NIHR | Innovation Observatory

Overview of our internal systems and external tools to support horizon scanning

Professor Dawn Craig
on behalf of the IO Team

email: dawn.craig@io.nihr.ac.uk
twitter: @dawn_craig

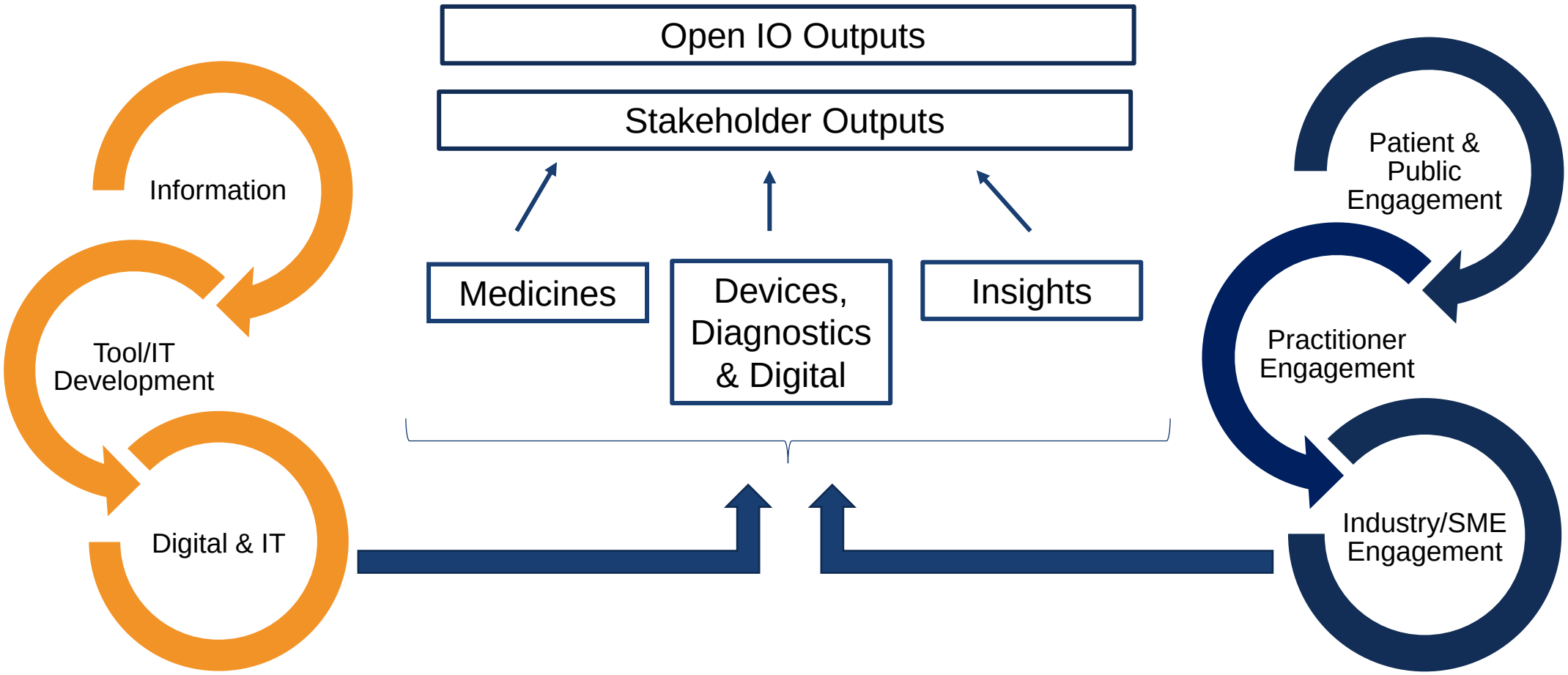
Who we are

- National Horizon Scanning and Intelligence Research Centre – funded by NIHR (National Institute for Health and Care Research) based at Newcastle University, UK
- Providing national stakeholders with the intelligence to support the delivery of the most valuable/useful innovation into the NHS to benefit patients
    - We share intelligence to enable
        - regulatory processes & market access
        - industry to innovate
        - NHS to implement
        - citizens needs to support and drive innovation
        - NIHR to support and prioritize research

