Management and Outcomes of Perioperative Care among European Diabetic Patients: (MOPED): A prospective observational, international cohort study

STUDY SYNOPSIS

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Title	Management and Outcome after Perioperative Care among European Diabetic Patients (MOPED)
Short Title	MOPED
Protocol Version	V 1.1
Background & Rationale	Diabetes is common (about 20m patients in Europe), and patients have more surgical interventions than the general population. There are plausible pathophysiology and clinical mechanisms that diabetes patients are at increased risk of postoperative complications. When postoperative complications occur in the general population, they increase one-year mortality or major adverse events up to one year later. This is likely to be worse in diabetic patients. There is variation in practice guidelines in different countries in the perioperative management of diabetic patients undergoing major surgery, and whether this may affect postoperative outcome has not been investigated on a large scale. Neither is it known whether postoperative outcome differs depending on subgroups of diabetic patients, particularly whether different strata of preoperative glycaemic control affects outcome. If confirmed in this study, personalised perioperative management of diabetic patients may be enabled.
Objectives	Main Objectives: To conduct the first major European epidemiological study on the perioperative management of diabetic patients undergoing surgery and their 30-day postoperative patient-centered outcome; To evaluate subgroup outcomes, particularly strata of preoperative glycaemic control. Specific Objectives: To address the following research questions: 1. What is the epidemiology of diabetic patients undergoing surgery across Europe: Are there major variations in perioperative glycaemic control? Does management practice vary between centres and between nations? 2. What is the extent and patient-centered impact of postoperative complications among diabetic patients up to 30 days after surgery in Europe? 3. To undertake sub-group analysis comparing these outcomes among *Diabetes Mellitus Type 1, Diabetes Mellitus Type 2, and other diabetic patients; *Patients with different strata (levels) of glycaemic control, i.e. HbA1c <53, HbA1c 53-69 and HbA1c >69 mmol.mol; *Patients who received different anaesthetic techniques: -Volatile versus total intravenous anaesthesia; regional versus general anaesthesia (GA) and *Diabetics of longer duration have higher risk of intraoperative hypotension due to autonomic neuropathy.

Outcomes	Primary endpoint: Days at Home at 30 days after surgery (DAH-30) Secondary endpoints: Comprehensive Complications Index (CCI) score, Quality of Recovery (QoR-15) Day 1 if applicable, 30-day mortality, Length of Hospital Stay, Incidence of specific major adverse events (as listed exhaustively see Appendix 11 'Definitions of Outcomes') Tertiary endpoints: Time to resumption of normal diabetes therapy (insulin or oral hypoglycaemics and diet), Incidence of Diabetic Ketoacidosis or Hypoglycaemia, Incidence and duration of use of IV Insulin Infusion Therapy, Change in diabetic management at 30 days Intraoperative and postoperative management techniques of diabetes therapy will be documented, including capillary blood glucose levels before, during and <2hr after surgery.
Inclusion & Exclusion Criteria	**Inclusion criteria:** Diabetic patients aged 18 years or over (all classes except gestational diabetes) undergoing surgery (defined as requiring any general anaesthesia technique or any specific regional anaesthetic technique or a combination). Ambulatory, elective or emergency surgery and patients who receive postoperative care in intensive care or high dependency units will be included. Pre-defined subgroups of diabetic patients will be highlighted for later analysis. **Exclusion criteria**: Patients who are not diabetic; Patients with gestational diabetes; Patients undergoing minor surgery, i.e. surgery under local anaesthetic infiltration alone with or without monitored sedation alone or surgery not as defined in the inclusion criteria above.
Project Measurements	Patients' consent will be requested to allow documentation of their perioperative course and 30-day outcome as outlined in the outcome measures. Apart from routine clinical care, no intervention is planned.
Number of Participants	5,000
Duration	In each participating centre, recruitment of new patients will continue for a period of 12 months after their registration with the European Society of Anaesthesiology and Intensive care (ESAIC) as a participating centre, until the target 5,000 patients is reached. Follow up duration to 30 days after surgery.
Centres	This will be an international, multicentre prospective observational study. Any centre where colleagues can enrol and collect the data outlined in a minimum of n=45 patients are welcome to participate.
Statistical Considerations	Up to 5% of the population of Europe is thought to have diabetes. About 30m surgeries are performed in Europe per annum, therefore perhaps 1.5m diabetics have surgery in Europe per annum. It is proposed to evaluate a pragmatic sample of 5,000 European diabetic patients across at least 50 centres in a minimum of 10 nations.

	Centres undertaking surgery for diabetic patients will be invited to contribute patients. It is envisaged that this target number would be enrolled over a two-year period from initial roll-out, with up to a further 12 months needed for final data acquisition, cleaning and analysis. A sample size of 5,000 should be sufficient to avoid over-fitting and variance inflation for up to 63 factors or interactions. In addition, a sample size of 5,000 will have 90% power to find a small standardised difference of 0.10 as significant at $P<0.05$ for up to 63 independent hypotheses in comparing subsets of interest.
Risk-Benefit analysis	There is no risk to patients participating in this study other than any risk associated with their perioperative care. Individual patients will not benefit from the study, but the knowledge gained from the overall evaluation will inform best practice in this previously under-researched field.