

The Belgian FHIN-hospitals Industry Data Alliance (BELFHINDA) : Outcomes and Learnings from a Feasibility Assessment in NSCLC

Feasibility analysis using datapoints available in the OMOP model from 5 FHIN hospitals, combined with data quality evaluation and basic analysis of the NSCLC cohort to inform readiness for RWD studies.

Background: The Federated Health Innovation Network (FHIN) VZW is a collaborative initiative uniting 11 (non-)academic hospitals in Belgium to facilitate data-driven care by leveraging data harmonization via OMOP CDM. The network focusses on building OMOP data warehouses based on mainly structured data in the participating hospitals, creating a federated platform to collaborate and started developing prediction models in lung and prostate cancer. FHIN partners via the Belgian pharmaceutical Industry Association, pharma.be, with pharmaceutical companies to conduct real world data (RWD) research in the lung cancer domain. This abstract presents the outcomes and learnings from both the FHIN network and industry perspectives of the feasibility study.

Methods

OMOP database from 5 FHIN Hospitals

- Prevalent and incident stage I-IV NSCLC patients based on national cancer registry data
- Diagnosed 1 Jan 2020 – 31 Dec 2024



Data catalogue

15 data categories, 92 subcategories representing >2000 data points



Feasibility Assessment

1. Quality assessment (DQD)
2. Data availability evaluation in OMOP vs EHR
3. Feasibility descriptive analyses (e.g., OHDSI treatment regimen finder, patient counts)

Results

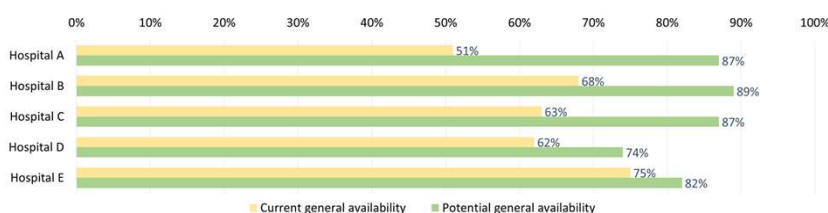
- ① Table 1. Results from the OHDSI Data Quality Dashboard (DQD) for each hospital and their range of total NSCLC patient count. Due to technical issues, hospital A could not generate a DQD. The other 4 hospitals show **high conformance, moderate to high plausibility and moderate completeness**.

% Pass	Hospital A (N 650-700)	Hospital B (N 850-900)	Hospital C (N 750-800)	Hospital D (N 100-150)	Hospital E (N 450-500)
Plausibility	NA	72%	95%	89%	90%
Conformance	NA	97%	100%	99%	99%
Completeness	NA	55%	71%	65%	67%
Total	NA	80%	92%	89%	90%

- ② Availability of 15 data categories in OMOP data warehouses of 5 hospitals:

- **Consistent availability ($\geq 4/5$):** patient demographics, smoking status, **lab results**, **WHO/ECOG scores**, TNM staging, comorbidities, and medications
- **Mixed availability (1-3/5):** Genetic mutations, imaging, surgery, FEV1
- **Limited availability ($\leq 1/5$):** PD-L1, lines of therapy, PROMS & PREMS, disease progression

Figure 1. OMOP data availability of 92 data subcategories per hospital showing current availability (51-75%) versus the potential after maximized mapping of EHR data (74-89%).



- ③ Figure 2. Heatmap for data availability (%) for lab results and WHO/ECOG score in more detail per hospital

Lab result	Hospital A	Hospital B	Hospital C	Hospital D	Hospital E
CRP	84	98	99	97	99
Hemoglobin	84	98	99	97	99
Leukocytes	84	98	99	97	99
LDH	76	95	98	96	95
Platelets		98	99	97	99
CEA		54	87	72	67
CA-125		2	2	2	1
CA 19-9		7	4	8	2
CA 15-3		5	3	4	4
NSE		36	68	1	41
Creatinin	84	98	99	97	99
AST	72	91	98	88	50
ALT	76	97		97	58
GGT		97	99	97	58
eGFR	84	98	99	97	99
WHO/ECOG					
Total		88	100	66	99
Grade 0		16	14	19	26
Grade 1		54	58	34	50
Grade 2		9	18	10	17
Grade 3		5	7	1	4
Grade 4		3	2	2	2
Grade 5		0	0	0	0

Conclusion: Results show the potential of the FHIN NSCLC database (n=2800-3050) for leveraging RWD research questions. Completeness should be improved through maximized mapping and by unlocking unstructured data across all hospitals.

Industry perspective: Federated, multi-hospital queries in Belgium are feasible with FHIN within short timelines (6 months), confirming their potential as a valuable RWD partner. Governance enables multi-stakeholder collaboration while preserving data sovereignty. Advanced RWD studies require increased data availability and analytics capabilities.

FHIN perspective: Confirmation of value in building a network around OMOP to enable high quality, scalable, and reuseable RWD research. Alignment on standards, tools, governance and federated analytics allow hospitals with heterogeneous data to jointly perform research. FHIN is a mature partner and provides a strong foundation for new partners to co-create.

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Reference: 1. Deltomme C, Denturck K, De Jaeger P, et al. Data-driven medical practices and enhanced patient care through OMOP CDM and federated learning in 9 Belgian hospitals. Presented at OHDSI Europe 2024.

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