INTRODUCTION
Future hospital admission costs due to long-term diabetic complications could be cut down if patients are effectively treated to improve health outcomes. However, treatment differentiation between high risk and low risk patients is necessary to ensure the sustainability of an intensive diabetes management program. Multivariate computer models enable a population to be classified in order of complication risk and aid clinical judgement in the assignment of intensive treatment to high risk patients.

OBJECTIVES
- To identify significant predictors of complication risk and;
- To develop local diabetic neuropathy (DNeurM), retinopathy (DRM), nephropathy (DNeprM) and macrovascular (MVM) models which determine treatment effectiveness in Maltese type 2 diabetes patients.

METHODOLOGY
Setting & Criteria
A retrospective cross-sectional study was carried out at the Endocrine and Diabetes Centre at Mater Dei General Hospital (MDH), Malta. The sample population comprised of 120 randomly selected patients:
- Aged ≥25-70 years;
- Diagnosed with type 2 diabetes ≤ 1 year and;
- Taking metformin 500mg bd, perindopril 5mg od and simvastatin 40mg. Written informed consent was obtained from the participants to record 20 different predictors from their medical files and computerised medical records. After data collection the sample was reduced to 92 participants because required data was not available.

Risk Assessment
Using the Diabetes Complication Risk Index (DCRI; figure 1), three resident specialists assigned a total of 4 complication risk scores to 40 study participants from the sample. These 4 scores individually represent the current risk for neuropathy, retinopathy, nephropathy and macrovascular complications of that particular participant. Once inter-rater reliability was established, one resident specialist continued the risk assessment for the rest of the participants.

RESULTS
A statistically significant positive correlation was obtained between the scores assigned by three resident specialists (Pearson correlation=0.888, 0.844, 0.812), indicating good reliability for the DCRI.

Diabetes Complication Models
The significant predictors which featured in the parsimonious models (Table 1) were age, genetic predisposition, alcohol abuse, BMI, waist circumference, systolic BP, HbA1c level, serum total cholesterol level, serum fasting triglyceride level, serum uric acid level, urinary glucose level and albumin-creatinine ratio.

Although p-values for age (p=0.070) in DNeurM, waist circumference (p=0.095) in DRM, serum fasting triglycerides (p=0.062) in DNeprM and HbA1c level (p=0.060) in MVM exceed the 0.05 level of significance, they were included in the model fit because their contribution was found to be considerable on the corresponding R² value.

From the analyses, the presence of trace and 2+ urinary glucose was inversely associated with the risk for nephropathy development. In addition, since the increase in the risk score associated with 1+ urinary glucose is 0.183, the detection of 2+ urinary glucose was expected to contribute more to the risk for diabetic nephropathy than the resultant 0.149 increase. These outcomes conflict with literature and may be attributed to the small samples which fell in the categories.

CONCLUSION
Diabetes-specific models which stratify the diabetic population according to the risk for complications were derived. Even though this study provides preliminary evidence that the models could aid healthcare professionals identify the need for intensive treatment, further studies and long-term follow-ups are required to validate the models such that adequate risk assessment tools for primary complication prevention are obtained.

REFERENCES