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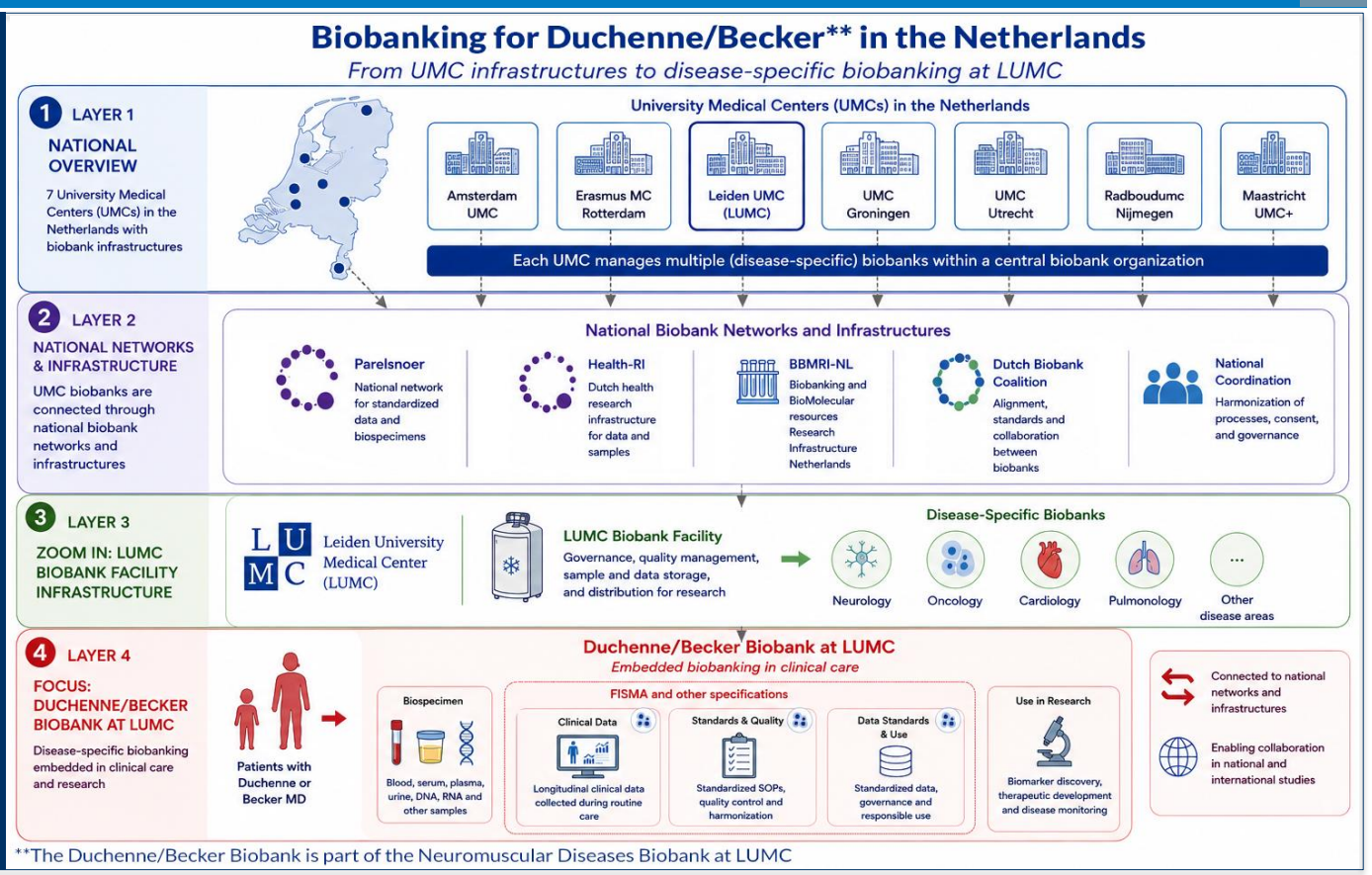
Nation-wide FAIR Biomaterials

FISMA unifies LUMC Biobanks and enables interoperability

INTRODUCTION

In 2007, the 7 Dutch UMCs launched a collaboration on multi-center biobanks, marking the start of centralized biobank facilities for most UMCs. Biomaterial preparation protocols that were jointly developed then, remain standard practice today. Duchenne Center Netherlands (DCN) promotes real-world data that is FAIR from the source through FISMA, ensuring data and samples are interoperable, reusable, and research-ready across national and international settings.

As a first, for our Duchenne and Becker Biobank (as part of the Neuromuscular disease biobank at LUMC), DCN has published these national protocols on protocols.io, making not only our biomaterials interoperable, but also providing interoperability for many biomaterials managed by the LUMC Biobank Facility, and other UMCs.



