

## Diagnosis and Treatment of Inborn Errors of Metabolism

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### Abstract:

Inborn Errors of Metabolism (IEM) are due to compromised enzyme ('intoxication type') or transporter ('storage type') functions. This results in the accumulation of metabolites in body fluids (enzyme deficiency) or intracellular compartments (transporter deficiency).

Diagnosis is based on the accumulation of substrates (biomarkers), reduced activities of enzymes or transporters and molecular genetic testing (mutation analysis). In Germany, newborn mass screening (as a preventive measure) from dried blood is performed at the 2<sup>nd</sup> day of life in every newborn using the high-throughput Tandem-MS technique as well as enzyme-tests for a total of 14 IEMs meeting the W&J-criteria. In India, this is only available in very few metabolic centers, diagnosis of IEM is mainly based on clinical suspicion resulting in a reduced rate of picking-up patients or considerable delay in diagnosis.

Therapeutic options include substrate reduction by dietary intervention and/or medication, activation of enzymes by cofactors, activation of alternative excretion pathways, chaperones (stabilizing protein folding), enzyme substitution and enzyme replacement (enzymes produced by cell cultures in bioreactors and given by intravenous or intrathecal infusion to patients). If dietary and pharmacological treatment fails liver or bone-marrow transplantations can be performed which is, however, not a cure in most patients. Gene therapy is a (future) option to tackle IEM.

Financial restrictions in India result in limited options for diagnostic procedures, hampering timely diagnosis of IEM. Furthermore, high-end therapy is not available.