Innovation Observatory Research Programmes

- **Medicines** - *providing timely data and intelligence on 'innovative medicines' in the development pipeline for human use*
- **Devices, Diagnostic and Digital** – *identifying new & emerging MedTech innovations with the potential to address unmet health needs*
- **Insights** – *capturing patient, public and practitioner insights to inform & empower appropriate, timely innovation*
- **Industry** – *engaging the SME community to enable innovation into the NHS*
- **Digital & IT** - *continuously developing/augmenting our cloud-based IT systems & AI tools to ensure they are fit for purpose and utilise the latest technologies in the digital and data processing space*
- **Information** – *underpinning the programmes with robust evidence & data identification and retrieval methods*

Integrated working



Core objectives

- To drive innovation in healthcare innovations through intelligence/evidence scanning, translation and dissemination
- To provide horizon scanning intelligence/evidence to several national agencies, including - NICE, NHS E/I, Accelerated Access Collaborative, MHRA, UKRI, DHSC
- To develop and deliver world class futures scanning tools to facilitate sharing of intelligence/evidence
- To capture citizen insight and unmet need to drive appropriate innovation development and uptake
- To disseminate and publish methods and insights that will enable innovation into the NHS

Through the lens……..

Established:

- Children's health and Wellbeing
- Ageing
- Under-represented populations

Exploring:

- Rare disease
- Multiple long-term conditions

Within our work we are seeking to

Promote partnership across our stakeholders

Gather and share health & care intelligence

Develop methods & tools to support

Systems….

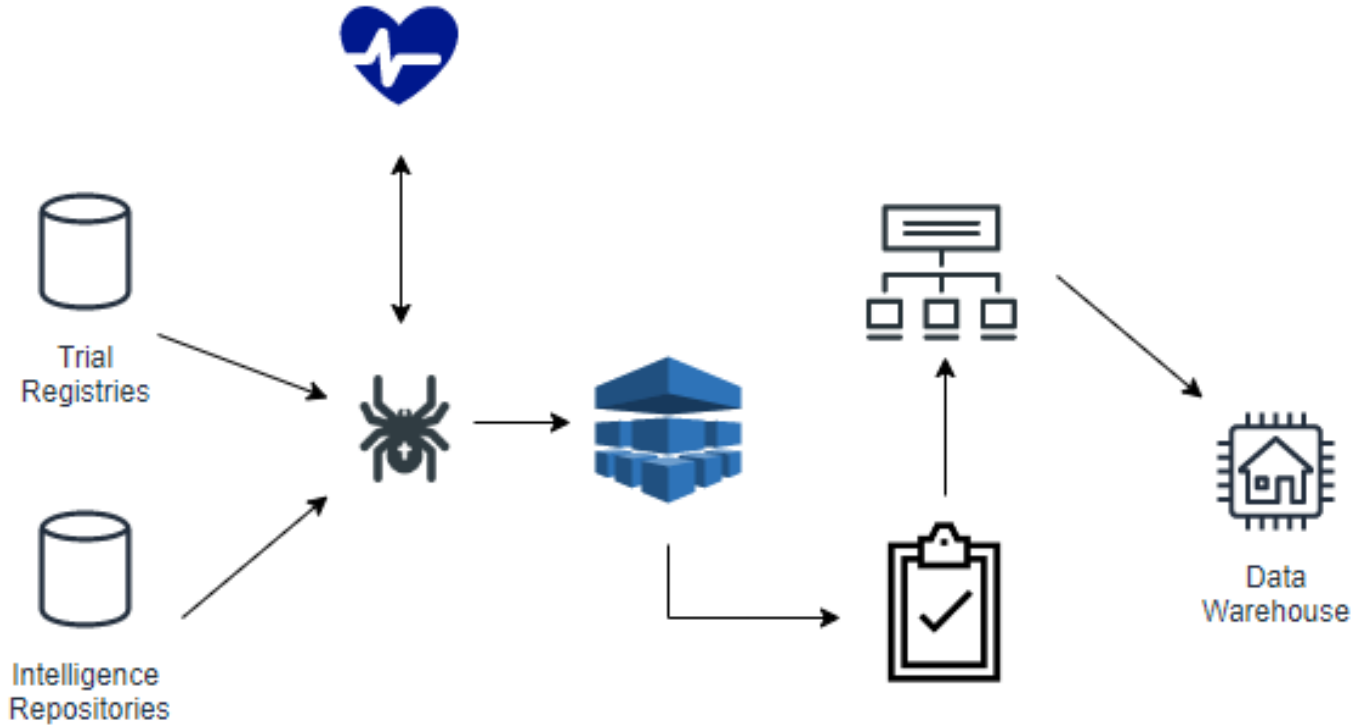
- Developed several internal and externally facing systems/tools

