Mount Hood 2026 Diabetes, Aging, and Dementia Challenge: Challenge Instructions (Version 1.6; 31 July 2026)

1 INTRODUCTION

Background

Dementia is increasingly recognised as an important comorbidity in people with type 2 diabetes. Older adults with type 2 diabetes are at increased risk of cognitive decline and dementia, and the presence of dementia may substantially influence survival, quality of life, healthcare utilisation, and diabetes management. Consequently, dementia has the potential to affect both the occurrence and consequences of diabetes-related complications and is becoming increasingly relevant when evaluating the long-term clinical and economic consequences of diabetes.

Recent methodological developments, including the publication of diabetes-specific dementia risk equations, are making explicit modelling of dementia within diabetes simulation models increasingly feasible. The recently developed Diabetes Outcomes Model for the U.S. (DOMUS) includes published diabetes-specific risk equations for dementia (Winn et al., 2025). Other groups, including those developing future versions of the UKPDS Outcomes Model, are also working toward incorporating dementia outcomes.

Despite these advances, most currently available diabetes simulation models do not explicitly represent dementia. This challenge therefore seeks to understand both how participating models currently capture the consequences of dementia and how diabetes simulation models may incorporate explicit diabetes-specific dementia outcomes.

Many of the clinical and economic consequences of dementia develop over decades and cannot be directly observed within available clinical studies. Decision-analytic models therefore play a central role in synthesising available evidence and projecting long-term clinical and economic outcomes to inform healthcare decision-making. Previous work has similarly emphasised that the prolonged natural history of cognitive impairment necessitates long-term modelling, as many of the benefits, harms, and costs associated with dementia occur well beyond the duration of available clinical studies (Handels et al., 2025).

The Mount Hood Diabetes Challenge Network brings together developers and users of diabetes simulation models to address common decision problems using independently developed models. By systematically comparing model predictions, assumptions, and methods, the Mount Hood Network facilitates methodological learning and continuous model improvement, with the ultimate goal of strengthening the credibility of model-based evidence for healthcare decision-making.

Challenge aim

The aim of this challenge is to characterise current approaches to dementia representation within diabetes simulation models and to compare the implications of those representations for projected long-term survival, quality-adjusted survival, diabetes-related outcomes, and costs. More broadly, the challenge seeks to identify opportunities for methodological learning and future model development through systematic comparison of independently developed diabetes simulation models. Costing is intentionally simple and uses common UK inputs to support comparison rather than a full cost-effectiveness analysis.

2 CHALLENGE OVERVIEW

- **Decision Problem:** This challenge asks diabetes modelling groups to simulate two populations with type 2 diabetes: (1) an incident (at-risk) cohort free of dementia at baseline (Runs 1 and 2), and (2) a prevalent cohort aged 80 years with and without dementia at baseline (Run 3). Results will be used for cross-model learning, not ranking models.
- **Target populations:** Adults with type 2 diabetes

    - **Incident (at-risk) cohort (Runs 1–2):** Adults with type 2 diabetes who are free of dementia at baseline and are followed to estimate the occurrence and consequences of incident dementia.
    - **Prevalent cohort (Run 3):** Adults aged 80 years with type 2 diabetes, represented by eight profiles: the four prior-stroke-by-prevalent-dementia combinations in Table 3, run once for men and once for women.
- **Dementia definition:** The preferred outcome is all-cause dementia. If your model represents a different dementia concept, use the closest available state or event and document the mapping (see Table 4).
- **Simulation runs:** Run 1 (incident at-risk reference cohort), Run 2 (the same cohort with the dementia utility decrement and dementia care cost set to 0, if feasible), and Run 3 (prevalent age-80 cohort). Run each simulation separately for men and women.
- **Time horizon:** Simulate all runs for 40 years or until death, whichever occurs first. Report end-of-simulation cumulative totals. Label these as lifetime totals only when no simulated individuals remain alive at year 40; otherwise label them as 40-year cumulative totals and report the proportion still alive.
- **Outcomes:** End-of-simulation survival, life-years, dementia-free life-years, years lived with dementia, QALYs, major diabetes complications and health states, cumulative complication costs, cumulative dementia costs, and total costs, together with dementia incidence and prevalence where modelled.

