Mortality risk in posttransplantation diabetes mellitus: Discordance between glucose and HbA1c based diagnostic criteria

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OBJECTIVES

- Posttransplantation diabetes mellitus (PTDM) is considered a separate entity of type 2 diabetes.
- Current diagnostic criteria: fPG ≥ 7.0 mmol/L (≥ 126 mg/dL) or 2-hours post-challenge plasma glucose ≥ 11.1 mmol/L (≥ 200 mg/dL) during an OGTT.
- Recently HbA1c ≥ 6.5% (≥ 48 mmol/mol) has been proposed as a diagnostic criteria.
- We examined HbA1c compared with conventional glucose criteria early after transplantation as a predictor of mortality.
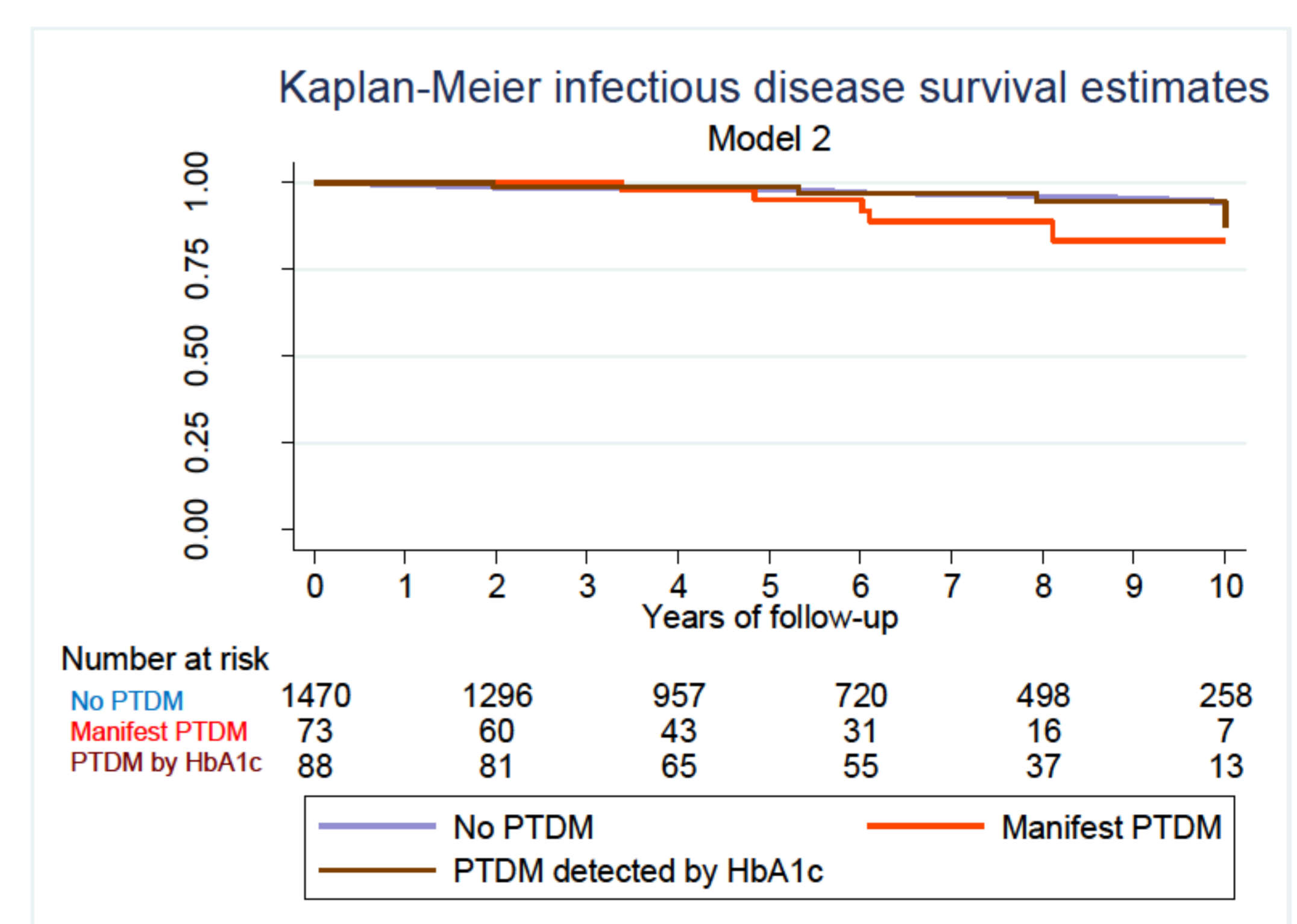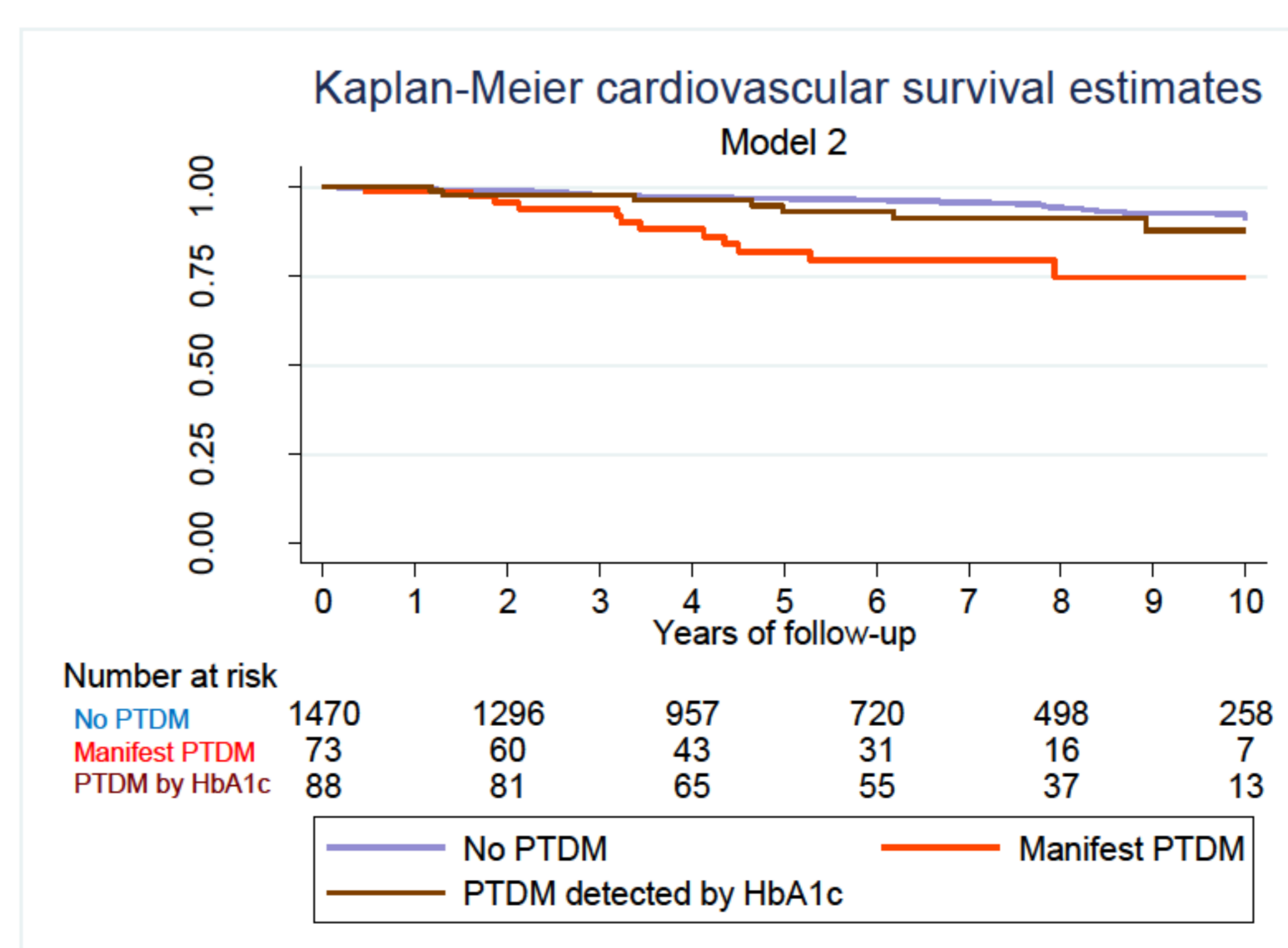