- Some of the internal tools are core to how we work
  - OpenScan
  - MInD – Medicines Innovation Database

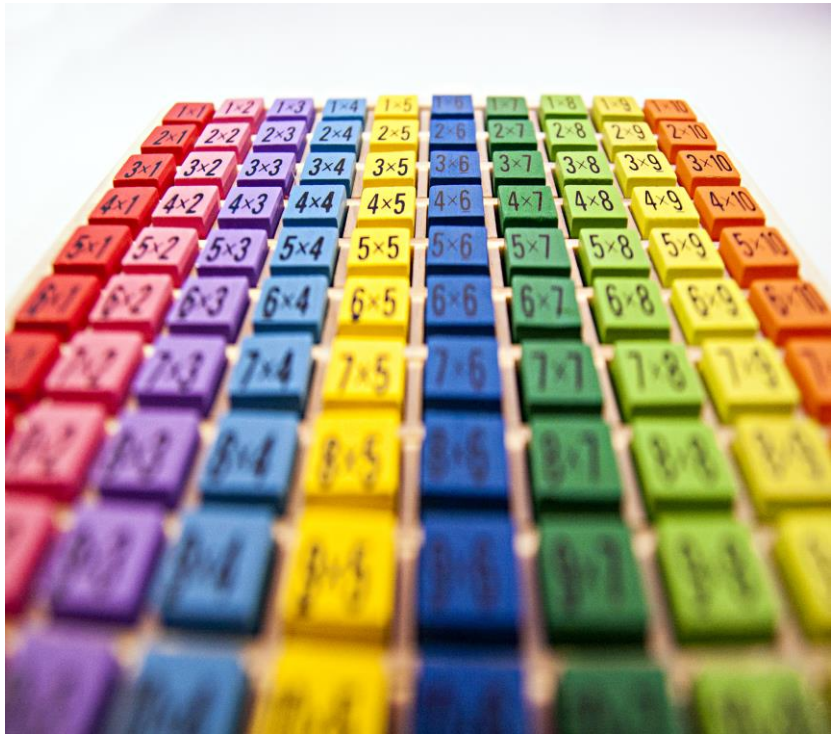
- Core Data Warehouse/OpenScan also feeds our externally facing tools
  - ScanMedicine – phase one launched last year
  - ScanNovus – beta version will launch early next year

System workflow

- Cloud based & scalable
- AWS services - architecture
  - “building block service”
    - Cloudfront
    - API Gateway
    - Lambda Functions
    - Load balancers
- Six servers – each with several micro servers