3 CHALLENGE INSTRUCTIONS

Participants should implement the challenge specifications described in this section using their own independently developed diabetes simulation models. Unless otherwise specified, participants should implement the challenge as closely as possible while preserving their model's established structure and methods. Where exact implementation is not feasible, the model's standard approach should be retained and any material deviations documented in the reporting workbook.

Step 1. Load the model with baseline population characteristics

Implement the incident and prevalent cohorts separately for men and women using the baseline population characteristics specified below. If your model requires additional baseline inputs beyond those specified for either cohort, use your usual default values and document the values and sources in the reporting workbook.

Incident (at-risk) cohort (Runs 1 and 2): Populate the model using the common type 2 diabetes reference-case population specified in Table 1. All individuals should be free of dementia at baseline.

Table 1. Baseline characteristics for the incident (at-risk) cohort (Runs 1 and 2)

Characteristic	Men	Women
Current age	66	66
Duration of diabetes	8 years	8 years
Current or former smoker	No	No
Ethnicity	White	White
HbA1c	7.5%	7.5%
Systolic blood pressure	145 mmHg	145 mmHg
Diastolic blood pressure	80 mmHg	80 mmHg
Total cholesterol	5.2 mmol/L	5.2 mmol/L
HDL cholesterol	1.3 mmol/L	1.3 mmol/L
LDL cholesterol	3.0 mmol/L	3.0 mmol/L
Triglycerides	2.0 mmol/L	2.0 mmol/L

Characteristic	Men	Women
BMI	28 kg/m²	28 kg/m²
Urinary albumin-to-creatinine ratio (uACR)	14.2 mg/g	14.2 mg/g
Peripheral vascular disease	No	No
Urine albumin concentration ≥50 mg/L	No	No
Atrial fibrillation	No	No
eGFR	70 mL/min/1.73 m²	70 mL/min/1.73 m²
White blood cell count	7 × 10^9/L	7 × 10^9/L
Heart rate	79 bpm	79 bpm
Haemoglobin	14 g/dL	14 g/dL
Prior macrovascular disease	No	No
Prior microvascular disease	No	No

Note: Use the Table 1 baseline values as specified for the common analysis. If a model requires additional inputs, use the model's standard values and document them in the reporting workbook.

Prevalent cohort (Run 3): First set the fixed age-80 diabetes characteristics in Table 2. Then, within each sex, simulate the four prior-stroke-by-prevalent-dementia combinations in Table 3. This gives four profiles for men and four for women (eight profiles in total). The profiles may be simulated separately or in one batch. Prevalent dementia means dementia is present at baseline; a history flag may be used only as a proxy when a current dementia state cannot be initialised, and the mapping must be documented.

Table 2. Fixed baseline characteristics for the prevalent age-80 cohort (Run 3)

Profile variable	Values	Instruction
Current age	80 years	Use age 80 for all Run 3 profiles.
Sex	Men and women	Run the four Table 3 profiles separately for men and women, giving eight profiles in total.
Diabetes profile	Table 1 values except age	Use the same diabetes risk-factor values as Run 1, with age changed to 80.
Prior stroke	No / Yes	Create profiles with and without prior stroke.
Prevalent dementia at baseline	No / Yes	Current dementia at baseline. If unavailable, use the closest history/state proxy and document it.
Smoking status	No	Use non-smoker status for all profiles.

Renal-profile note: Run 3 retains Table 1 uACR (14.2 mg/g) and eGFR (70 mL/min/1.73 m²). ESKD incidence may therefore be low or zero in some models and should be interpreted in light of each model's renal-progression approach.

Apply all four combinations below once for men and once for women. Sex is therefore a stratifier, not another column to vary inside this four-row table.

Table 3. Prior-stroke-by-dementia combinations within each sex for Run 3

Profile within each sex	Prior stroke	Prevalent dementia at baseline	Purpose
Neither condition	No	No	Age-80 comparator with neither condition present.
Prior stroke only	Yes	No	Shows the contribution of prior stroke without prevalent dementia.
Prevalent dementia only	No	Yes	Shows the contribution of prevalent dementia without prior stroke.

Profile within each sex	Prior stroke	Prevalent dementia at baseline	Purpose
Both conditions	Yes	Yes	Shows the combined implications of prior stroke and prevalent dementia.

