

METHODS: Two-year of data on prescribed anti-diabetic medications were also available for the analyses. Data from this cohort were compared to an age and gender control group of Aboriginal individuals without diabetes. Regression analyses were conducted to evaluate the impact of anti-diabetic medications on glycemic levels and control after covariate adjustment (e.g. age, gender, baseline HbA1c). **RESULTS:** A total of 323 individuals newly diagnosed with diabetes in 2002 were identified. The mean HbA1c levels increased from 6.8% at time of diagnosis to 8.2% at the end of the study in 2008. A similar trend was seen for fasting glucose levels. After adjusting for covariate, the results of the regression analyses indicated that continuous (versus no use) and intermittent (versus no use) use of anti-diabetic drugs have no significant impact on 2-year HbA1c levels. Other clinical results indicated that a large proportion of the Aboriginal people had uncontrolled hypertension and hyperlipidemia. The average number of visits to physician, number of hospitalization and the length of staying at hospital were higher among the Aboriginal people with diabetes compared to their control group. **CONCLUSIONS:** Consistent with previous studies, these findings suggest that a minority of Aboriginal people in Southwestern-Ontario achieved optimal glycemic control.

PDB15

PREVALENCE OF HYPERTENSION AND/OR OBESITY IN PATIENTS WITH TYPE 2 DIABETES MELLITUS THROUGHOUT THE WORLD: A SYSTEMATIC LITERATURE REVIEW

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OBJECTIVES: Hypertension and obesity are associated with long-term complications of type 2 diabetes mellitus (T2DM). A systematic literature review assessed the comorbidities' prevalence in adults with T2DM. **METHODS:** Electronic databases (PubMed, Embase, and Cochrane Library) were searched for articles published in English between 2001 and 2012 and related to T2DM plus hypertension and/or obesity. Bibliographies of included studies were also examined. Data were analyzed by continental regions (Africa, Asia, Europe, North America, Oceania, and South America). **RESULTS:** We reviewed 2,688 abstracts and identified 92 relevant observational studies. Hypertension was defined by varying blood pressure cut-points (e.g., 140/90, 130/85, or 130/80 mmHg) or sometimes not clearly defined. The prevalence rates for hypertension were: Africa, 38.5%-80%; Asia, 13.6%-85.8%; Europe, 29.3%-95%; North America, 52%-70.9%; Oceania, 79%-85%; South America, 50%-90.0%; and multi-regional (Europe and Africa), 75.8%. Cutpoints for defining obesity by body mass index (BMI) or waist circumference (WC) also varied among the studies. The prevalence rates of obesity among adults with T2DM, were: Africa, 11.9%-54.6%; Asia, 20.1%-83.45%; Europe, 22.1%-96.9%; North America, 38%-62.4%; Oceania, 46%-51%; South America, 30.5%-80.6%. In Europe, the combined prevalence of obesity defined by BMI or waist-to-hip ratio was 50.9%-98.6%. Limited data suggest common comorbidity of both hypertension and obesity in adults with T2DM. **CONCLUSIONS:** Across the globe, hypertension and obesity, separately or together, are common comorbidities in adults with T2DM. Accurately quantifying their prevalence in regional populations will help prioritize health care efforts for managing these comorbidities, with a goal of reducing their long-term health and cost consequences.

PDB16

GEOGRAPHIC VARIATION TRENDS IN DIABETES MELLITUS PREVALENCE IN THE UNITED STATES VETERAN POPULATION

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OBJECTIVES: According to the U.S. Department of Veterans Affairs (VA), roughly 25% of veterans have been diagnosed with diabetes, and the mortality rate averages 5% per year compared to 2.6% in patients without diabetes. The goal of this study was to examine the geographic variation in the annual prevalence of diabetes mellitus (DM) in the U.S. veteran population. **METHODS:** The study sample was extracted from the Veterans Health Administration (VHA) Medical SAS datasets from 2006 through 2011. All patients diagnosed with DM throughout the study period were identified using International Classification of Diseases 9th Revision Clinical Modification (ICD-9-CM) diagnosis codes 250.xx, 357.2x, 362.0x and 366.41. The change in prevalence over the 6-year period was assessed and the variation in DM prevalence was tested by U.S. state. Statistical analyses were performed using SAS v9.3 software. **RESULTS:** Puerto Rico had the highest regional prevalence of DM with an increase from 23.79% in 2006 to 26.33% in 2011, while the western region maintained the lowest prevalence throughout the study period (11.34% to 12.85%). The trend in annual state-wide DM prevalence followed an increasing pattern, particularly among southeastern states and Puerto Rico. From 2006 to 2011, the number of states in the DM prevalence range of 15%-20% increased from 6 in 2006 (West Virginia, Nevada, Indiana, Missouri, Rhode Island, Oklahoma) to 25 states in 2011. Alaska and Hawaii were the only states to maintain prevalence below 10% in the 6-year study. **CONCLUSIONS:** The uneven distribution of DM toward southeastern states suggests a geographic variation in risk areas that may be useful for future targeted intervention strategies.

