The IHE Diabetes Cohort Model (IHE-DCM)

THE SWEDISH INSTITUTE FOR HEALTH ECONOMICS
ENABLING INFORMED DECISION MAKING

The IHE Diabetes Cohort Model (IHE-DCM) is a cohort-level, cost-effectiveness model developed for the evaluation of interventions in diabetes care. IHE-DCM can be used to support early-stage decision making, market access, value story dissemination, post-marketing evidence needs and analyses of long-term cost and health implications of public health issues.

Transparent, flexible, and easy to use

IHE-DCM is designed to meet strict HTA requirements for transparency in diabetes modelling while remaining easy to use and quick to run. Implemented in Microsoft® Excel, the model requires no external software and uses a familiar interface that supports review, adaptation, and clear communication of assumptions and results. This makes it well suited for engagement with clinical, payer, and policy stakeholders. Two model versions are available within the IHE-DCM framework: IHE-DCM-T1 for type 1 diabetes and IHE-DCM-T2 for type 2 diabetes.

Validation and real-world use

The validity and practical relevance of the model are supported by extensive evaluation through external validations and comparison with well-established microsimulation models [1-5]. The validation studies found that IHE-DCM produced results that were consistent with real-world data and with other established models. The model has also been accepted by HTA agencies in Sweden, Norway, Canada, and Australia, supporting its use in healthcare decision-making across different healthcare systems [6-12].

Scientific publications from Sweden, Denmark, Canada, and China further demonstrate the international use of IHE-DCM [13-24]. The model has been used to evalute a broad range of interventions, including pharmaceutical treatments, insulin pumps, continuous glucose monitoring, and pediatric screening for type 1 diabetes. The practical relevance of the model is also reflected in licensing by external stakeholders, including life science companies and HTA agencies [25]. Overall, this evidence supports the credibility and practical value of the model for healthcare decision-making in different settings.

Accessing the model

IHE-DCM is available through global or country-specific license agreements covering IHE-DCM-T1, IHE-DCM-T2, or both. Each license includes supporting documentation, including a technical report and user guide, together with technical support. Additional model training can be scheduled on request. The model can also be accessed as part of specific projects conducted by IHE.

USER FRIENDLY

- Available through licensing
- Fully Excel-based
- Intuitive interface
- Short run time
- Can be shared with HTA agencies

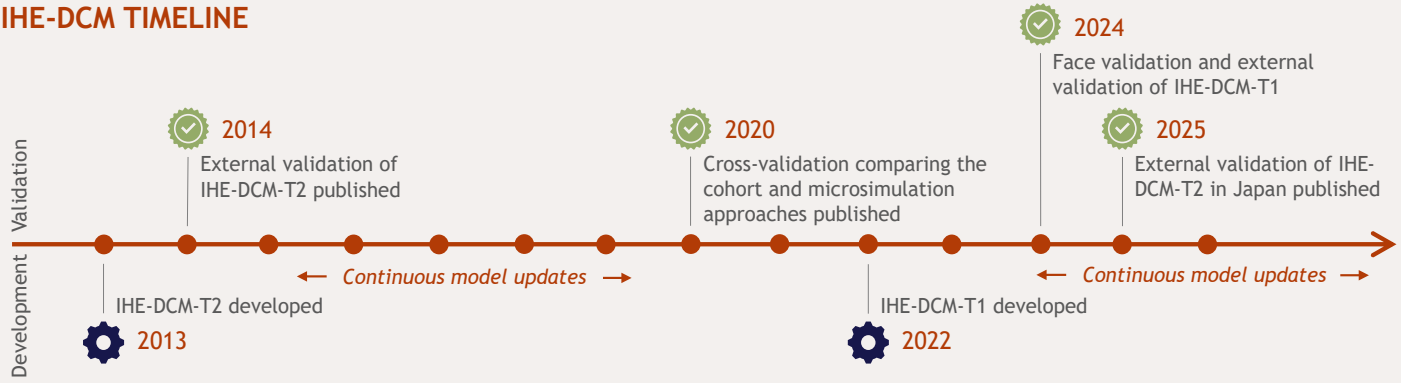
ACCEPTED & VALIDATED

- Externally validated in several independent studies
- Accepted for use by HTA agencies in multiple countries
- Transparent model structure to support review