Step 2. Specify dementia representation

For the purposes of this challenge, prevalent dementia refers to individuals who have dementia at baseline. If a model does not represent prevalent dementia as a separate health state, participants should use the closest available representation and document the representation used and how it was mapped to the challenge definition.

Table 4. Dementia representation instructions

Item	Instruction
Incident (at-risk) cohort (Runs 1 and 2)	Use no dementia at baseline. Report incident dementia during follow-up if the model can generate it.
Run 2 dementia-burden comparator	Use the same cohort and the same dementia incidence, progression, mortality, diabetes-management effects, and complication pathways as Run 1. Set only the dementia utility decrement and dementia care cost to 0. Retain all diabetes complication costs. This is a structural burden comparator, not a clinical intervention.
Preferred dementia outcome	All-cause dementia, if available.
Acceptable alternatives	Alzheimer's disease, vascular dementia, generic cognitive impairment, or dementia severity states may be used if those are the modelled concepts.
Prevalent cohort (Run 3)	Use the age-80 profiles with prior stroke and current prevalent dementia at baseline varied as shown in Table 3. If current dementia cannot be initialized, use the closest history/state proxy and document what the proxy captures and what it omits.

Step 3. Configure the simulation runs

Configure the simulation runs specified in Table 5 separately for men and women. No diabetes or dementia intervention arm is included in this challenge; Run 2 is a structural dementia-burden comparator, not an intervention.

Run 2 should be completed only if the model can set the dementia utility decrement and dementia care cost to 0 without changing clinical dementia effects, diabetes complications, or diabetes complication costs.

Table 5 specifies the three simulation runs to be completed, including the target cohort, baseline dementia status, dementia representation during follow-up, and the purpose of each run.

Table 5. Simulation runs

Run	Cohort	Dementia at baseline	Dementia during follow-up	Purpose
1	Incident (at-risk) cohort	No dementia at baseline	Use the model's usual incident dementia risk, dementia utility decrement, and downstream consequences.	Common type 2 diabetes reference case with incident dementia modelled.
2	Incident (at-risk) cohort	No dementia at baseline	Use the same clinical dementia representation as Run 1. Set the dementia utility decrement and dementia care cost to 0; retain all clinical effects and diabetes complication costs.	Comparator isolating the specified dementia utility decrement and dementia care cost while holding clinical pathways and diabetes complication costs fixed.

Run	Cohort	Dementia at baseline	Dementia during follow-up	Purpose
3	Prevalent cohort	No or yes, varied within each sex and prior-stroke stratum.	Use the model's usual dementia, stroke-history, mortality, utility, and diabetes-interaction assumptions.	Factorial profile set for older people with type 2 diabetes. Profiles may be run together if supported by the model.

Step 4. Load general simulation parameters

Apply the general simulation parameters specified in Table 6. Where exact implementation is not possible, retain the model's standard implementation and document any material deviations in the reporting workbook.

Table 6. General simulation parameters

Topic	Instruction
Time horizon	Simulate all runs for 40 years or until death, whichever occurs first. Report end-of-simulation totals as lifetime only if no individuals remain alive at year 40; otherwise report 40-year cumulative totals and the proportion still alive.
Risk factor paths	Hold the specified baseline risk factors constant over the simulation. Age and modelled events may change normally.
Discounting	Annual state traces, life-years, QALYs, and costs should be undiscounted. The challenge is descriptive and does not request an ICER.
Dementia equations	Use each model's standard dementia incidence equation, progression assumptions, mortality effects, and diabetes interactions. This challenge does not specify a common dementia-risk equation.
Replications	For microsimulation models, use enough replications for stable mean results. Report the number of simulated individuals or replications, random-seed policy, and whether common random numbers were used across paired runs.
Deviations	Document all departures from the specified inputs or scenarios in the reporting workbook.
Cost perspective	UK NHS and publicly funded social care. Exclude patient-paid care, unpaid care, productivity, and monetised quality-of-life losses.
Cost price year and currency	Report pounds sterling (£) in 2024/25 prices. This is the latest published NHS National Cost Collection year available when Version 1.6 was prepared.
Costing approach	Use the common values in Table 10. Apply each complication cost once, in the cycle of first occurrence. Apply the dementia cost for every person-year lived with dementia in Runs 1 and 3. In Run 2, set only the dementia care cost to 0 and retain all diabetes complication costs. Do not add other complication follow-up costs.

