HELIX — Result In Brief

Project ID: 308333
Funded under: FP7-ENVIRONMENT
Coordinated in: Spain

Building the Early Life Exposome

Due to our ever changing environment and habits, exposure to environmental contaminants is growing increasingly complex, but the health impact of environmental hazards remains poorly characterized. Prospective studies focusing on periods of high susceptibility, such as early life, should help predict individual disease risks related to the environment.

Major environmental hazards may lead to serious, chronic pathologies with large societal and economic costs, especially when exposure takes place during pregnancy or early life. Pollutants in food, water and air may be linked to a number of diseases such as neurological, respiratory, and cardiovascular disorders. To address this susceptibility through appropriate preventative measures and legislation, comprehensive data on exposure is required. In addition, we need to evaluate the combinatorial impact on health of exposure to multiple hazards.

The term exposome is used to describe the totality of exposure to environmental hazards from conception onwards. The EU-funded HELIX initiative will use prospective birth cohort studies at different sites across Europe to obtain the comprehensive, longitudinal human data needed to build on this concept.

Through specially developed tools and methods, the HELIX consortium will obtain estimates on the health impact of chemical and physical exposures in food, consumer products, water, air and the outdoor environment (external exposome). They will link these environmental exposures with alterations in the levels of metabolites, proteins, RNA transcripts and DNA methylation (internal exposome). This molecular signature will be measured by omics analyses in the cohorts.

Using novel statistical approaches, researchers will also try to associate multiple and combined environmental exposures with child health, focusing on overall growth, obesity, neurodevelopment and respiratory and allergic diseases. Importantly, HELIX will address the determinants (e.g. diet, social factors, and commuting habits) of individual variability in early-life exposures, in order to better predict individual disease risk and direct preventions.

Overall, HELIX will provide a better understanding of the effect of multiple environmental exposures early on during development. Since most studies thus far have concentrated on single pollutants, the integrated exposure concept is a more realistic approach to estimating the joint impact of the environment on health. This will lead to improved risk assessments and preventative strategies.

Related information
Keywords

Environmental exposure, health, disease risks, exposome, child health

Last updated on 2015-07-07
Retrieved on 2019-10-13

© European Union, 2019