patients. For each cohort, we calculated proportions of patients with T2D using 7 individual insulin regimens (basal only, bolus only, basal-bolus, basal only with oral anti-diabetic medication (OAD), bolus only with OAD, basal-bolus with OAD, other). Chi-square test and Fisher’s exact test were used to examine the association between patients’ insulin regimens and the specialty of the physician who initiated their insulin use. Further we used canonical correspondence analysis to explore the association between practice specialty and patients’ insulin regimens.

RESULTS: Both the Chi-square statistics (p < 0.0001) and the Fisher’s exact test (p < 0.000001) indicate that patients’ insulin regimens are strongly associated with physicians’ practice type. The canonical correspondence analysis suggest that 86.27% of principal inertia could be explained by a dimension on which OAD use is correspond closely with general practitioners, endocrinologists, and internist practice specialties. The canonical correspondence analysis results also indicate that physicians’ choice of insulin initiation regimen was statistically significantly associate with their practice specialties.

CONCLUSION: The practice specialty of the physicians initiating insulin is strongly associated with their patients’ overall insulin regimens. Compared to other physician practice specialties, endocrinologists were most likely to prescribe basal-bolus insulin with OAD, and least likely to prescribe basal only insulin.

PDB77

INVOLVEMENT OF LAY VOLUNTEERS IN TRAINING ON SELF-MANAGEMENT OF PATIENTS WITH DIABETES IN THE UNITED KINGDOM—COST IMPLICATIONS

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OBJECTIVE: A recent randomised clinical trial demonstrated that specialist health professionals (SHP) and volunteer peer advisors in diabetes (PAD) are equally effective in delivering training programs for self-management of diabetes, based on a validated five-item knowledge questionnaire. The objective of this study was to compare the costs of training delivered by SHP and by PAD. METHODS: Cost of SHP (specialist nurse) in the NHS setting, including their education/training costs, was estimated rule-based approach, LabRespond.

RESULTS: The cost per patient completing the training delivered by SHP was £45.19. The cost for PAD depended on the number of courses delivered after they have been trained: for one course scenario, the cost was £21.52, for 3 courses £7.17, and for five courses £4.30. The respective cost savings per 1000 patients completing the training were £23,673, £38,021, and £40,891. Engaging PAD instead of SHP to train 1000 patients would allow the NHS to provide training in self-management in diabetes to additional 1100–9500 patients.

CONCLUSION: Engaging volunteer peer advisors in the training on self-management of diabetes is a highly cost-saving intervention with potentially considerable implications for public health in the UK.

PDB78

MEASURING THE IMPACT OF AN EDUCATIONAL PROGRAM ON PHYSICIAN PRACTICE PATTERNS: EXPERTMDTM CV DIABETES

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OBJECTIVE: Controlling risk factors/using cardioprotective therapies can reduce cardiovascular (CV) morbidity/mortality in diabetic patients 1) translating this evidence into practice can be challenging, and 2) many patients receive inadequate care. In an effort to help improve the care primary care physicians provide to patients with Diabetes (DM) in Canada, the ExpertMDTM CV Diabetes program was developed. To assess the impact of the ExpertMDTM program in improving physicians’ management of the CV complications of DM patients.

METHODS: A total of 100 Canadian family physicians (FPs) voluntarily participated in the program. Physicians’ management of the CV complications of patients with DM was assessed before (Pre) and After (Post) implementation of the ExpertMDTM program via self-audit. Clinical data parameters, gathered via case report forms submitted on-line, examined State of Care at Visit Entry and Visit Exit, Pre- and Post-Program. Twenty-four FPs recruited as a control group solely for self-audit submitted paper-based forms to the data centre. Data were cleaned/analyzed by Groupe D’analyse, Ltee, Montréal, QC.

