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POSTERS

1 Review of Management of Diabetes Mellitus on the Liverpool Care Pathway

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Introduction: End of life diabetes care has been identified as lacking quality care standards and detailed clinical guidance. Unpredictable glycaemic control in the dying predisposes patients to symptomatic hypoglycaemia or ketoacidosis. At the time of this study, there is little published evidence to justify any particular glucose level in end of life diabetes management.

Aim: This review assesses an existing standard of practice regarding management of diabetes in patients on the LCP in relation to prescription of blood glucose-lowering agents and monitoring of BM levels.

Methods: The study captured snapshot data for the Royal Cornwall Hospital by reviewing the case notes of all diabetic patient mortalities on the LCP over five consecutive months in 2012.

Results: The case-notes of 38 such patients were reviewed. Average length of time on the LCP was 29 hours. Eight patients were diet-only controlled. All (100%) of 26 patients requiring oral hypoglycaemic agents had this medication discontinued immediately. Documentation supporting this decision was noted in just 6 of these cases (23%). All (100%) of 12 patients requiring regular insulin had their insulin regimen discontinued immediately. In all 30 cases of non-diet controlled diabetes, BM levels were neither requested nor measured.

Conclusion: The discontinuation of hypoglycaemic agents should be reviewed on a case-by-case basis, primarily to avert symptomatic glycaemic change. Advanced directives should be discussed. Routine availability of detailed clinical guidance, such as that endorsed by NHS Diabetes (2012), would support the holistic approach facilitated by end of life care pathways.

2 An Investigational New Insulin Glargine U300: Glucose Control and Hypoglycaemia in People with Type 2 Diabetes Using Basal and Mealtime Insulin (EDITION I)

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An investigational new insulin glargine U300 (Gla-300) has even flatter and prolonged PK and PD profiles than glargine 100 U/ml (Gla-100). The EDITION I study compared the efficacy and safety of Gla-300 vs Gla-100 in people with T2DM using basal plus mealtime insulin. In this multicentre, open-label study, 807 people were randomised to once-daily Gla-300 (n=404) or Gla-100 (n=403), administered in the evening. Primary endpoint was change in HbA1c from baseline to month 6, and first secondary endpoint was percentage of people with ≥1 severe or confirmed (≤70 mg/dL) nocturnal hypoglycaemic event from month 3 to month 6. Gla-300 was non-inferior to Gla-100 for change in HbA1c [least squares mean change –0.83% (0.06) in both groups; difference -0.00% (95% CI –0.11 to 0.11)]. Fewer people using Gla-300 had severe or confirmed nocturnal hypoglycaemia from month 3 to month 6 (36.1% vs 46.0%; RR 0.79 [95% CI 0.67 to 0.93]; p=0.0045). Occurrence of any hypoglycaemic event (% of people with ≥1 event) during study period was numerically lower in the Gla-300 group than in the Gla-100 group. No between-treatment differences in adverse events were seen. In conclusion, in people with T2DM, Gla-300 was as effective as Gla-100 in controlling glycaemia and was associated with a 21% reduction in severe or confirmed nocturnal hypoglycaemia from month 3 to month 6. Gla-300 was well tolerated.

Study sponsored by Sanofi

3 Impact of social deprivation and ethnicity on service uptake and outcomes in type 1 diabetes; a 10 year retrospective study

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As part of a comprehensive service review we conducted a retrospective analysis of combined biochemical, demographic and health resource utilisation data collected over 10 years for T1DM patients to determine factors influencing outcomes.

The cohort (n=1038) was defined to include all patients attending since 2002 with follow-up until 2010 or prior death. Baseline glycaemia was defined as mean HbA1c in 2002-2004. Economic status was defined using the index of multiple deprivation (IMD)

Results: At baseline, mean (+SD) age was 41.6+12.3 years and diabetes duration 17.7+13.7 years . Mean HbA1c was 8.1+1.4. 37 deaths occurred (3.6% cumulative mortality). Patients who died were older (50.9+9.1 years, p <0.001) with higher baseline A1c (9.1+1.6%, p<0.001) but similar diabetes duration. For baseline HbA1c > 9.0% cumulative morality was 9.0 % (p< 0.001). Patients who died were more socially deprived, 61% having scores in the top quintile of the population.