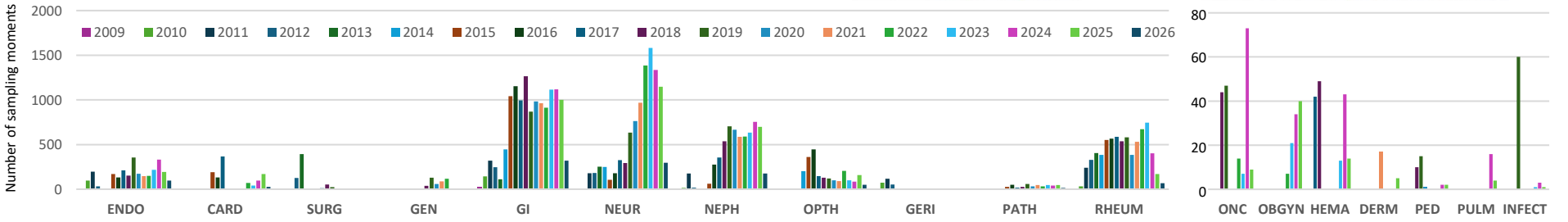
Sampling moments per specialism at LUMC, 2009-2026

Biomaterials processed per year according to nationally agreed sampling protocols

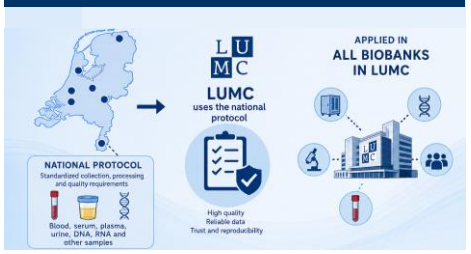
One protocol One standard
National Dutch protocol for Biomaterials

22,536 Patients included using these protocols

521,156+ Aliquots in store processed according to published protocols



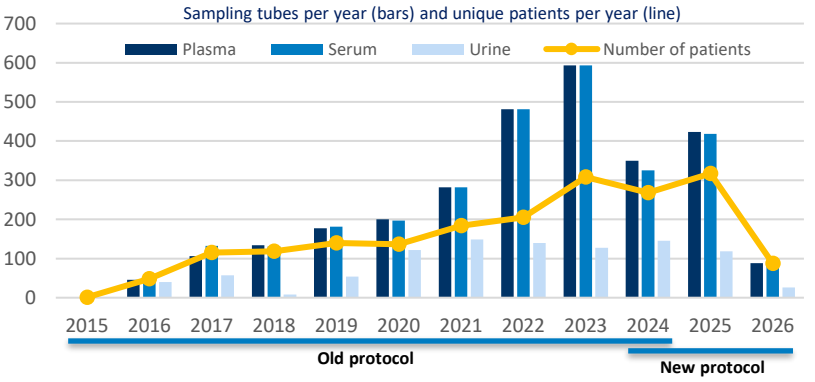
National Dutch protocol for Biomaterials
- Standardized. Reliable. Trusted -



We published our biobank protocols on **PROTOCOLS.IO**, making them openly findable, accessible, and reusable for research purposes. See: linktr.ee/RWD_NL

Neuromuscular disease biobank at LUMC, 2015-2026

Sampling tubes per year (bars) and unique patients per year (line)



Above: Specialisms from left to right: ENDOcrinology, CARDiology, SURGery, GENetics, GI=Gastroenterology, NEURology, NEPHrology, OPTHalmology, GERIatrics, PATHology, RHEUMatology. Right bar graph: ONCology, OBstetrics/GYNaecology, HEMAtology, DERMatology, PEDiatrics, PULMonology, INFECTiology.
Below: the Neuromuscular Disease biobank, no. of sampling tubes per material, versus unique patients, per year. Duchenne and Becker Muscular Dystrophy are part of the Neuromuscular Disease Biobank.

Impressive numbers

- Biomaterials of **22,536** LUMC patients collected and stored using these national protocols
- In total, LUMC Biobank Facility currently manages **521,156** aliquots that are processed according to these protocols
- SOP deviations tracked per material and patient
- Neuromuscular Diseases Biobank: 21% SOP deviation recorded over 10 years

Key findings on deviations

71% of samples were stored >4 hours before processing

20% were haemolytic

Other deviations were rare (<1–2% each)

THE TAKEAWAY

This poster shows that by adhering to FISMA principles and with moderate effort, you can provide biomaterials with a wealth of meta information, making them more readily reusable for other research. Sharing the protocols through protocols.io makes them openly available and instantly accessible to other Dutch UMCs, thus rendering many of the biomaterials at these UMCs interoperable, as well

More information
Linktr.ee/RWD_NL

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