PDB17

SYSTEMATIC REVIEW OF EARLY LIFE DETERMINANTS OF METABOLIC SYNDROME AND DIABETES MELLITUS IN BANGLADESH, INDIA AND PAKISTAN

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OBJECTIVES: To investigate whether nutritional, life-style or behavioural interven-

tions during pregnancy or early life alter risk factors of developing metabolic syndrome and diabetes mellitus and to gain knowledge about the burden of the disease in population of Bangladesh, India and Pakistan. **METHODS:** A systematic search, using controlled and free terms (i.e. - metabolic-syndrome, glucose-intolerance, diabetes-mellitus, pregnancy, fetal development, life-style, nutrition) was conducted in Medline, Centre for Reviews and Dissemination and Cochrane Library databases. It was completed by pearling and hand-searching. Two reviewers assessed independently the results retrieved in the search, to adopt a decision on inclusion/exclusion. The quality of included papers was appraised with STROBE checklist for observational studies and Centre for Evidence Based Medicine checklists for any other study design. The present review is part of the GIFTS project funded by Seventh Framework Programme of European Commission. **RESULTS:** The search strategy identified a total of 3,278 papers. After exclusion by title, abstract or duplicated 424 full text articles were retrieved. Up to now we have assessed the 138 latest published papers, excluding 37. Of the 101 included articles 8 were randomized controlled trials, mainly focused on improving maternal and fetal outcomes with nutritional supplementation, but also with community-based interventions. There were another 47 observational studies, including long term follow-up cohorts, which established relationship between fetal development and posterior increased risk of metabolic syndrome for mothers and offspring. The other ones are reviews, most of them narrative reviews, heightening the burden of disease in these countries, the relevance of the pregnancy period, and the necessity of implement preventing strategies. **CONCLUSIONS:** Metabolic syndrome is a health problem of great magnitude in Bangladesh, India and Pakistan. As early life determinants of the disease are clearly stated, it would be important to now design feasible and cost-effective interventions to prevent disease.

PDB18

POPULATION ATTRIBUTABLE RISK OF MICROVASCULAR EVENTS ASSOCIATED WITH HBA1C, BLOOD PRESSURE OR WEIGHT IN PATIENTS WITH TYPE 2 DIABETES MELLITUS

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OBJECTIVES: To determine the population attributable risk (PAR) of microvascular events associated with HbA1c, systolic blood pressure (SBP), or body mass index (BMI) in patients with type 2 diabetes mellitus (T2DM). **METHODS:** From the PHARMO database 6010 T2DM patients were followed in the period 2000-2008 after at least 6 months of antidiabetic treatment (median 25, iqr 9-51 months). Survival models based on regularly monitored risk factors, other characteristics and registered complications were used to estimate the expected number of complications (renal failure, retinopathy, ulcers +/- amputations) after 5 years (base-case). The estimated number of averted cases after reducing risk factors divided by the base-case number resulted in the PAR. **RESULTS:** Mean age was 66 years (SD 12), 55% were men. 45% had elevated HbA1c ($\geq 7.0\%$), averaging 7.8% (SD 0.8). HbA1c reductions of 0.5% or to target ($> 7.0\%$) led to significant case reductions of renal failure of 3% and 5% and of retinopathy by 6% and 10%, respectively. 66% had elevated SBP (≥ 140 mmHg), averaging 161 mmHg (sd 16). SBP was not significantly associated with microvascular complications. 85% had elevated BMI (> 25.0 kg/m²) averaging 30.7 kg/m² (SD 4.5). BMI reductions of 10% (mean 8.7 kg) or to target (25.0 kg/m², mean 15.8 kg) led to significant case reductions of ulcers of 20% and 35%, but an increase of retinopathy of 7% and 12%, respectively. Eliminating all risk factors in the model would have averted 99 out of 493 renal failure cases (PAR 20%), 148 out of 566 ulcer cases (PAR 26%) and 21 out of 580 retinopathy cases (PAR 4%) after 5 years. Reductions of 0.5% HbA1c, 10 mmHg SBP and 10% BMI would have averted 11% of renal failure, 16% of ulcers and 1% of retinopathy. **CONCLUSIONS:** Even modest changes in HbA1c and BMI led to significant reductions in microvascular complications.

PDB19

A SYSTEMATIC REVIEW OF RECENT DATA DESCRIBING THE RISK OF COMPLICATIONS IN TYPE 1 DIABETES MELLITUS PATIENTS

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OBJECTIVES: To identify recent data describing the long-term risk of complications in patients with type 1 diabetes mellitus (T1DM), and their association with glycosylated haemoglobin (HbA1c) and other risk factors, and to select complications and related data for inclusion in a new cost-utility model for T1DM. **METHODS:** A systematic review was performed. The following electronic databases were searched (1 January 2003-27 July 2011): MEDLINE, MEDLINE In-Process, EMBASE, and the Cochrane Library, including the Health Technology Assessment (HTA) database. Relevant clinical guidelines and HTA documentation were also searched. **RESULTS:** A total of 4,846 titles were screened, 281 reports of 72 unique studies were included for qualitative synthesis. Multiple reports were identified for several studies, including the Diabetes Control and Complications Trial and the Epidemiology of Diabetes Interventions and Complications follow-up study (DCCT/EDIC), the Epidemiology of Diabetes Complications (EDC) study, the Finnish Diabetic Nephropathy (FinnDiane) Study, the Wisconsin Epidemiologic Study of Diabetic Retinopathy, the EURODIAB type 1 complications study, and several other large observational and registry studies. Data were extracted for 57 T1DM complications in adults and 20 in children and adolescents. Complications were selected for inclusion in the cost-utility model where there was evidence for a statistical association with T1DM and HbA1c levels, an impact on mortality, and an expected impact on