

ABCD
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POSTERS

1 Best Practice Tariffs for Diabetic Ketoacidosis and Hypoglycaemia

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The objective of the best practice tariff (BPT) policy is to reduce unexplained variation in clinical quality and universalise best practice. The tariffs are structured and priced to incentivise and adequately reimburse care that is high quality and cost effective.

The Joint British Diabetes Societies guideline-writing group for the management of diabetic ketoacidosis, the National Clinical Director for diabetes and the Department of Health Diabetes Policy Team have developed a BPT proposal for diabetic ketoacidosis and hypoglycaemia.

The proposed BPT incentivises several components and is structured such that only providers meeting the following criteria could achieve full tariff price:

- o During the in-patient admission all patients must be seen by the multi-disciplinary diabetes team, receive an educational review and be discharged with a written care plan.
- o Following discharge access to timely structured education must be provided.

The BPT proposal has been submitted to the PbR team and will be included in the tariff sense-check exercise in Autumn 2012 .

The sense check aims to scrutinise the draft prices to ensure that there are no hidden incentives to perverse clinical practice and to double check the impact of what is being proposed.

Decisions on the BPT areas to be included in the 2013/14 tariff package will be taken following this exercise.

2 Mean HbA1C as a predictor of survival in Type 2 Diabetes Mellitus; the DECADE study

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This study aimed to evaluate the relationship between mean long term quintiles of glycaemic control with survival in the Wirral Peninsula population.

Using the Wirral Diabetes Register, a retrospective observational cohort study of 22589 patients from January 2000 to December 2010 was conducted as part of the DECADE study. Patients were classified into quintiles according to their average lifetime glycosylated haemoglobin (HbA1C) levels. Mortality, means and median survival times were determined

from the register data. The Cox proportional hazard ratio was conducted to assess the relationship between glycaemic control and mortality.

Of the 22589 patients, males accounted for 12171 [53.9%] and females 10416 [46.1%]. Seventy-four percent [n=16719] of patients were alive and 26% [n=5870] had died during the follow up duration of 11 years. The commonest causes of death were cardiovascular disease (32.3%), sepsis (23.4%), malignancies (19.5%), and cerebrovascular disease (10.4%). The hazard ratio for the 1st, 2nd, 3rd and 4th quintiles of HbA1C were 1.235 (95%CI:0.586-2.601), 0.812 (95%CI:0.743-0.888), 0.765 (95%CI:0.701-0.835), and 0.994 (95%CI:0.901-1.097) respectively. In males and females, for the HbA1C range 6.6-7.5%, the mean survival times were 86.0 years [95%CI:85.5-86.5] and 85.6 years [85.0-86.1] respectively. The analysis showed that mortality increases at both extremes of the HbA1C range; worse when $\geq 8.6\%$ in males and $\leq 4.5\%$ in females. The association between HbA1C and mortality therefore indicates a U-shaped pattern for this cohort of patients.

In conclusion, our data suggests that increased all-cause and cardiovascular mortality occurs at the lowest and highest mean HbA1C levels in type 2 diabetes. Further consideration is therefore needed of the optimal level of glycaemic control to be advised to patients with type 2 diabetes.

3 An online survey of Insulin start among Specialty Trainees and Consultants in the Mersey Deanery.

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Introduction-Post graduate training has changed considerably over the recent years with a move from time based to competency based training where skills are assessed via work place based assessments and reviewed at the Annual Review of Competence Progression (ARCP).

The curriculum for training in diabetes is published by the Joint Royal College of Physicians Training Board and is chosen by a subgroup of Specialist Advisory Committee in Diabetes and Endocrinology after consultation with Regional Specialty Advisors, trainees, local training committees and specialist societies.

Insulin initiation and teaching patients to use blood glucose monitors is largely done by Diabetes Specialist Nurses. We conducted a survey among all Specialty Trainees in diabetes in the Mersey deanery to assess how confident trainees felt in doing this. We also asked diabetes consultants for their opinions through the same survey.

Methods- An online questionnaire was sent to all Specialty Trainees (ST3-ST7) and consultants in diabetes in the deanery. We asked how many times they had initiated insulin treatment in patients explaining the use of pens and injection technique in the a) last 1 year b) last 5 years, and whether they were confident in doing this. We asked whether they were familiar with insulin pen devices and whether they knew the specific type of insulin used in individual pen devices. We also asked whether they thought this was an important skill to acquire, and for suggestions for acquisition of this skill if this was perceived as being a training need.

Results- 10 consultant and 12 trainee responses (ST4-4, ST5-3, ST6-2, ST7-3) were obtained. 50% had not done any insulin starts in the last 1 year and 36.4% had not done any insulin starts in the last 5 years.