Step 5. Load health utility and cost parameters; calculate QALYs and costs

Use the diabetes utility values and utility decrements in Table 8, based on Beaudet et al. (2014), where feasible. Point estimates are sufficient; second-order uncertainty is not required. Report all QALYs undiscounted.

Table 7. Health utility specifications

Item	Instruction
Diabetes utility values and utility decrements	Use the common values shown in Table 8, based on Beaudet et al. (2014), where feasible. If the model cannot use them directly, retain the model's usual approach and document the difference.
Dementia utility decrement	Use the common general dementia utility decrement of −0.235. If the model cannot apply it directly, map the closest internal representation and document the mapping.
Baseline utility	Keep baseline utility constant across ages where the model permits. If age-specific baseline utility is unavoidable, report the implementation clearly.

Item	Instruction
Combining diabetes utility decrements	Where feasible, apply an additive quality-of-life approach across different disease categories and apply only the largest decrement when multiple complications fall within the same category. Document any alternative approach.
Combining dementia utility decrement	Apply the dementia utility decrement additively with diabetes complication decrements for the common challenge analysis. Document any unavoidable alternative.
Timing	For incident dementia, begin the dementia utility effect in the cycle of onset. For prevalent dementia in Run 3, apply it from baseline.
Run 2 dementia-burden comparator	In Run 2, set the dementia utility decrement to 0. Keep dementia incidence, mortality effects, diabetes-management effects, and diabetes complications the same as Run 1. The Run 2 dementia care cost setting is specified in Table 10.

Table 8. Diabetes utility values and utility decrements (Beaudet et al., 2014)

Disease category	Complication/state	Utility value or utility decrement
Baseline	Diabetes without complications	0.785
Acute metabolic disorder	Minor hypoglycaemia event	-0.014
Acute metabolic disorder	Major hypoglycaemia event	-0.047
Comorbidity	Excess BMI: each unit above 25 kg/m2	-0.006
Retinopathy	Cataract	-0.016
Retinopathy	Moderate non-proliferative diabetic retinopathy	-0.040
Retinopathy	Moderate macular oedema	-0.040
Retinopathy	Vision-threatening diabetic retinopathy	-0.070
Retinopathy	Severe vision loss	-0.074
Nephropathy	Proteinuria	-0.048
Nephropathy	Renal transplant	-0.082
Nephropathy	Haemodialysis	-0.164
Nephropathy	Peritoneal dialysis	-0.204
Neuropathy	Peripheral vascular disease	-0.061
Neuropathy	Neuropathy	-0.084
Neuropathy	Active ulcer	-0.170
Neuropathy	Amputation event	-0.280
Cerebrovascular disease	Stroke	-0.164
Coronary heart disease	Myocardial infarction	-0.055
Coronary heart disease	Ischaemic heart disease	-0.090
Coronary heart disease	Heart failure	-0.108

Source: Beaudet et al. (2014). Table 8 specifies the common diabetes reference-case inputs. The general dementia utility decrement in Table 9 is the only additional common utility input for this challenge.

The only new common utility input introduced for this challenge is one general dementia utility decrement of −0.235. This is the moderate diagnosed-dementia utility decrement used in a recent UK health-economic model (Shore et al., 2023), selected as a pragmatic single value between its mild (−0.125) and severe (−0.305) values. Models do not need separate MCI or dementia-severity utility rows for the common challenge analysis.

Table 9. Dementia utility decrement reporting table

Utility item	Use in this challenge	Value used	Source	Application notes
No dementia	Baseline/comparator state	No additional dementia utility decrement	Challenge assumption	Use the diabetes baseline and complication utilities.
General dementia utility decrement	Apply while dementia is present in the model	−0.235	Shore et al. (2023), moderate diagnosed dementia	Apply additively while dementia is present: from baseline in prevalent profiles and from the cycle of onset for incident dementia.
Run 2 dementia utility decrement setting	Run 2 only	0	Challenge setting	Set the dementia utility decrement to 0 in Run 2; keep all clinical dementia effects unchanged.

