Pediatric FH Screening in Luxembourg

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Hypercholesterolemia is a major driver of arteriosclerosis. In familial hypercholesterolemia (FH), arteriosclerosis develops already during childhood and leads to precocious atherosclerotic cardiovascular disease (aCVD) and mortality. FH is a frequent (1/300) autosomal dominantly inherited disease, which often does not cause any symptoms until a cardiovascular event occurs. If diagnosed and treated in childhood, arteriosclerosis and CVD can be prevented. As it can be easily detected via a blood lipid profile, we hypothesized it to be an excellent candidate for a universal pediatric screening. We tested this in a pilot study.

Screening was performed by a capillary lipid profile in primary school children (1). Further diagnostic work up (including a genetic analysis) was proposed if total cholesterol and/or low-density lipoprotein cholesterol (LDL-C) levels were elevated. Our results showed that this screening offer was very well accepted (1860 children included, 49.8% participation rate), as was the capillary blood test (1.6% refusals). We identified 6 children with very elevated LDL-C levels (>160 mg/dl), but only 3 families accepted a further diagnostic work-up. We therefore suggest performing the screening in the presence of the parents to increase the acceptance for further work-up and treatment. By applying a reverse cascade screening, we identified in the pilot study an additional 5 affected family members (2).

Based on these results, a national FH screening program has been initiated in November 2025 in Luxembourg for children at the age of 18 months, making Luxembourg the second country in the world to offer such a national screening program. From a pilot study to a national screening programme: this example perfectly illustrates the benefits of clinical research.

References

1) Screening for familial hypercholesterolaemia in primary school children: protocol for a cross-sectional, feasibility study in Luxemburg city (EARLIE). Becker M, et al. BMJ Open, accepted 11/2022.

2) Universal paediatric screening for familial hypercholesterolaemia: Lessons learnt from our pilot study EARLIE. Becker M, et al. Atherosclerosis. 2026 Sep;420:120838.

Biosketch

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CURRENT AND PAST POSITIONS

Since 9/2026: Clinical affiliate Professor at the University of Luxembourg.

Since 11/2024: Head of the CHL Research Department.

1/2023-9/2026: Research position funded by the Ministry of Health, Luxembourg.

5/2020-6/2025: Secretary-General of BELSPEED (Belgian-Luxemburgish Society of Paediatric Endocrinology and Diabetology).

Since 3/2020: Lecturer at the Charité, University hospital of Berlin.

Since 2015: Paediatric endocrinologist at the Centre Hospitalier de Luxembourg.

2010-2014: Consultant for Paediatrics at the Charité, University hospital of Berlin, Department for Pediatric Endocrinology and Diabetology.

EDUCATION

PhD in Medical Science at the VUB on “Hypercholesterolaemia in children” (2021-2026).

Doctoral thesis at the University of Freiburg on neurophysiological characterisation of the hydro-soluble fraction of a St John's wort extract and its influence on long term (1999-2004).

Paediatric training at the children's hospital Lindenhof, SANA Klinikum Lichtenberg, Berlin (2003-2009).

Medical studies at the University of Freiburg, Humboldt University of Berlin and Wellington School of Medicine (1996-2003).

Training in lipidology (Vicoforte 2015 / Turin 2019 / EACCME 2023); paediatric gynaecology (Merseburg 2016 / Potsdam 2018); didactic university teaching (Charité, Berlin 2021-2022).

OTHER RELEVANT PROFESSIONAL ACTIVITIES AND ACCOMPLISHMENTS

Implication in the update of the German AWMF S3 guideline on paediatric dyslipidaemia and in the update of the Luxemburgish guideline on the therapy of dyslipidaemia (2024-2026).

Medical guidance of the national paediatric FH screening program (since 11/2025).