91.6% of trainees were not confident to initiate a patient on insulin. 95.5% of respondents felt that this was an important skill to acquire during training.

68.2% were not familiar with insulin pen devices and 60% did not know which type of insulin to use in specific pens. However 100% of respondents felt this was important to know.

60% of respondents felt out of depth while dealing with patients in clinic who have specific questions regarding pens or meters. 95.5% felt that this should be a mandatory part of Specialty Training.

When asked about ways of implementing this, most respondents suggested having sessions with Diabetes Specialist Nurses during the initial training years for insulin starts and making it part of the curriculum for diabetes as a Directly Observed Procedural Skill (DOPS).

Conclusion- Our survey showed that there is a training need among specialty trainees in diabetes on practical aspects of diabetes management. Trainees irrespective of their training grade were not confident on starting patients on insulin.

Though this aspect of diabetes management is largely undertaken by Diabetes Specialist Nurses, basic knowledge is very important. We suggest including this as a DOPS in the diabetes curriculum. We also suggest and aim to do the survey nationally across trainees in all deaneries.

4 Mapping the Endocrinology and Diabetes Mellitus Curriculum

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Specialty training in endocrinology and diabetes mellitus has changed. The traditional apprenticeship model has given way to structured training with clearly defined competencies and transparent assessments including the Specialty Certificate Examination. Curriculum mapping from trainer and trainee perspectives can be used to ensure the quality of specialty training.

We analysed individual posts and the North Western Deanery's specialty training programme as a whole for opportunities to achieve the competencies outlined in the new curriculum. Data was gathered from trainees and their educational supervisors using red / amber / green judgements, where red implies no opportunity to gain competency, amber suggests limited opportunity, and green represents ample opportunity.

We collected data from eighteen of the nineteen hospitals offering training posts in the region, receiving twenty-four responses from the twenty-eight trainees in post between October 2010 and October 2011 (85.7%) and twenty-one responses from the thirty-two educational supervisors (65.6%). The results showed good alignment between the intended and experienced curriculum with better than expected observed agreement (Cohen's kappa 0.48).

Trainees should be able to achieve all the curriculum competencies by the end of their training but there were a number of 'problematic' competencies, including the assessment of normal growth and development, diagnosing and providing first line care for patients with rarer endocrine conditions, care within community settings, and attendance at diabetic eye disease and paediatric endocrine clinics.

Curriculum mapping is a formative process for trainees and their supervisors, making the curriculum and local training opportunities more transparent and allowing the programme director to ensure deficiencies are compensated for by targeted training or planned teaching.

5 Design of an ABCD study: REVISE-Diabetes - proposed trial of Randomisation to Endoluminal intestinal liner Versus Incretin analogue in Sustained Diabetes

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Background: The “diabetes” pandemic continues unabated. New, effective therapies are urgently needed. GLP-1 receptor agonists can improve diabetes with weight loss but many patients nevertheless fail to achieve targets. Bariatric surgery is not a universal solution and the benefits of intense caloric restriction are difficult to sustain. ‘Endobarrier’ is a novel 60cm tubing device designed to line the small-intestinal lumen preventing food absorption. It partially mimics bariatric surgery with improved glycaemic control and weight loss. ABCD is proposing a clinical trial of Endobarrier in an NHS setting.

Hypotheses: 1. Endobarrier-Liraglutide treatment will improve metabolic outcomes compared to Endobarrier treatment alone; 2. the device’s glycaemic effect is via altered insulin resistance driven by altered bile acids, which Endobarrier uniquely separates from food.

Methods: REVISE-Diabetes is a multicentre randomised controlled clinical trial involving Liraglutide-treated patients with T2DM and obesity ($HbA1c \geq 7.5\%$, $BMI \geq 35\text{kg/m}^2$), followed in the ABCD nationwide audit, randomised to receive Endobarrier alone, Endobarrier with continued Liraglutide or increased dose Liraglutide alone (controls), for 12 months. We will investigate mechanisms of action and their time course by repeated measures of: 1. glycated haemoglobin; weight; waist circumference and BMI; 2. fasting glucose, insulin, HOMA-IR; 3. hepatic and pancreatic triacylglycerol stores assessed by magnetic resonance imaging. The trial involves 72 patients studied over 24 months.

Expected outcomes: This proposed study will allow us to describe the place of Endobarrier in resistant diabetes in an NHS setting. By evaluating mechanisms of action, this will contribute to on-going development of therapies for patients with diabetes.

6 A survey to examine monitoring and management of liver function in patients with diabetes

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Background

Abnormal liver function tests (LFTs) are common in patients with diabetes and influence pharmacotherapy decisions, yet there is inconsistency in LFTs monitoring and management of raised transaminase(s) in clinical practice.