Cost specifications

Use the common cost inputs below for the challenge analysis. Values are rounded to the nearest £100 to avoid false precision. The diabetes-event values are UK excess hospital costs uprated to 2024/25; the dementia value is an annual UK NHS plus publicly funded social-care estimate. These deliberately simple inputs are intended for cross-model comparison.

Table 10. Common UK cost inputs

Complication/state	Challenge cost (£, 2024/25)	Application	Source and derivation
Myocardial infarction	5,900	Once, at first occurrence	Keng et al. (2022): £4,913 in 2019/20, uprated with NHSCII
Ischaemic stroke	8,600	Once, at first occurrence	Keng et al. (2022): £7,170 in 2019/20, uprated with NHSCII
Heart failure	10,000	Once, at first occurrence	Keng et al. (2022): £8,319 in 2019/20, uprated with NHSCII
End-stage renal disease (renal failure)	25,200	Once, at first occurrence	Keng et al. (2022): £20,954 in 2019/20, uprated with NHSCII
Lower-limb amputation	21,500	Once, at first occurrence	Keng et al. (2022): £17,887 in 2019/20, uprated with NHSCII
Severe vision loss	5,300	Once, at first occurrence	Alva et al. (2015) blindness proxy; UK value converted to 2017/18 prices and uprated with NHSCII
Dementia	16,400 per person-year	Each year lived with dementia in Runs 1 and 3; set to £0 in Run 2	Derived from Carnall Farrar (2024) NHS and publicly funded social-care totals; uprated to 2024/25 with NHSCII

Note: NHSCII = NHS Cost Inflation Index. The 2019/20 diabetes complication costs were multiplied by 1.20265. The dementia input was derived from £7.1 billion NHS healthcare plus £8.4 billion publicly funded social care for 982,000 people in 2024, then uprated by the provisional 2024/25 NHSCII of 4.02%. For severe vision loss, blindness in one eye is used as the closest available UK proxy: the Alva et al. blindness proxy, converted to £4,247 in 2017/18 prices, was multiplied by 1.24804.

For the Run 2 dementia-burden comparator, calculate ΔQALY = QALY Run 1 − QALY Run 2 and ΔCost = total cost Run 1 − total cost Run 2. A negative ΔQALY and positive ΔCost are expected because Run 1

includes the dementia utility decrement and dementia care cost. Clinical outcomes and diabetes complication costs should be unchanged. Report the signed differences separately and do not calculate an ICER because Run 2 is not an intervention. For Run 3 paired comparisons, calculate outcome with prevalent dementia minus the otherwise identical outcome without prevalent dementia.

Step 6. Run the simulations

Run the simulations specified in Step 3 using the assumptions and parameter values described in Steps 4 and 5. Perform all feasible simulation runs separately for men and women. For microsimulation models, use sufficient replications to produce stable mean results. If one or more runs cannot be completed, perform all feasible runs and document the limitation in the reporting workbook.

Step 7. Extract model results and populate the reporting workbook

Modify the workbook as necessary to accommodate model-specific outputs while preserving the requested outcome definitions and overall workbook structure.

Table 11. Reporting workbook contents

Workbook area	What to include
Baseline characteristics	Specified reference values plus any additional model-required inputs, with values and sources.
Utility values and utility decrements	Diabetes utility values used, the general dementia utility decrement, source, value type, timing, and combination rule.
Time paths and outcomes	Input risk-factor time paths, dementia incidence/prevalence, survival, life-years, QALYs, major health-state traces or counts, and cumulative costs.
Simulation settings	Number of simulated individuals or replications, random-seed policy, use of common random numbers, and any stability checks.
Deviations	Any departures from these instructions, why they were needed, and the likely direction of impact if known.
Cost values and outputs	Common costs used, event/state mapping, cumulative complication costs, dementia costs, and total costs.

Please report end-of-simulation cumulative outcomes separately for each run and sex. Label them as lifetime totals only if no individuals remain alive at year 40; otherwise label them as 40-year cumulative totals and report the proportion still alive. Also report supporting checkpoints at 10, 20, and 40 years for Runs 1 and 2 and at 5, 10, and 20 years for Run 3, together with annual state traces where requested. If an output is unavailable, leave it blank and briefly explain why. Costs should be cumulative, undiscounted, and reported per starting individual in 2024/25 pounds sterling.