Data Warehouse +



OpenScan

ScanMedicine
Searching Global Medical Innovation

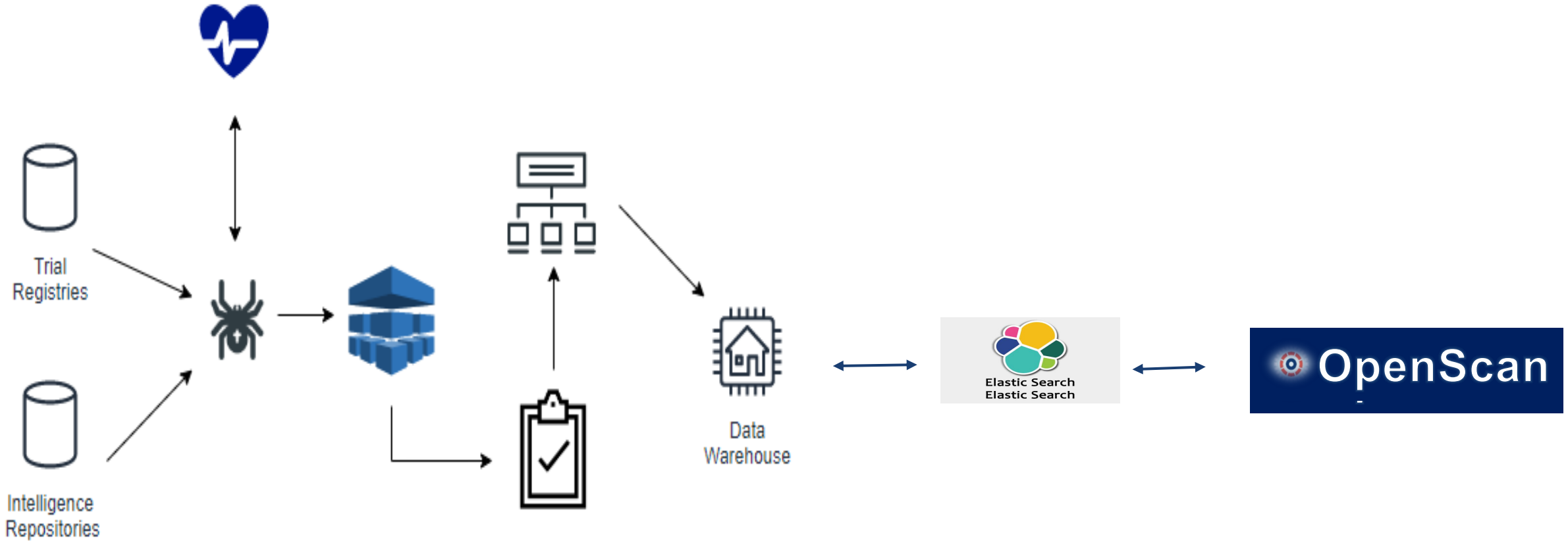
ScanNovus

MInD

NIHR | Innovation Observatory

OpenScan

Back to the workflow



OpenScan – our internal search engine

- Internal tool that requires IO account and log-in
- Not as pretty as our externally facing tools
- Similar functionality is used across all of our tools
- Same/similar visualizations
- Additional sources that have not yet been transitioned to external tools

NIHR | Innovation Observatory

ScanMedicine

About ScanMedicine

- ScanMedicine is a web-based horizon scanning tool

  (*horizon scanning is a strategy to identify new, emerging or obsolete health technologies that have the potential to affect health, health services or society*)

- Designed and developed in collaboration with various horizon scanning agencies/ users in the UK

- BETA version launched mid-2021

- Currently contains two datasets: FDA-approved medical devices (refreshed once/month) and clinical trials linked to publications (refreshed daily), results are presented in a list and visual view

Objectives

- Develop an easily searchable cloud based, scalable, platform which promotes access and sharing of early intelligence of innovative medical and care innovations
  - Draw together multiple global data sources into one place
  - Provide visualizations that will support informed decision making and system preparedness
  - Easily accessible and available to healthcare professionals, patients and public

NIHR | Innovation Observatory

ScanMedicine Demo

NIHR | Innovation Observatory

ScanNovus

Objectives

- Develop an easily searchable platform which promotes access to innovative medical treatments
  - Provide details of clinical trials and publications for innovative medical treatments
  - Draw on multiple global data sources
  - Available to Healthcare professionals, patients and public
  - Following Government Digital Standards process for digital service development

Actions

- Scoping exercises
  - Interviews with Key Opinion Leaders
  - Patient and Public Engagement
  - Identified and prioritised data sources

- Agile Development
  - Iterations (Sprints) based on feedback
  - Close working between developer (external in this instance) and user engagement