Aim

To evaluate LFTs monitoring and management of raised transaminase(s) in patients with diabetes in primary/secondary care.

Method

Proforma were used to collect data on frequency of LFTs monitoring, medications that prompted monitoring, threshold at which to investigate raised transaminase(s) and actions taken.

Results

Survey response rate was 39% (164/420). 89% (146/164) respondents monitor LFTs at least once a year. 95% (148/156) monitor LFTs with statin use, 76% (119/156) with other lipid lowering agents and 58% (90/156) with other medications routinely used in diabetes, predominantly glycaemic lowering agents.

53% (85/161) respondents would act upon transaminase(s) 1-2 times the upper limit of normal (ULN). 69% (53/77) would repeat LFT within 3-6 months, 64% (49/77) would perform a liver screen, 56% (43/77) would arrange a liver ultrasound, 55% (42/77) would stop hepatotoxic medications, and 9% (7/77) would refer to a hepatologist.

47% (76/161) respondents would act on transaminase(s) more than twice ULN. 89% (66/74) would perform a liver screen, 73% (54/74) would stop hepatotoxic medications, 69% (51/74) would arrange a liver ultrasound, 68% (50/74) would repeat LFT within 3-6 months, and 20% (15/74) would refer to a hepatologist.

Conclusion

Most physicians check LFTs at least once a year in all patients with diabetes. However, there is a heterogeneous response on the threshold at which physicians would act upon raised transaminase(s). National guidelines on monitoring and management of liver function would appear warranted.

7 Understanding of Stress Hyperglycaemia in Acute Care

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AIM

Stress hyperglycaemia (SH) is an insulin resistant and acute hyperglycaemic state commonly seen during acute illness. Despite being associated with poor outcomes (including prolonged length of stay and increased mortality) in a range of medical conditions, it remains under-recognised. We examined current perceptions of SH using a short survey.

METHODS

A ten question paper survey was given out to doctors on the wards and at meetings in order to obtain data.

OUTCOMES/RESULTS

40 doctors completed the survey (FY 57.5%, CT 7.5%, ST 20% and Consultants 15%) over two weeks. "Definitions" for SH plasma glucose ranged from 6.1-20mmol/L (median 10mmol/L).

Initial Responses to SH included:

- Review medication chart/nutrition – 90%
- Monitor BMs – 90%
- Repeat blood glucose – 90%
- Dietetic review – 30%
- Inform diabetes team – 27.5%
- Start treatment for hyperglycaemia – 7.5%

50% of respondents would alter their initial actions based on level of blood glucose.

Suggested treatments included: insulin (45%), metformin (20%) and gliclazide (12.5%). 7.5% required confirmation of diabetes or specialist advice before treatment (22.5% NK).

The majority (77.5%) would arrange follow-up with 35% specifying diabetes clinic and 35% GP.

HbA1c (45%), fasting glucose (37.5%), OGTT (22.5%) and ketones (10%) were suggested to further investigate patients.

CONCLUSIONS

Doctors vary considerably in their views on the diagnosis and treatment of SH. Given the large numbers of patients presenting to the AMU with SH, and the implications of the condition, further work to improve understanding is needed.

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8 Metformin in the management of gestational diabetes in a Scottish teaching hospital.

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Background.

Gestational Diabetes Mellitus (GDM) occurs when endogenous pancreatic function is insufficient to overcome the insulin resistance and hyperinsulinaemia that characterizes pregnancy. In 2010 an international consensus statement adopted by the ADA, SIGN and others defined blood glucose (BG) values of ≥ 5.1 (fasting) and ≥ 8.5 (2 hour) as diagnostic of GDM. Treatment regimens for GDM include diet, metformin and insulin to achieve glycaemic targets, for our population in Glasgow, based upon SIGN 116. The MiG trial investigators reported in 2008 that 46.3% of women assigned to metformin required supplemental Insulin.

Aims and Methods.

We aimed to determine what proportion of our patients with GDM managed with metformin required supplemental Insulin and also to characterize the mode and timing of delivery. We therefore used our clinic database to retrospectively analyse the management and outcome of GDM in 72 women attending from August 2011 to June 2012. Students t test were used for statistical analysis, $p < 0.05$ significant.

Results.