Table 12. Required outputs

Output	Required?	Notes
Input risk-factor time paths	Yes	Report specified baseline risk factors over time, even when they are held constant.
Alive and dead by year	Yes	Annual trace, preferably as proportions of the starting cohort.
Dementia prevalence by year	Yes, if modelled	Report no dementia, dementia, and death. Severity-state reporting is optional.
Cumulative incident dementia	Yes, if modelled	For runs starting without dementia.
Life-years	Yes	Mean per starting individual at the end of simulation, with supporting checkpoint values.
Dementia-free life-years	Yes, if modelled	Mean time alive without dementia.

Output	Required?	Notes
Years lived with dementia	Yes, if modelled	Mean time alive with dementia.
QALYs	Yes	Undiscounted total at the end of simulation, with supporting checkpoint values.
Run 1 minus Run 2 QALYs	Yes, if Run 2 feasible	Use QALY Run 1 − QALY Run 2 at the end of simulation. The value should be negative when the dementia utility decrement lowers QALYs; clinical outcomes should be unchanged.
Major diabetes complications and health states	Yes, if available	Report rates, counts, or cumulative incidence for usual diabetes model outcomes, such as MI, stroke, heart failure, renal failure, amputation, severe vision loss, and other major health states.
Event definitions	Yes	State whether event outputs represent first events, total events, people ever experiencing an event, or prevalent cases.
Survival-adjusted complications	If feasible	For the prevalent cohort, report events per person-year alive or another survival-adjusted measure to help interpret competing mortality.
Cumulative complication costs	Yes	Apply Table 10 costs once at first occurrence; report the total and, where feasible, the breakdown by complication.
Cumulative dementia costs	Yes, if dementia modelled	Apply £16,400 for each person-year lived with dementia in Runs 1 and 3. Set the dementia care cost to £0 in Run 2.
Total costs	Yes	End-of-simulation cumulative complication costs plus cumulative dementia costs, per starting individual.
Run 1 minus Run 2 total costs	Yes, if Run 2 feasible	Use total cost Run 1 − total cost Run 2 at the end of simulation. The value should be positive and should reflect dementia care costs only; diabetes complication costs should be unchanged.

Step 8. Document model implementation

Alongside the numerical results, please provide a short implementation note covering the items below. A concise response is sufficient.

Table 13. Model implementation documentation

Item	Documentation requested
Dementia representation	Whether the model includes dementia, what type of dementia is represented, and how this was mapped to the challenge definition.
Incident dementia risk	The data source, equation, variables, and transition assumptions used to generate incident dementia. If dementia incidence is not modelled, state this.
Prevalent cohort (Run 3)	How the age-80 factorial cohort was implemented, including the mapping used for prior stroke and prevalent dementia at baseline.
Mortality	Whether the model's standard implementation assumes dementia affects mortality directly, indirectly through severity, or not at all.
Utilities	The dementia utility decrement values used, their sources, value type, timing, and how they were combined with diabetes complication decrements.
Diabetes interactions	Whether dementia affects diabetes treatment, adherence, complications, hypoglycaemia, or other diabetes outcomes in the model.
Double counting	Whether dementia can occur after stroke or other vascular events and how double counting between dementia, stroke, and cognitive impairment is avoided.

Item	Documentation requested
Deviations	Any deviations from these instructions and the reason for them.
Costs	How each model event/state was mapped to Table 10, how partial cycles were handled, confirmation that only the dementia care cost was set to 0 in Run 2, and any deviations from the common cost method.
Renal progression and ESKD	How eGFR and uACR progress over time and how ESKD is generated (for example, risk equations, renal-state transitions, or another method).

Step 9. Prepare the headline interpretation summary

Provide a headline interpretation of approximately 300-450 words in total, organised under the three prompts below. Focus on end-of-simulation cumulative outcomes. State whether these are lifetime totals or 40-year cumulative totals. Use intermediate checkpoints only to explain when or why the final differences emerge. Report signed Run 1 minus Run 2 differences and paired Run 3 differences. Do not calculate an ICER because the challenge contains no intervention comparison.