Behind the Scenes

Data Warehouse

Response

Query

Elastic Search
Search filter for innovative use

Search terms

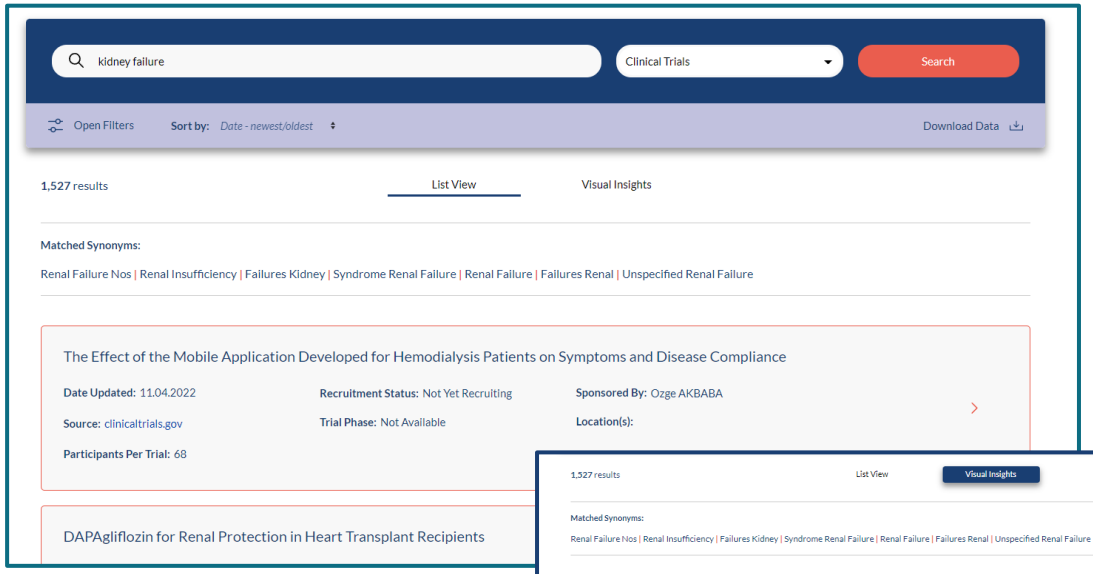
Results

ScanNovus
Presentation of Data

PubMed API
Search filter for innovative use

Search terms

Results



Actions

- Filter
  - Developed by an Information Specialist
  - Based on a previously published filter for off-label searching (Available here)
  - Designed to retrieve information on:
    - Off-label/unlicensed use
    - Expanded access routes
    - Compassionate use

("off label"[All Fields] OR "off labelled"[All Fields] OR "off labeled"[All Fields] OR "off labels"[All Fields] OR "unapproved"[All Fields] OR "not licenced"[All Fields] OR "not licensed"[All Fields] OR "off licence"[All Fields] OR "off licenced"[All Fields] OR "off license"[All Fields] OR "off licensed"[All Fields] OR "nonapproved"[All Fields] OR "unlabeled indication"[All Fields] OR "labelled indication"[All Fields] OR "registered indication"[All Fields] OR "non fda approved"[All Fields] OR "non-approved"[All Fields] OR "compassionate use"[All Fields] OR "compassionate drug use"[All Fields] OR "expanded access"[All Fields])

NIHR | Innovation Observatory

Medicines Innovation Database (MInD) – Internal Use Only

Medicines Innovation Database (MInD)

- Bespoke database that consists of unique technology records
    - *[innovative medicine(s) + target indication(s)]*

Triangulates intelligence from:

- ‘hard’ data sources
    - clinical trials registries
    - research funders
    - regulatory authorities
- ‘soft’ intel
    - news/media
    - social media
- pharma’ intel
    - company websites
    - press releases
    - direct engagement with companies

Medicines Innovation Database (MInD)

- MInD provides the team with a clear and complete picture of the clinical and regulatory development profile of each technology record
- Mix of CiC and open data
- Mix of intelligence that is AI or manually inputted, AI or manually processed, AI or manually selected
- MInD is semi-automated – we don't anticipate being fully automated

