Biomarkers 4Pediatrics

Leibniz Institute for Prevention Research and Epidemiology – BIPS

Factsheet

Biomarkers4Pediatrics – International Multicohort Pediatric Biomarker Collaboration

PROJECT
Age-, sex-, and ethnic-specific reference curves for metabolic syndrome and its components, incl. abdominal obesity, elevated blood pressure, hyperglycemia, and dyslipidemia, in children and adolescent populations (aged 0-18 years): a pooled cohort analysis.

AIM
To pool, harmonize and analyze data from pediatric populations in order to provide age-, sex- and ethnic-specific reference curves on a global scale for metabolic biomarkers to facilitate the diagnosis of metabolic syndrome in early life in clinical practice and public health.

RATIONALE

Health monitoring and clinical decision making in pediatric care largely depend on the availability of reference values for clinical parameters. Hence, the diagnosis of highly prevalent conditions in children and adolescents such as metabolic dysfunction has been hampered by the lack of a worldwide consensus on diagnostic criteria. The term metabolic syndrome (MetS) [1] has been introduced to depict the common phenomenon of clustering of metabolic components, incl. abdominal obesity, hyperglycemia, dyslipidemia and elevated blood pressure. MetS in early life is an escalating problem in both developed and developing countries. It is commonly underdiagnosed or missed to be diagnosed in early stages when prompt treatment could be crucial. There is a pending need for the development of reliable reference values taking into account individual age, sex and ethnicity.

DATA REQUIREMENTS

Studies are eligible to participate if they meet the following criteria:

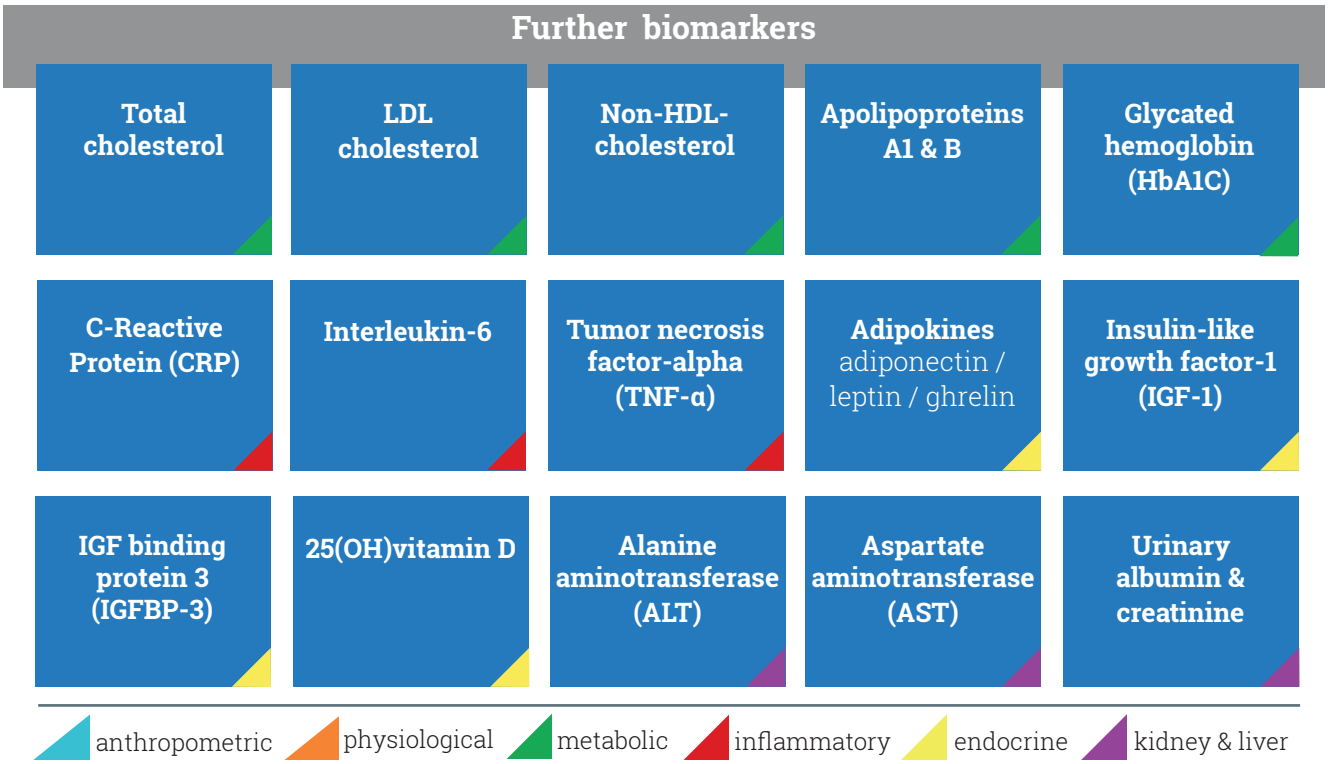
1. Epidemiological population-based studies (cross-sectional or prospective cohort)
2. Participants' age range: 0 to 18 years (optional: ages up to 24 years, if available)
3. Relevant data available (established metabolic syndrome components and further biomarkers)

Established metabolic syndrome components

Adiposity	Blood pressure	Fasting glycemia & insulin resistance	High density lipoprotein cholesterol (HDL-C)	Triglycerides (TG)
waist circumference / body mass index	systolic / diastolic blood pressure	glucose / insulin		

Biomarkers 4Pediatrics

Leibniz Institute for Prevention Research and Epidemiology – BIPS



DATA POOLING AND ANALYSIS

Harmonizing data across different studies involves standardizing variables, data formats, and measurement techniques. This process will be developed to ensure compatibility and comparability of data, facilitating seamless integration and reducing potential biases or confounding factors. Within the Biomarkers4Pediatrics research collaboration, different preferences for data pooling by participating studies will be considered. Study collaborators are free to opt for either traditional pooling methods or the federated analysis approach, in which individual research teams retain control of their respective datasets while sharing aggregated results. For facilitating the federated data analysis the open-source software DataSHIELD [2, 3] will be used and technical support willl be provided, if necessary.

PRINCIPAL INVESTIGATORS

Prof. Dr. Wolfgang Ahrens

Head Department of Epidemiological Methods and Etiological Research

Prof. Dr. Iris Pigeot

Scientific Director & Head Department of Biometry and Data Management

CONTACT

www.bips-institut.de/biomarkers4pediatrics | biomarkers4peds@leibniz-bips.de