Socioeconomic status also influenced uptake of structured education: attendance was low among those with high IMD scores and ethnic minorities were under-represented among attendees. Attendance was associated with significantly better long-term glycaemic control (mean HbA1c at study end 8.1+1.2 vs 8.4+1.8 %, p=0.001) and a lower prevalence of subsequent hospitalisation for severe hypoglycaemia (1.7 vs 4.8%, p=0.006).

Conclusions: These data demonstrate a clear association between socioeconomic status, service utilization and outcomes, with social deprivation and dysglycaemia being independent risk factors for mortality. This suggests that developing specific interventions addressing the needs of this group of patient could impact on outcomes and overall service c

4 Inpatient diabetes – easy to emulate IT solution to support and enhance the Think-Glucose project

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"Think-Glucose" is a national initiative to improve inpatient diabetes care including effective use of the inpatient diabetes specialist team(IPDST). It utilises a comprehensive "traffic-light" system to give guidance as to which patients should be referred to IPDST. The traffic-lights include 31 cases: 16 types of "always-refer" cases(red), 8 "sometimes-refer"(amber) and 7 "rarely-refer"(green). It is difficult for busy clinical staff to keep all these possibilities in their heads and even with reminder cards/leaflets/posters, these are readily not to hand when needed. Previously referral to IPDST required phone, fax or internal-mail with their built-in delays and patients being missed.

Most NHS hospital-trusts have an internal, on-line, electronic investigation-ordering system. Depending on the test being ordered, this brings up a form which when completed is sent electronically to the laboratory or imaging department concerned. We used our hospital-trust's investigation-ordering system to develop an electronic form for "Think-Glucose-Assessment" and mandated all clinical staff to ensure the assessment on all diabetes patients as soon as possible after admission. The quick-and-easy form incorporates the 31 traffic-light cases with simple tick boxes, and safety data on glucose and feet assessment within 4 hours of admission. Once submitted the form appears instantly in a generic NHS-email-account accessible by IPDST. This facilitates daily IPDST ward round lists. Over the year following implementation the number of patients seen by IPDST increased from 83/month to 452/month, whilst at the same time ensuring those seen complied with the national traffic-light criteria. All hospitals with electronic test ordering systems could easily emulate our system.

5 Diabetes related general practice training: are we equipping future GPs to adequately manage diabetes in the community?

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Background: 2.4 million people in the UK currently have diabetes. The responsibility of managing majority of these patients will inevitably fall on primary care. Poorly managed diabetes leads to complications, and hence increasing costs of healthcare; patients with diabetes already use 10% of the NHS budget. Standards 4 – 6 of the National Services Framework for diabetes states that all patients with diabetes must receive high quality care. We conducted a survey to ascertain whether current training in General Practice (GP) will allow us to achieve this.

Methodology: An anonymised online questionnaire was administered to 2nd and 3rd year GP trainees in the local training scheme (n=350) exploring their views on their diabetes–specific training.

Results: 65 trainees responded. 48% had not received diabetes-specific education. 84% will not have attended diabetes clinics during training. 90% had undertaken extra educational activities to supplement their training. Only 50% felt the GP curriculum had clear objectives regarding diabetes training; of these, 71% felt current training did not allow them to fulfil those objectives. 76% agreed that majority of diabetes care should be provided by GPs. However 65% rated the education they receive as poor, and only 26% felt it affords them the confidence to manage diabetes in the community.

Conclusions: Our small survey suggests a deficiency in GP training with regard to diabetes. This would have negative implications on patient care. The training programme may need to be restructured by mandating diabetes clinic experience, and adding e-learning modules and courses to the curriculum.

6 The association between post-prandial urinary C-peptide creatinine ratio (UCPCR) and the treatment response to liraglutide: a multicentre observational study.

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Introduction: The response to GLP-1 receptor agonist treatment may be influenced by endogenous beta-cell function. We investigated whether urinary C-peptide creatinine ratio (UCPCR) as a marker of insulin secretion was associated with the treatment response to liraglutide.

Methods: Single, outpatient urine sample for UCPCR was collected two hours after the largest meal of a day among two separate groups of subjects; (1) subjects initiating liraglutide (0.6→1.2mg daily), or (2) subjects already treated with liraglutide fo -32 weeks. The association between pre-treatment and on-treatment logarithm-transformed UCPCR (log UCPCR) and HbA_{1c} reduction at 32 weeks was assessed using univariate and multivariate analyses. The likelihood of subjects achieving pre-specified HbA_{1c} reduction of ≥1%; 11 mmol/mol was assessed with increasing quartiles of UCPCR.