> **1. Run 1 headline results:** What are the end-of-simulation totals for life-years, cumulative dementia incidence, years lived with dementia, QALYs, cumulative dementia costs, cumulative complication costs, and total costs? Identify the principal model mechanisms driving these results.
>
> **2. Run 2 dementia-burden comparison:** What are the end-of-simulation Run 1 minus Run 2 differences in QALYs and total costs? Confirm that survival, dementia incidence, diabetes complications, and diabetes complication costs are unchanged, and explain any unexpected difference.
>
> **3. Run 3 headline results:** At the end of the simulation, how does prevalent dementia change life-years, QALYs, cumulative dementia costs, cumulative complication costs, and total costs relative to no prevalent dementia within the same sex and prior-stroke stratum? Highlight material differences by sex or prior-stroke status.

4 RESULTS SUBMISSION

Please submit the completed results workbook, implementation note, and brief interpretation to the challenge organisers using the address and deadline in the participant invitation email. If one or more runs cannot be implemented, submit the feasible results and document the limitation. The goal is to understand current model capabilities and the potential importance of dementia, not to require every model to implement every feature.

Submission package

The submission package should include:

- Completed results workbook named MODEL_MtHood2026_Dementia_Results_v1.6.xlsx
- Implementation note named MODEL_MtHood2026_Dementia_Implementation_v1.6.docx
- Brief interpretation named MODEL_MtHood2026_Dementia_Interpretation_v1.6.docx
- Optional supporting files, prefixed with the same MODEL identifier

Questions, contact information, and deadline

Replace MODEL in each filename with a short, consistent model name. The submission deadline, email address, and named organiser contact will be those stated in the participant invitation email. Send clarification questions to that organiser contact. Material clarifications will be circulated to all participating groups, and the latest numbered challenge version will take precedence over earlier drafts.

5 REFERENCES

1. Alva ML, Gray A, Mihaylova B, Leal J, Holman RR. The impact of diabetes-related complications on healthcare costs: new results from the UKPDS (UKPDS 84). Diabetic Medicine. 2015;32(4):459–466. https://doi.org/10.1111/dme.12647.
2. Beaudet A, Clegg J, Thuresson PO, Lloyd A, McEwan P. Review of utility values for economic modeling in type 2 diabetes. Value in Health. 2014;17(4):462-470. https://doi.org/10.1016/j.jval.2014.03.003.
3. Carnall Farrar. The economic impact of dementia – Module 1: Annual costs of dementia. Report commissioned by Alzheimer's Society; May 2024. https://www.alzheimers.org.uk/what-we-do/policy-and-influencing/dementia-scale-impact-numbers.
4. Handels RLH, Herring WL, Kamgar F, et al. IPECAD Modeling Workshop 2023 Cross-Comparison Challenge on Cost-Effectiveness Models in Alzheimer's Disease. Value in Health. 2025;28(4):497–510. https://doi.org/10.1016/j.jval.2024.09.006.
5. Keng MJ, Leal J, Armitage J, Bowman L, Mihaylova B; ASCEND Study Collaborative Group. Hospital costs associated with adverse events in people with diabetes in the UK. Diabetes, Obesity and Metabolism. 2022;24(11):2108–2117. https://doi.org/10.1111/dom.14796.
6. NHS England. National Cost Collection for the NHS: 2024/25 National Cost Collection data. https://www.england.nhs.uk/costing-in-the-nhs/national-cost-collection/.
7. Personal Social Services Research Unit. Unit Costs of Health and Social Care 2025. University of Kent; 2026. NHS Cost Inflation Index, including provisional 2024/25 inflation. https://kar.kent.ac.uk/115569/.
8. Shore J, Kalafatis C, Stainthorpe A, Modarres MH, Khaligh-Razavi SM. Health economic analysis of the integrated cognitive assessment tool to aid dementia diagnosis in the United Kingdom. Frontiers in Public Health. 2023;11:1240901. https://doi.org/10.3389/fpubh.2023.1240901.
9. Winn AN, Newman Z, Deckard A, et al. Development and Internal Validation of the Multiethnic Type 2 Diabetes Outcomes Model for the U.S. (DOMUS). Diabetes Care. 2025;48(11):1942–1950. https://doi.org/10.2337/dc25-0911.