Creation linked to IO's objectives and KPIs

- To Deliver for NICE Health Technology Assessment (HTA) in its statutory role
  - To provide horizon scanning and tracking for medicines
  - To provide alerts within required timelines for technologies coming to the market in the UK

- Develop systems and processes to support the Technology Appraisal / Highly Specialised Technologies (TA/HST) programme
  - Maintaining a comprehensive horizon-scanning and tracking database: IO's MInD
  - Alert system: Technology Briefings
  - Other Tools: NICE Dashboard, other stakeholder dashboards/open dashboards & reports

Some current stats

- MInD contains intelligence re:
  - 19,555 Technology Records
  - 20,913 trials
  - 7,004 drugs (Medicines)
  - 258 Fixed Dose Combinations
  - 806 ATMPs
  - 1,884 Indications
  - 2,089 companies/developers

The expansion of IO's MInD

HSRIC Database

- ~2000s – April 2018
- Access database
- Narrow 'reactive' scanning process

'The Database' (MInD1.0)

- April 2018 – April 2020
- Broad, 'proactive' scanning process
- HS intelligence to support NICE process

MInD 2.0

- April 2020 – November 2022*
- Enhanced / semi-automated scanning process
- HS to support all IO stakeholders
- High-quality data & real-time intelligence

What is ‘added’ to the MInD?

- Historical data imported from HSRIC
- In scope topic for NICE Topic Selection (Health Technology Assessment Programme (Medicines)) – i.e. Innovative technologies
- In scope technologies from the NHSE/I Medicines Repurposing Programme
- Technology data is supplemented by news/media sources, pharmaceutical companies, pipeline meetings, external data sets

NHSE/I Medicines Repurposing Programme

Aims:

- To identify and develop opportunities to repurpose prioritised medicines to improve outcomes, patient experience and value for money
- To support and advance innovative research into medicines that might be repurposed and adopted into the NHS
- To facilitate and encourage the licensing of repurposed medicines to support clinical decision making and improve equity of access

Other features on MInD

- Clinical Studies Scan (CSS) tool - Automated system to identify, update & review trials data currently in testing
- API integration – automated data feed for some fields in MInD from a variety of sources
- Document generation – semi-automated population of IO's briefing document directly from a technology record
- Semi-automated monitoring – technology records are prioritised for monitoring using a scoring system

The future of the MInD

- High-quality & Real-time data
  - API directly into the database to allow real-time monitoring
- Actionable intelligence
  - Embedding *'soft'* intel into monitoring process
  - Incorporating probability/likelihood of approval
- Increased efficiency
  - Integrated horizon-scanning – OpenScan.IO & CSS tool
  - Enhanced semi-automated tracking for more precise monitoring

Innovation Observatory Medicines Innovation Database (MIND)

Innovation Uat | Home | Technology | Trials | Drugs | Fixed dose combinations | Advanced therapies | Indications | Companies | Reports

Hello, Dawn Craig **Log Off**

Filter Technology records by:

NIHRIO ID :

NICE TSID :

UKPS ID :

Stage :
Select some options

Closed
Select an option

Rare disease
Select an option

Interventions
OR Select interventions by generic name or alias

Technology Type
Select a technology type

Therapeutic area :
Select some options

Indication :
OR Select some options

Indication subgroup :
OR Select some options

Potential tumour-agnostic treatment
Select an option

Stage of disease :
OR Select some options

Place in treatment :
Select some options

Company :
Select some options

Age range category :
Select some options

Trial :
Select trials by name or identifier

Additional tags
Select regulatory fields or tags

Reset search | Search technology records

NIHR | Innovation Observatory

Innovation Observatory Medicines Innovation Database (MIND)

Innovation Uat | Home | Technology | Trials | Drugs | Fixed dose combinations | Advanced therapies | Indications | Companies | Reports

Hello, Dawn Craig **Log Off**

Filter Technology records by:

NIHRIO ID :

NICE TSID :

UKPS ID :

