes about clinical tolerability)

Hughes, A et al. Adv Ther (2016) 33: 1012. https://doi.org/10.1007/s12325-016-0335-4
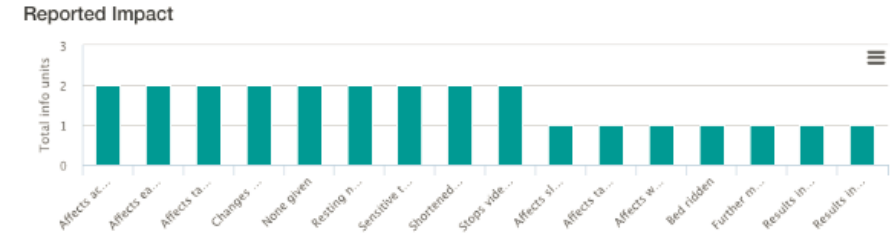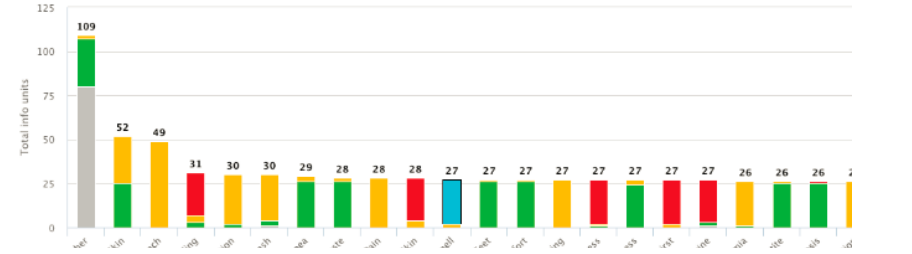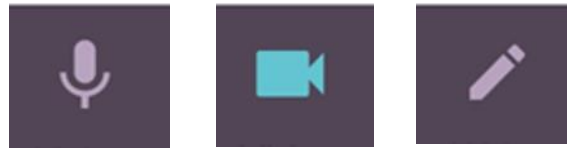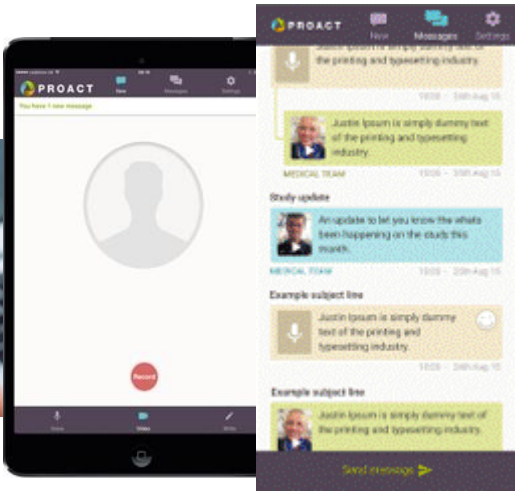
Integrating clinical and genomic data - REACT

- REACT (REal Time Analytics for Clinical Trials) - an advanced visual analytics system

- Enables earlier understanding and interpretation of patient benefit-risk and agile study design

- REACT informed Tagrisso Ph2/Ph3 study designs (AstraZeneca)

- Previous sponsor studies have involved > 200,000 patients

Adverse Events view

Oncoprint view

iDecide research programme_AstraZeneca.com
REACT_real-time analytics for clinical trials_AstraZeneca.com
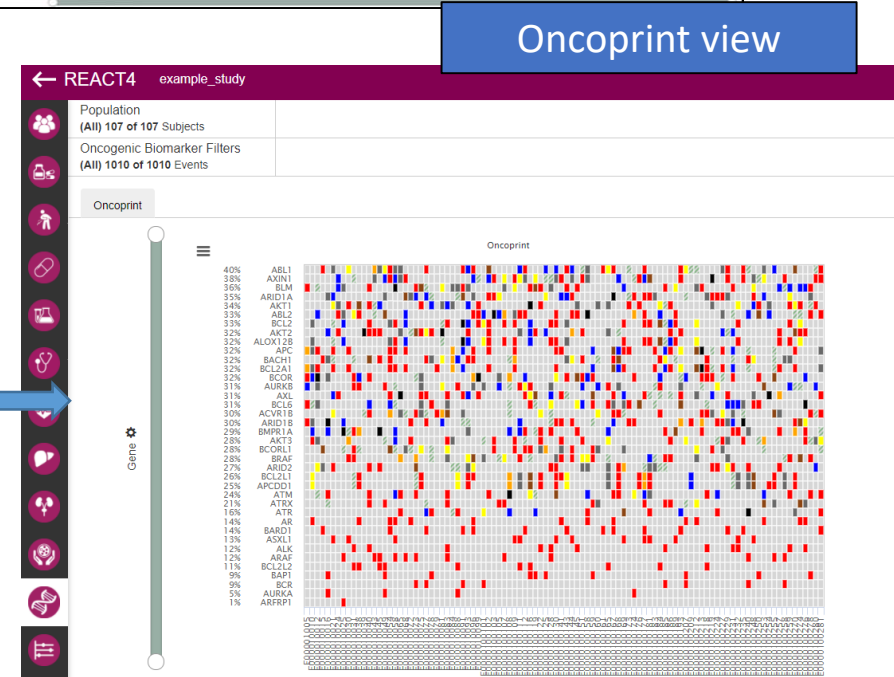
Clinical algorithms – changing the conduct of early clinical trials

