Garvan Institute
of Medical Research

GCCTI Workshop 25 Oct 2024

Democratising equitable access to cancer trials knowledge through transparent open data sharing and AI-powered annotation: The ARTICANZ Initiative

Frank Lin, *MB ChB, PhD, FRACP, FAIDH*
Senior Research Officer, Translational Oncology Program, Garvan Institute of Medical Research.
Medical Oncologist (Precision Oncology Clinic), Prince of Wales Hospital, Sydney
Research Fellow, MoST Fellow, NHMRC Clinical Trials Centre, University of Sydney
Senior Research Fellow, SPHERE Cancer Clinical Academic Group, UNSW Sydney

Identifying Oncology Trials: Informatics Tools for Sharing Knowledge and Enhancing Trial Identification

Garvan Institute of Medical Research

- Efficient trial finding, or “matching”, is critical for drug development and access to novel drugs
- However, trial finding needs specialist (pathology, oncology, pharmaceutical and biomarker) and operational knowledge:
  - Time-consuming, information intensive, **short knowledge half-life.**
  - Information and knowledge: often the practical barrier to optimal selection.
- Can AI-based tool assist with rational shortlisting of trials for reporting?
  - In a before-and-after implementation study of an AI decision support system (DSS) from the Molecular Tumour Board (MTB) of the Molecular Screening and Therapeutics (MoST) program (n = 2,203) [1,2]:
    - DSS implementation was associated with increased alignment between MTB recommendations and actual trial participation in biomarker-matched trials (difference of trial participation rate of 3.8% at 12 months between recommended/non-recommended patients, in patients who were treated with adjusted sub-distribution HR for rate of trial participation: 2.69, 95% CI 1.02–7.07, interaction p=0.045), indicating that **AI DSS may be associated with increased precision of** MTB trial recommendations.
  - However, no overall effect on the trial participation rate (6.8 vs 8.8 mo, adjust SHR 1.19, p=0.29) was seen: potential barriers:
    - Information recency, accuracy, clinical factors
- Can digital trial support be implemented **at the time or point of requirement**?

1. ArXiv 2020; 10.1101/2020.11.15.383448; 2. J Clin Oncol 2024; 42: 16_suppl: 1557

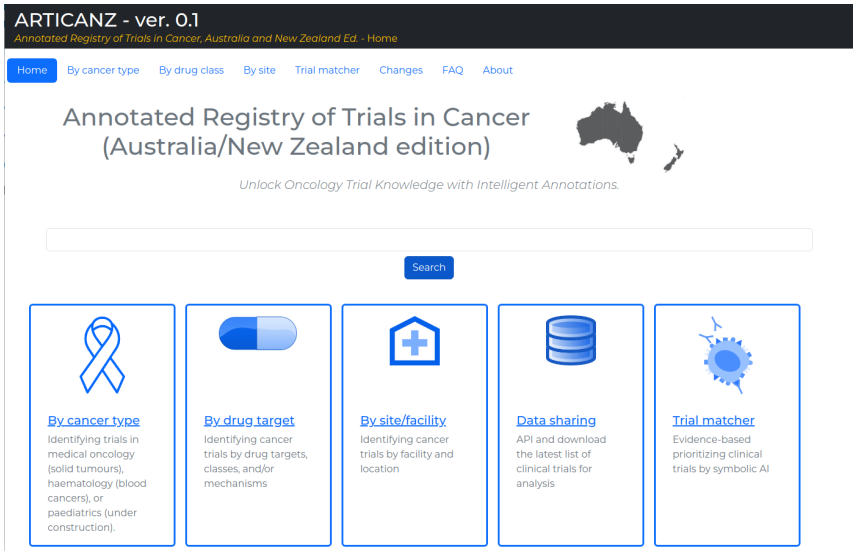
Trial registries and databases – Concept proposal