RESULTS: At Visit Entry, more patients were at BP goal (<130/80) Post program in both FP groups (ExpertMDTM: 34.3% vs. 29.2%, p = 0.01; Control: 47.5% vs. 34.3%, p = 0.02). At Visit Exit, Physician management of glucose (A1c <3 months, 80.8% vs. 77%, p = 0.05), cholesterol screening <12 months (93.7% vs. 89.5%, p = 0.002), ACR screening <12 months (95.6% vs. 90.5, p = 0.0004), obesity screening via waist measurement (28.2% vs. 12.5%, p < 0.0001) and ASA use (86.9% vs. 77.5%, p < 0.0001) was significantly higher Post- versus Pre-program for ExpertMDTM participants. Post-program Control FPs checked BP at office visit (100% vs. 74.9%, p = 0.0001), monitored ACR (92.8% vs. 83.5%, p = 0.04) and used ASA (96.1% vs. 82.4%, p = 0.0002) significantly more often.

CONCLUSION: The results indicate the ExpertMDTM CV Diabetes program positively impacted physician practice patterns, enhancing the care provided to DM patients.
(N = 2000) and a test set (N = 4486). A proportion of glucose and HbA1c specimens were mismatched by randomly switching either HbA1c or glucose results. The outcome of interest was correct classification of vials as either ‘matched’ or ‘mismatched’. The outcome was predicted using a Bayesian network that encoded probabilistic relationships among analytes, self-reported diabetes status, and a latent ‘mismatch’ variable. Performance was compared against an established approach LabRespond via area under the receiver-operating characteristics curves (AUCs). An AUC = 1.0 and 0.5 represents perfect prediction and random guessing respectively. RESULTS: The network was predictive of glucose and HbA1c mismatches that produced 20 mg/dL glucose and 1 point HbA1c discrepancies between true and mismatched scores (AUC = 0.84 (+/-0.03)). The network also identified errors among those self-reporting diabetes (N = 329) AUC = 0.81 (+/-0.02) and predicted self-report of diabetes diagnosis AUC = 0.95 (+/-0.01). The network also performed better (z = 12.04, p < 0.001) than LabRespond (AUC = 0.76 +/- 0.01). CONCLUSION: A Bayesian network that models probabilistic relationships among analyte values can accurately identify mismatched specimens. The algorithm is best at identifying mismatches that result in a clinically significant magnitude of error. Information about diabetes diagnosis acted to reduce uncertainty in a mismatch. Decision analysis may be have direct application in reducing cost at point-of-care.

REDUCING COSTS AND IMPROVING OUTCOMES BY REDUCING MEDICAL ERRORS: A COMPARISON OF EXPERTS WITH PROBABLISTIC LABORATORY ERROR DETECTION IN A POPULATION OF PRE-DIABETICS

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OBJECTIVE: Human evaluation of laboratory errors is a costly standard of practice. Automating error detection may reduce costs and improve patient outcomes. To compare an automated probabilistic approach (Bayesian network) to human expert error detection in a pre-diabetic population. METHODS: Two test sets (A and B) each N = 60 were generated from the results of the Diabetes Prevention Program (DPP). Glucose values were randomly drawn from a pre-diabetic distribution and expected HbA1c score was estimated by the DPP based formula: HbA1c = 4.22 + 0.166 × Glucose. In each test set, 37% of the HbA1c scores were mismatched to generate vial labeling errors. Eleven experts recruited from the American Academy of Clinical Chemists and a Bayesian network evaluated the results to detect mismatched vials. Six and five experts were assigned to test sets A and B respectively. Receiver-Operating Characteristics (ROC) curves were generated for each expert and for the Bayesian network and area under the curves (AUCs) were compared via null hypothesis testing. An AUC = 1 and 0.5 represents perfect prediction and random guessing respectively. RESULTS: The Bayesian network was predictive of glucose and HbA1c mismatches in both Test Set A (AUC = 0.86 (+/-0.05)) and Test Set B (AUC = 0.93 (+/-0.04)). Expert performance was on average worse in Test Sets A (AUC = 0.74 (+/-0.07)) and B (AUC = 0.76 (+/-0.07)). Individual analysis revealed that the network performed significantly better (z < 1.96, p < 0.05) than 7 of the 11 experts; in no case did the network perform worse than the experts. CONCLUSION: A Bayesian network that models probabilistic relationships among analyte values is often better than laboratory experts at identifying laboratory errors. This suggests that an automated program may help reduce costs and improve patient outcomes in the laboratory.