Human biomonitoring special features & its synergies with other health information instruments

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Chronic NCD - a matter of concern

- Cancer
- Cardiovascular diseases
- Allergies/COD
- Mental disorder
- Reproductive disorders
- Congenital anomalies

Raise in incidence/prevalence not fully understood

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This project is funded by the Health Programme of the European Union
Health information instruments

- Disease registries (perinatal, chronic diseases)
- Health Information Surveys (HIS)
- Health Examination Surveys (HES)
- Nutrition Surveys
- Human Biomonitoring (HBM)
- Health indicators

This project is funded by the Health Programme of the European Union
Special features of HBM

1. Internal human exposure or effects to exposure
   (occupational/environmental; cross-sectional/longitudinal)

2. May identify particularly vulnerable or exposed subgroups

3. May associate body burden/reactions to health effects

Information on „Determinants of Health“
HBM in the causal chain from environment to disease

adapted from (Needham, 2005)
Examples of national HBM surveys/cohorts

- German Environment Surveys (GerES I - V) since 1985
- Czech Environmental Health Monitoring System (EHMS) since 1994
- **U.S. National Health and Nutrition Examination Survey (NHANES)** since 1999
- The Korea National Health and Nutrition Examination Survey (KNHANES) since 1998
- The Norwegian Mother and Children Cohort Study (MoBa) since 1999
- Flanders human biomonitoring network (FLEHS) since 2002
- Canadian Health Measures Survey (CHMS) since 2007
- **Japan Environmental and Children’s Study (JECS)** since 2010
- French birth cohort (ELFE) since 2011
- French biomonitoring, environment and physical activity survey (ESTEBAN) since 2014
- Spanish monitoring programme BIOAMBIENT.ES 2009 - 2010
- Programme for Italian population exposure (PROBE) 2008 - 2011
- Slovenia’s national HBM programme since 2010
Exemplary EU research studies

- ESBIO (Expert Team to Support Biomonitoring in Europe) 2005-2008
- ECNIS (Environmental Cancer Risk, Nutrition and Individual Susceptibility) 2005-2013
- INTARESE (Integrated Assessment of Health Risks from Environmental Stressors) 2005-2010
- PHIME (Public Health Impact of Long-Term, Low-Level Mixed Element Exposure) 2006-2011
- NewGeneris (Newborns and Genotoxic Exposure Risks) 2005-2010
- EnviroGenomarkers - Genomics Biomarkers of Environmental Health 2009-2013
- COPHES (Consortium to Perform Human Biomonitoring on an European Scale) and its Life + pilot survey (DEMOCOPHES) 2009-2013
- EXPOsOMICs 2013-2018
- HELIX (The Human Early Life Exposome) 2013-2018
- HEALS (Health and Environment-wide Associations based on Large Population Surveys) 2013-2019

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Major limitations of HBM

1. HBM alone cannot provide information about source and time of exposure
2. HBM data need to be combined with other data and tools

1. Costs and time
Priorities for availability of comparable, high quality data

1. Network and infrastructure
2. Prioritisation schemes (Env. Stressors)
3. Harmonisation of Protocols (Guidance, Training)
4. Quality assurance systems
5. Method development (Biomarker, Analysis, HBGV)
6. Sample/data storage and sharing/exchange

Added value of synergies?
1. EU Platform for guiding tasks
2. MS infrastructures for surveillance
3. Prioritisation and review scheme
4. Research funding for further developments


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## Potential Synergies - HBM - HES - Disease Registries

<table>
<thead>
<tr>
<th>Common features (reduced efforts)</th>
<th>Single features (added value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prerepresentative Stratification</td>
<td>Clinical parameter</td>
</tr>
<tr>
<td>Recruitment/ Interview</td>
<td>Health status</td>
</tr>
<tr>
<td>Anthropometric measurements</td>
<td>Disease incidence/prevalence</td>
</tr>
<tr>
<td>Biological sample</td>
<td>Environmental risks</td>
</tr>
<tr>
<td>Geographical allocation</td>
<td>Environmental data</td>
</tr>
<tr>
<td>Socio-economic/ lifestyle classification</td>
<td>Health based guidance values</td>
</tr>
<tr>
<td>Age, gender, ethnicity</td>
<td>Chemical analysis</td>
</tr>
<tr>
<td>QS/QA, Training</td>
<td></td>
</tr>
<tr>
<td>Data management/storage/exchange</td>
<td></td>
</tr>
<tr>
<td>Interpretation/Communication</td>
<td></td>
</tr>
</tbody>
</table>
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The next steps

- BRIDGE health WP6 - blue print for optimized use of environmental health information (HBM data) in health information and health policies

- Joint Member State Action (Horizon 2020) for integrated long-term surveillance system to feed into HIS
Thank you very much for your attention!

For questions please contact

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