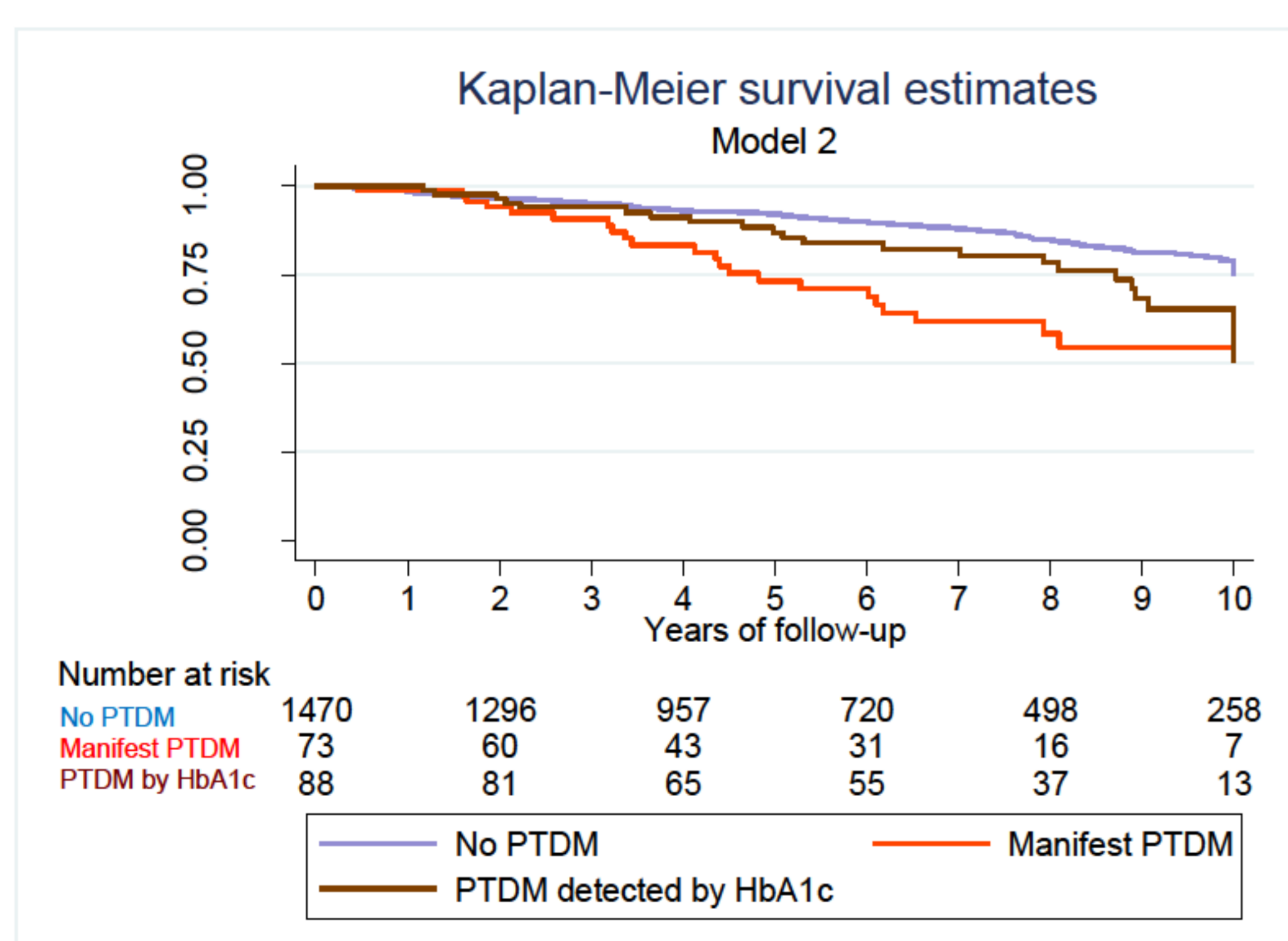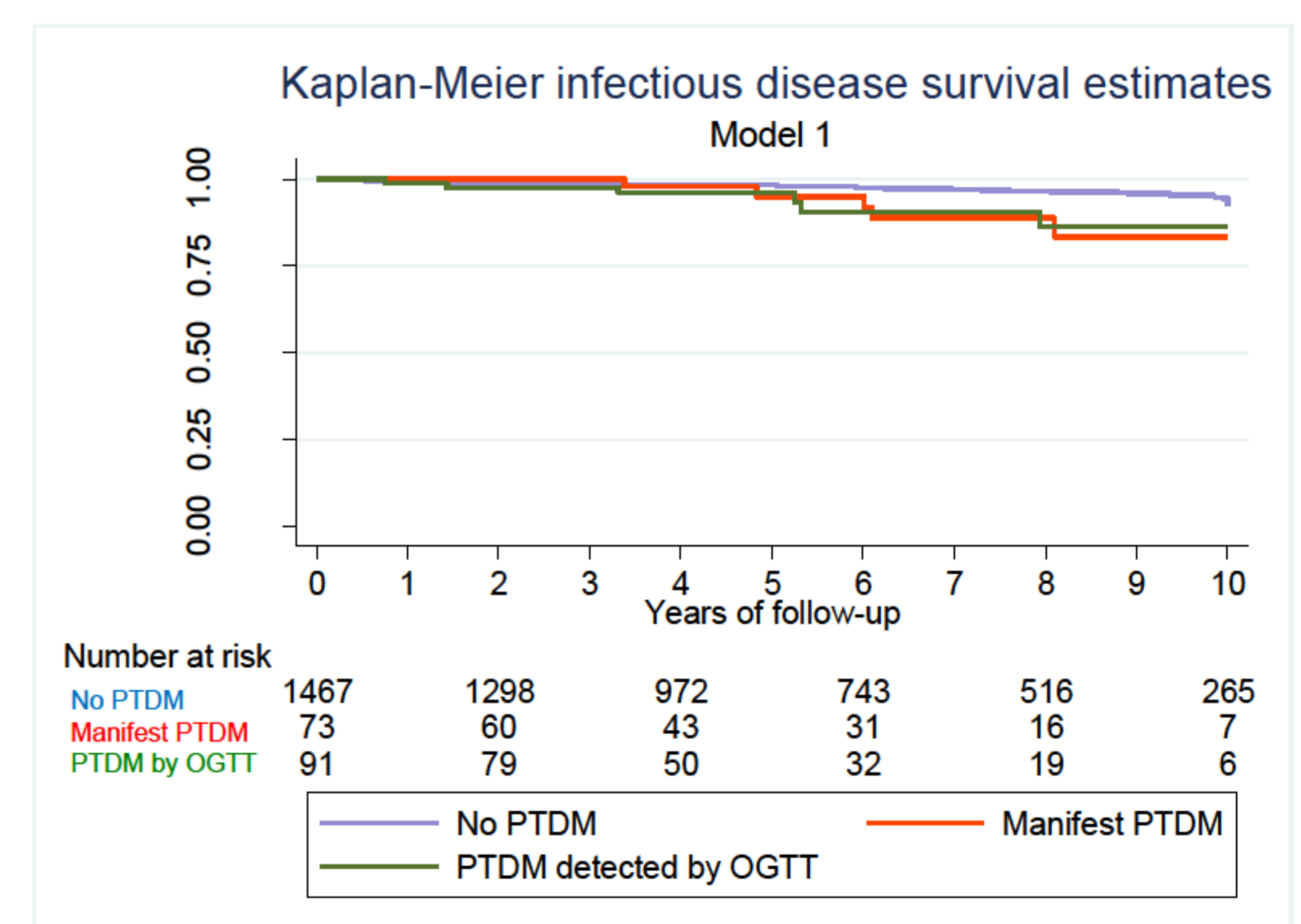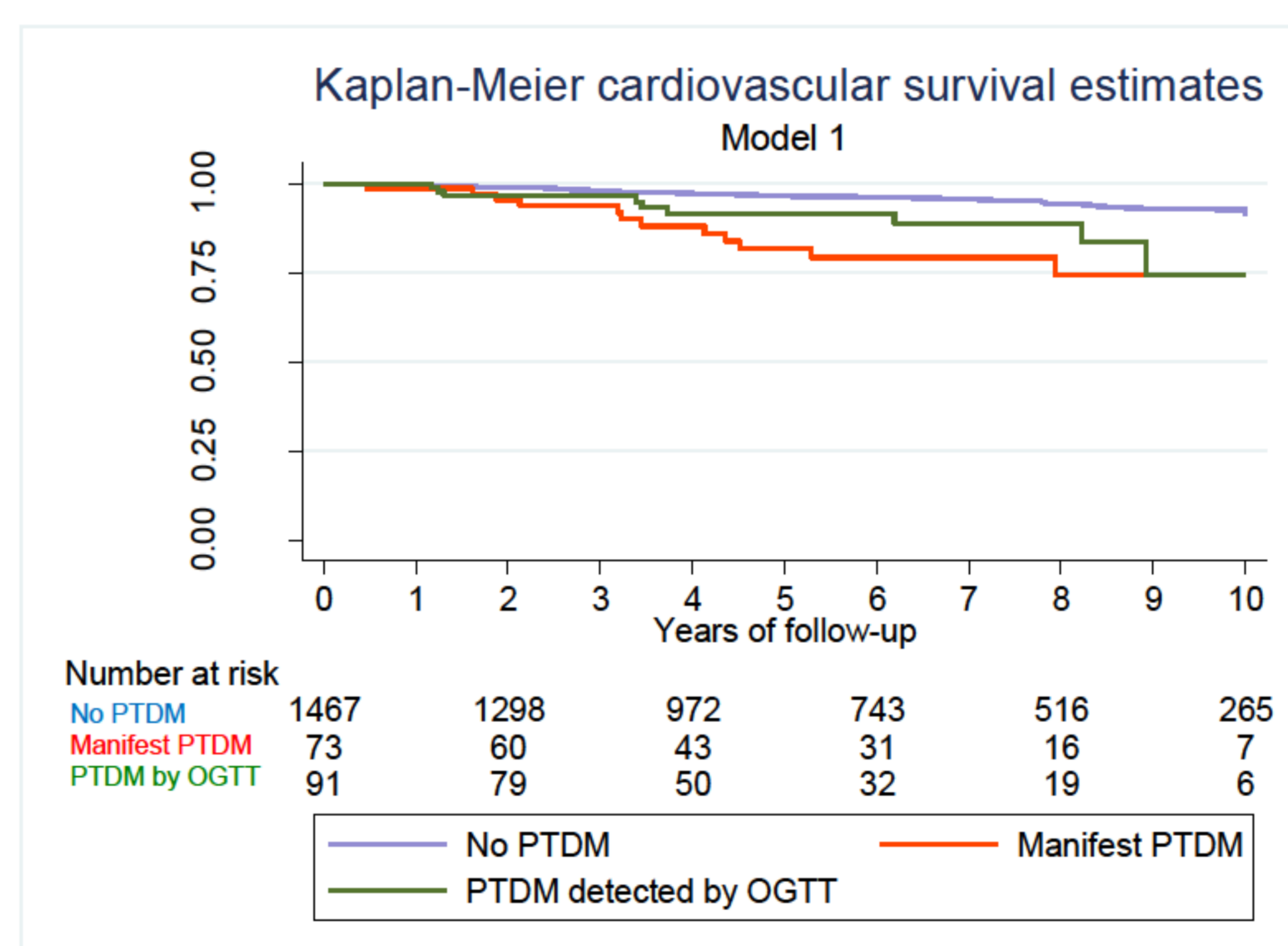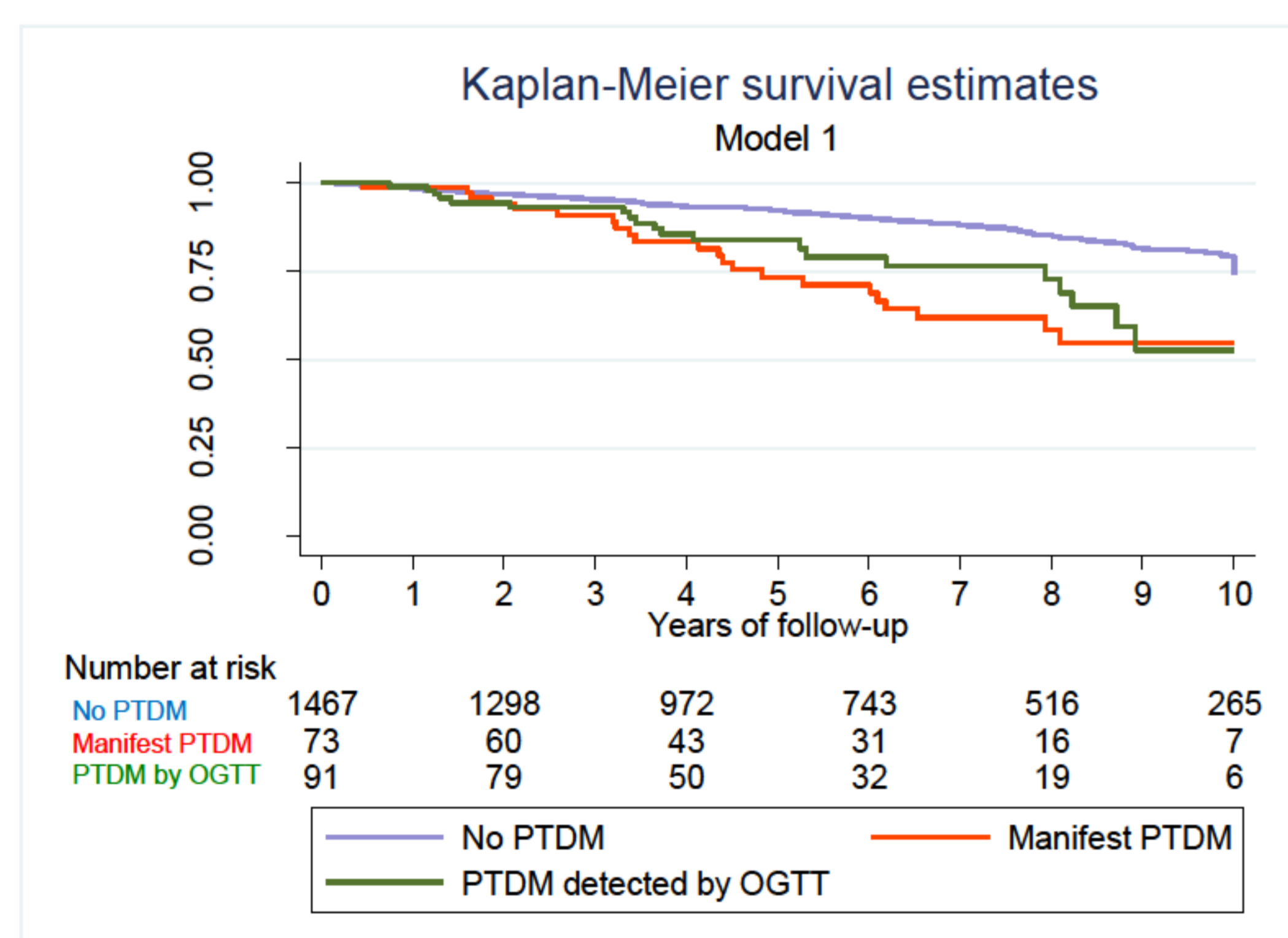
METHODS