Results:116 subjects (70 pre-treatment, 46 on-treatment) with type 2 diabetes from 10 diabetes centres were studied. The correlation between pre-treatment log UCPCR and HbA_{1c} reduction approached significance (r=0.23, P=0.051), with the association becoming significant after adjusting for the effects of baseline HbA_{1c} (P=0.037). On-treatment UCPCR was not associated with HbA_{1c} reduction in univariate (r=0.18, P=0.24) or multivariate analyses. Baseline HbA_{1c} (increases in one standard-deviation) but not pre-treatment UCPCR (increasing quartiles) was associated with achieving HbA_{1c} reduction ≥1%; 11 mmol/mol (OR 95%CI 2.52 [1.38,4.62], P=0.003 and 1.29 [0.81,2.07], P=0.284), respectively. Pre-treatment and on-treatment UCPCR did not correlate with weight reduction.

Conclusions:Postprandial UCPCR before liraglutide initiation was associated with the subsequent glycaemic response to treatment. We did not identify a clear cut-off UCPCR level that would help predict a favourable glycaemic response.

7 Epidemiology Of Type1 DM Over Five Decades: The Winchester Cohort.

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BACKGROUND. 613 adults (313 males,300 females) with Type1DM attending a Diabetes Clinic between 1983 and 2010 form a cohort of patients diagnosed over 5 decades (1951 to 2010).

METHODS. Clinical information captured in a database was analysed for: age at diagnosis; family history; and presence of co-morbid coeliac disease and/or hypothyroidism.

RESULTS. Mean age at diagnosis increased progressively over the decades 1961-70, 1971-80, 1981-90, 1991-2000, and 2001-2010, being respectively 18.5 years (66 patients); 18.3 (118); 23.4 (158); 28.2 (157) and 30.9 (114). Progressively the proportion diagnosed at ages 0.0-19.9 years decreased (61% in 1971-80 v 33% in 1991-2000), and increased between ages 20.0-39.9 (respectively 31% v46%), and those 40.0-59.9 (8.5% v 18.5%). For each decade from 1961-70 the percentage patients with a positive family history were: 10.6; 7.6; 17.1; 12.1; and 8.8%. Only 5 cases of coeliac disease were diagnosed. Hypothyroidism occurred in 24 (of313) males (7.7%) and 64 (of 300) females (21.3%).

CONCLUSIONS.1. Age at diagnosis appears to be increasing due to a change in age distribution. Type1DM is not rare between 40 and 60 (18.5%) but remains so over 60. 2.A positive family history occurred in between 1 in 6 and 1 in 13 patients. 3. Coeliac disease is rare in an entirely Anglo-Saxon population. 4. Screening for hypothyroidism should continue, particularly in females.

These observations are relevant to diagnosis and on going management of new cases of DM at any age.

8 Glycaemic control and weight change over one year in patients with Type 2 diabetes managed on Humulin R (U500) insulin.

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19 patients with Type 2 DM with insulin resistance were commenced on U500 between January 2009 and August 2012. The effect on HbA1c, weight and patient satisfaction is presented.

Results: Prior to the intervention these patients required a mean dose of 443 units (range 300-944) with an average of 10 injections (range 6-19) a day and had mean weight, 122 kg (range 80.5-180.2) & HbA1c 10.8% (95 mmol/mol) (range 7.1-15.2).
The analysis included 11 patients as 6 patients stopped using U500 due to hypoglycaemia and two after bariatric surgery.

After three months of starting U500, the mean HbA1c reduced by 1.7% in 9 patients but two patients had an increase of 0.4% and 0.3%. At 6 months the mean reduction was 2.4% with improvement in 10 patients whereas one patient had an increase of 0.1%. At 1 year the mean reduction was 1.5% with improvement in 7 patients, increase in 1 patient and no

change in one patient. 7 patients gained an average of 6.8 kg (range 0.4 to 17.3) over 6 months and 4 had an average 5 kg (0.8 to 6.65) weight loss. All the patients in the audit reported satisfaction with the treatment, especially due to the reduction in the frequency of insulin injection. There was cost saving of 20K calculated for 20 patients in using U 500 insulin compared to U 100.

Conclusion: The use of U500 has a role in the management of severely insulin resistant patients who are either waiting or not qualified for bariatric surgery.