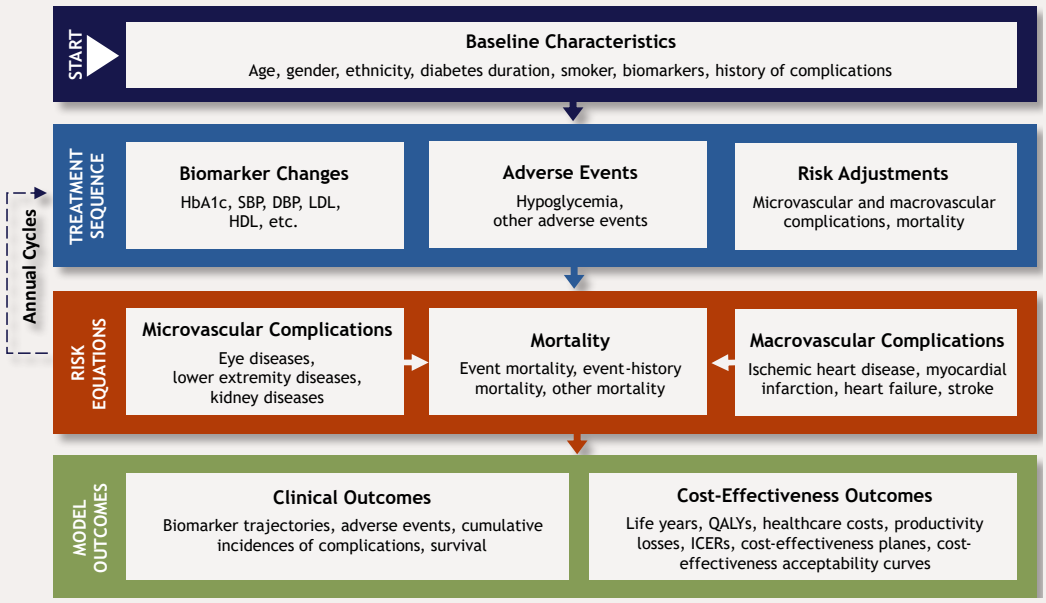
FLEXIBLE MODEL DESIGN

- Separate versions for type 1 and type 2 diabetes
- Designed to reflect different treatment options
- Supports comparison of multiple treatments in a single analysis
- Continuously developed and updated

IHE-DCM TIMELINE



IHE-DCM MODEL STRUCTURE



Risk prediction equations

Type 2 diabetes

- UKPDS-OM1 (UK)
- UKPDS-OM2 (UK)
- NDR (Sweden)
- FDS (Australia)
- JJRE (Japan)
- NIH (US; Eastman)

Type 1 diabetes

- DCCT/EDIC (US)
- NDR (Sweden)

Model description

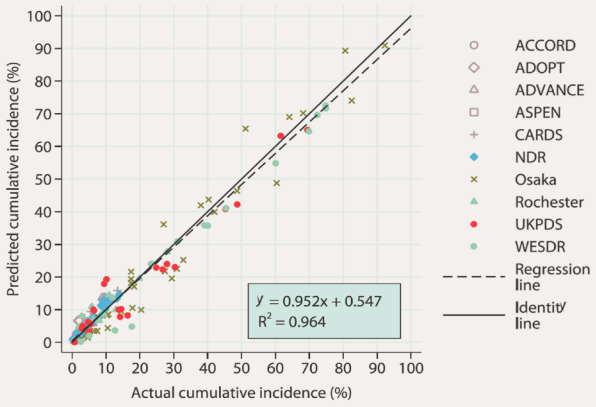
IHE-DCM is a cohort-level Markov cost-effectiveness model. It supports deterministic and probabilistic sensitivity analyses and operates with a one-year cycle length. The model is flexible, allowing most parameters to be user-defined.

The model includes key diabetes-related complications and mortality. Complications are chronic and generally progressive, and multiple complications can occur simultaneously. Transition probabilities are derived from established risk prediction equations for both type 1 and type 2 diabetes, based on evidence from multiple large cohort studies across various country settings.

Within this framework, the cohort is defined by characteristics such as age, diabetes duration, biomarker values, and baseline complications. Biomarkers evolve over time according to user-defined trends and treatment effects, while complications develop and progress. A flexible treatment sequence permits modelling of a wide range of treatment profiles.

The model estimates health outcomes, including life-years and quality-adjusted life years (QALYs), adjusted for complications and adverse events. It incorporates costs for treatments, adverse events, and complications, and can optionally include indirect costs such as productivity losses.

Cost-effectiveness is summarized using incremental cost-effectiveness ratios (ICERs) and through the probabilistic sensitivity analysis (PSA) functionality, results can be presented as cost-effectiveness planes and cost-effectiveness acceptability curves (CEACs).



Main results from the external validation of IHE-DCM-T2, using the Swedish National Diabetes Register (NDR) macrovascular risk equations, indicating a high level of predictive accuracy [1].

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