- Retrospective cohort study of 1996 renal transplant recipients, transplanted between 1999 and 2011 at Oslo University Hospital, Rikshospitalet.
- Estimated mortality hazard ratios for patients diagnosed with PTDM.
- Weekly fPG measurements during the first 10 weeks, followed by an OGTT and HbA1c measurements at 10 weeks after renal transplantation.

RESULTS

- During a median follow-up of 5.4 years, 314 patients died.
- Both PTDM detected by an OGTT (adjusted HR 1.64, green line in KM plot) and persistent hyperglycaemia throughout the first 2 months post-transplant (manifest PTDM, adj. HR 2.21, red line in KM plot) were associated with mortality, as opposed to PTDM detected by HbA1c ≥ 6.5% (≥ 48 mmol/mol) (HbA1c criterion; adj. HR 0.96, brown line in KM plot).

Cox prop. hazard regression analysis		Death from all-causes		Cardiovascular death		Death from infections	
Multivariate adj. estimated HR	n	HR	95% CI	HR	95% CI	HR	95% CI
Model 1. Diagnostic category	1996						
Manifest PTDM	73	2.32	1.49-3.67	3.61	1.90-6.88	2.37	0.90-6.20
PTDM detected by OGTT	91	1.64	1.02-2.63	1.82	0.88-3.71	2.26	0.92-5.53
Model 2. Diagnostic category	1996						
Manifest PTDM	73	2.21	1.40-3.49	3.34	1.76-6.34	2.13	0.82-5.55
PTDM detected by HbA1c	88	0.96	0.61-1.51	0.82	0.37-1.83	0.67	0.23-1.93

Kaplan-Meier survival estimates — Model 1

Kaplan-Meier cardiovascular survival estimates — Model 1

Kaplan-Meier infectious disease survival estimates — Model 1

Kaplan-Meier survival estimates — Model 2

Kaplan-Meier cardiovascular survival estimates — Model 2

Kaplan-Meier infectious disease survival estimates — Model 2

CONCLUSIONS

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In the early phase after renal transplantation, PTDM diagnosed by conventional glucose criteria, as opposed to the HbA1c criterion, predicted mortality.