Stage :
Select some options

Closed
Select an option

Rare disease
Select an option

Interventions
OR Select interventions by generic name or alias

Technology Type
Select a technology type

Therapeutic area :
Select some options

Indication :
OR Solid tumours ×

Indication subgroup :
OR Select some options

Potential tumour-agnostic treatment
Select an option

Stage of disease :
OR Select some options

Place in treatment :
Select some options

Company :
Select some options

Age range category :
Select some options

Trial :
Select trials by name or identifier

Additional tags
Select regulatory fields or tags

Reset search | Search technology records

NIHR | Innovation Observatory

Results – can be also exported..

Export ALL search results

NIHRIO ID	Stage	Closure Reason	NICE TSID	UKPS ID	Intervention	Indication	Subgroup	Stage of disease	Place in treatment	Age range	Trials	Company
34318	New (H)				CAR-GPC3 T Cells	Solid tumours	GPC3-positive	Advanced		Adult, Elderly	NCT05120271	Sotio AS
34296	New (H)				ZN-c3	Solid tumours		Locally advanced, Metastatic		Adult, Elderly, Very elderly	NCT05128825	K-Group Beta
34276	New (H)				Nandunolimab Chemotherapy	Solid tumours		Advanced		Adult, Elderly, Very elderly	NCT05116891	Cantargia AB
34275	New (H)				NVL-520	Non-small-cell lung cancer (NSCLC), Solid tumours	ROS1-positive (ROS1+)	Advanced		Adolescents, Adult, Child, Elderly, Very elderly	NCT05118789	Nuvalent Inc.
34270	New (H)				YL-15293	Solid tumours	KRAS G12C mutation	Advanced		Adult, Elderly, Very elderly	NCT05119933	Shanghai YingLi Pharmaceutical Co Ltd.
34267	New (H)				T3P-Y058-739	Solid tumours		Advanced.		Adult.	NCT05120596	T3 Pharmaceuticals

Individual Innovation

View on CRM | Edit technology | Technology summary | Copy summary to clipboard | Download document

Pembrolizumab for Solid tumours

created **02/09/2019 12:21:00** by **shannon.jamieson@io.nihr.ac.uk**
updated **05/11/2019 16:10:00** by **alex.inskip@io.nihr.ac.uk**

Administrative Information

Edit additional tags

Stage: Monitoring (H)

NIHRIO ID:	27853	**Company:**	Merck Sharp & Dohme Ltd
NICE TSID:		**Associated Companies:**	
UKPS ID:		**Technology Briefing Author:**	
Owner:	Rhiannon Green	**Briefing submission date:**	
Source:	clinicaltrials.gov		
Source details:			
Ad hoc Project(s):			

Review Information

Edit additional tags

Next review date:	21/11/2022
Last review date:	15/02/2022
Manual review:	✔
Review score:	3
Next pipeline date:	

Intervention information

Edit additional tags

Drugs:

Generic Name	Aliases	Global status	Licensed in UK	Licensed in EU	Route of Administration	Standard treatment	
Pembrolizumab	Keytruda, MK-3475, lambrolizumab, MK 3475, MK3475, SCH 900475, SCH-900475, SCH900475	Launched	Yes				Select

Latest change date	Latest change	PP URL
14/10/2022	Approval in Canada for renal cancer and Chinese approval for liver cancer reported	https://citeline.informa.com/#/drugs/details/69763

Technology Details

Edit additional tags

Innovation type:	New line
Technology type:	Repurposed Technology [On-patent/Branded]

Target Patient Group

Edit additional tags

Cancer indication:	✔
Rare disease:	
Therapeutic	Haematological cancer and

Regulatory Information

Edit additional tags

UK MHRA Regulatory timelines

Outputs/Dashboards

- Covid Therapeutics

https://www.io.nihr.ac.uk/latest-dashboards/

ATMPs *in progress* - open access

Repurposed Medicines – current provided for NHS England

– anticipate open access from next year

Moving forward more dashboards will be made available via our website

NIHR | Innovation Observatory

Thank-you for your attention!

Questions?