an *Annotated Registry of Trials in Cancer (Aus/NZ)*

Garvan Institute of Medical Research

Tools	Clinical trial registries	Institutional databases	Trial finding tools	Concept - ARTICANZ
Purposes	Research accountability, Regulatory compliance, Promoting transparency, Reduce redundancy	Information dissemination	Efficiency of referral, Decision support	**Decision support, Trial knowledge dissemination**
Intended audience	Investigators, Regulators	Investigators	Oncologists, Patients	Oncologists, Patients, Investigators
Integrating with care pathway	**None**	**Simple**	**Simple**	**Comprehensive** Cleaned, Knowledge annotation
Search complexity	Low (Terms/Free text)	Low (Terms/Free text)	**High**	**High AI-based annotation**
Information focus	Data focused	Data focused	Knowledge focused Low-level knowledge	Knowledge focused; **High-level knowledge**
Transparency	High Open data	Variable (often low) Not publicly shared	Low (variable) Often blackbox	**High; Open data**
Risk of stakeholder bias	Low	Moderate	High	Low (Trustworthiness)
Data sharing	Public	Institutional	Users	**Data and knowledge**
Data updates	Slow, frequently outdated **(By sponsor)**	Fast **(Manual)**	Fast (variable) **(Automated updating)**	Real-time **(Automated updating + Collaborative editing)**
Complexity of search	Free text, Entity level search	Variable	Cancer types, Biomarkers, Drugs	**Knowledge level search**

Can we democratise knowledge, open source, and open data in precision trial finding?



Concept:

- **Meta search engine** with comprehensive, categorized trial listings
- **Context-relevant** oncologist-level clinical and bioinformatics annotations
- Minimal relevant list and metadata supplementing trial registry data
- Novel strategies for up-to-date **recruitment information tracking**

AI Integration:

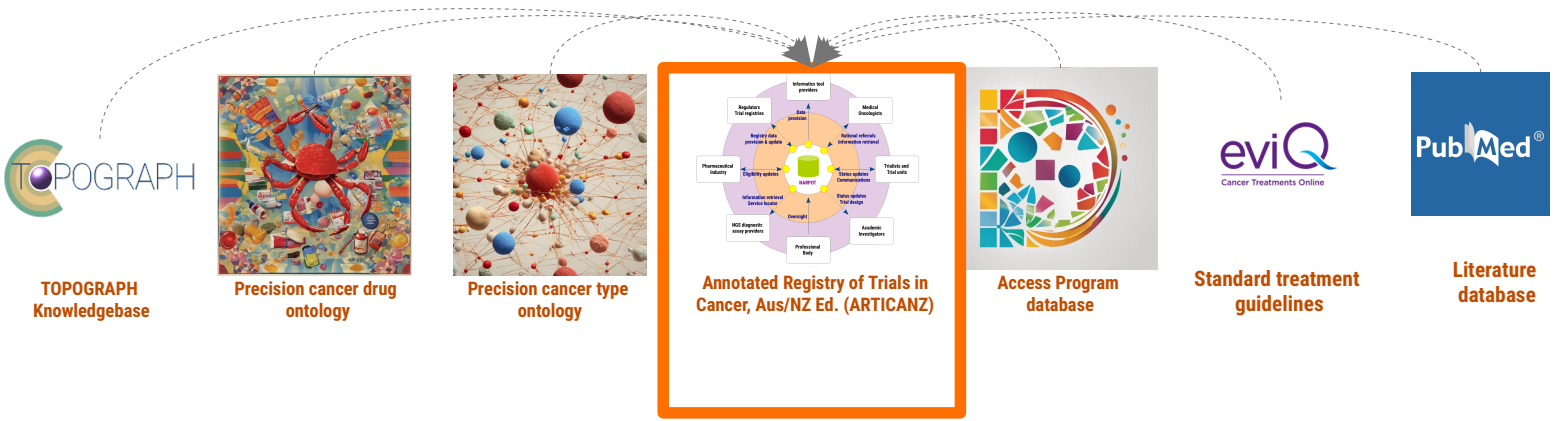
- Enhances rapid identification of suitable trials for researchers and clinicians
- Facilitates transparent, streamlined decision-support processes

Data Sharing & Open Information Platform:

- Promotes integration/sharing of trial operational data in Australia and New Zealand
- Improve equity in knowledge access regarding cancer trials

Vision:

- **Rational organisation** to streamline identification of relevant oncology drug trials
- Enhance **open information sharing** and improve trial decision-making processes



Potential opportunities

- A clinically focused tool for streamlining patient care.
- Sustainable, low-maintenance framework through applications of digital intelligence (AI) and collaborative editing (“wiki”)
- An open data platform for future academic projects, open for academic collaborations in 6-12 months