Digital Experimental Cancer Medicine Team

Nephro-oncology – a hospital-in-the-home approach

- **Aim** – to allow patients with impaired but stable renal function access to early trials

- **Research questions** – can patients measure creatinine levels at home as part of renal function monitoring? Is the clinical algorithm reliable?

- Device selection ✓
- Clinical algorithm implementation ✓
- Patient acceptability ✓
- Broader feasibility planned for 2018

POC Creatinine test > Rules > Triggers

POC creatinine test

REACT4
Demographics
Data visualisation

Watcher
Rules engine

Patient
Patient app
Medical professional
Physician app

Manuscript in development
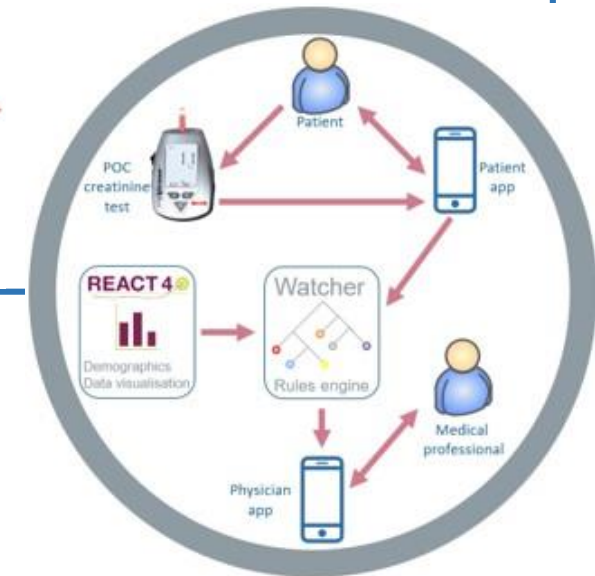
eTARGET - technology makes light work of hard decisions

21 February 2018
University of Manchester Research IT

Dr Julie Stevenson
Senior Business Analyst – digitalECMT/CRUK Manchester Institute

BACKGROUND

- TARGET* program established in 2015 at The Christie

  o Provide recommendations for the clinical management of patients with advanced solid cancer

  o Tumour biopsy and circulating tumour DNA (ctDNA) are screened for genomic aberrations

  o Results are discussed with clinical data by the Molecular Tumour Board (MTB) once a month

*Tumour ChAracterisation to Guide Experimental Targeted Therapy

CHALLENGES FACED BY MTB

- MTB not co-located
  - The Christie, CRUK MI, Genomic Diagnostics Laboratory (GDL)

- Three separate reports per patient
  - On average 10 patients per meeting so a lot of "paper"

- Different organisations with different data storage systems

- Reports circulated two days prior to meeting

- Discussion is recorded in yet another document

- Data integration and interrogation done manually
  - Time-consuming
  - Transcription errors

AIM

- To integrate clinical and genomic data from the TARGET trial to improve:

    o the running of the MTB meetings

    o data interrogation

SOLUTION: eTARGET

Challenge	Solution
Members of MTB not co-located	Skype meeting – all looking at same view Web application
Too many reports per meeting	Single patient view bringing data together
Availability of data - reports circulated two days prior to meeting	Can upload data as soon as it becomes available Web application accessible 24/7
Discussion is recorded in yet another document	Captured within eTARGET
Data integrated manually	Automated extraction and integration

Manuscript in preparation

PROGRESS

- **Phase I – Prototype completed end of May**
  - o Database manually populated with clinical and genomic data
  - o Some basic views of the data

- **Phase II – Ongoing**
  - o Completed the views of the data
  - o Established automated extraction of clinical and genomic data into database
  - o Added functionality to capture significant variants and outcome of the meeting
  - o Migrated the system to a secure managed production environment
  - o Added functionality to specify user roles

RESULTS

Challenge	Solution
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SUMMARY

- Developed a digital solution which integrates clinical and genomic data from disparate sources in different organisations

- Beta version has been supporting MTB meetings at The Christie since October 2017

- Further development planned

ACKNOWLEDGEMENTS

- University of Manchester
  - Rob Dunne

- CRUK Manchester Institute
  - Mahmood Ayub (CEP)

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  - Derek Barley

- The Christie
  - Matt Krebs
  - Jo Dransfield
  - Elwyn Shing

- Microsoft
  - Mike Westaway

- SCC
  - James Complin (now at Microsoft)

Thank you

Engaging patients, driving decisions

Digital Experimental Cancer Medicine Team

www.digitalecmt.org