Mean age of the women attending was 31.95 (± 4.99) years, mean pre pregnancy BMI was 38.96 (± 10.31), mean fasting BG was 6.23 (± 1.62), mean 2 hour BG was 8.64 (± 3.47) and mean gestation at diagnosis was 27.52 (± 6.18) weeks. Mean gestation at delivery was 38.02 weeks (± 2.02) weeks and mean birth weight 3386.55 (± 631.23)g. 30/72 (42%) of women had vaginal deliveries and 42/72 (58%) Caesarean sections. Ultimately 11 (15%) required diet alone, 42 (58%) metformin (of which 29 required supplemental Insulin) and 19 (27%) were treated with insulin alone. Patients initially initiated on insulin were older ($p = 0.04$) and had higher fasting glucose levels ($p = 0.01$) than those commenced on metformin. On analysis of patients commenced on metformin there was a trend towards higher fasting glucose values,

BMI and gestation at diagnosis of those requiring supplemental insulin but no single significant variable.

Conclusion.

The proportion of women requiring supplemental Insulin (69%) following initial metformin treatment for GDM was higher than previously reported potentially due to the change in diagnostic thresholds.

9 Prevalence of Non-Alcoholic Fatty Liver Disease (NAFLD) in Patients with Type 2 Diabetes Mellitus (T2DM): A Single-Centre Experience

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BACKGROUND

True prevalence of non-alcoholic fatty liver disease (NAFLD) in type 2 diabetes mellitus (T2DM) is not known. Studies in specialist centres have shown prevalence ranging from 40 – 70%.^ψ

OBJECTIVES

This retrospective study was designed to investigate the prevalence of NAFLD in prospective patients with T2DM.

METHODS

Data were collected from the BSUH diabetic database (Diabeta3) for all T2DM patients who attended the diabetic clinic from 1st August 2009 to 1st August 2011. LFTs (total protein, albumin, globulin, bilirubin, ALP, AST, ALT) and liver imaging (US, CT, MRI) were used as screening tools, and these were correlated with age, gender, BMI, HbA1c, alcohol consumption and lipid profile.

RESULTS

There were 1640 T2DM patients: 60% male, mean age 64years, mean BMI 32.8kg/m² and mean HbA1c 8.2%. The proportion of T2DM patients with abnormal LFTs is 31.2% (n=511), of which 28.8% (n=147) had liver imaging. Of these, 61.2% (n=90) demonstrated evidence of FLD, compared to 31.3% (n=105) of those with normal LFTs who coincidentally have had liver imaging. Overall prevalence of FLD amongst those who have had liver imaging is 40.4%. Of the FLD subgroup, 96.4% (n=81) were NAFLD, defined as drinking below 20units/week in females and below 30units/week in males^ψ; 53.7% (n=44) of those had abnormal LFTs and 46.3% (n=38) had normal LFTs.

CONCLUSION

- (1) High prevalence of FLD in T2DM patients
- (2) Need for a prospective cohort study
- (3) Possibility of a combined care pathway between diabetologists and hepatologists

LIMITATIONS

- (1) Retrospective data
- (2) Liver imaging not sensitive or specific
- (3) LFTs limited by trust standard laboratory requests – no GGT

^ψQM Anstee, S McPherson, CP Day. How big a problem is non-alcoholic fatty liver disease? BMJ 2011. 343: 201-204.

10 Predicting response to GLP1 analogue treatment in patients with type 2 diabetes mellitus

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Introduction

GLP-1 analogue treatment in type 2 diabetes confers advantages in improving glycaemic control aligned with potential blood pressure reduction and weight loss. Profiling patients who will be expected to respond to these treatments rather than alternative therapies is important in terms of constructing the most effective therapeutic regimen for patients.

Methods

Data on patients (n=200) attending our unit with T2DM who have been prescribed GLP-1 analogues (exenatide and liraglutide) for 12 months has been collected in a planned observational study of routine care in North Glasgow.

To attempt to predict patients who may benefit from these therapies we compared “responders” with “non-responders,” we defined good response as a minimum HbA1c drop of at least 0.5% at 12 months AND no weight gain. We compared patient age, duration of diabetes, HbA1c and weight before treatment commenced, to see if these variables could be used to predict patients’ response to treatment. Student t test was used to establish significance in comparing differences between the 2 groups.

We also compared rates of good response between pre treatment insulin users and non-users. Fisher’s exact test was used to establish significance.

Results

The group of “responders” were younger and had higher HbA1c pre treatment. There was no difference in duration of diabetes or pre-treatment weight.

Variable/Group	Responders (n=83)	Non Responders (n=117)	P value
Mean Age (years)	54.7±11.4	57.3±9.2	0.0385
Mean Diabetes duration (years)	10.9±5.7	11.1±6.9	0.8640
Mean Pre Rx HbA1c (DCCT, %)	10.2±1.5	9.2±1.8	<0.0001
Mean Pre Rx weight (kg)	109.4±20.0	109.7±23.4	0.9111
% Insulin use pre Rx	32/83 38.6%	36/117 30.8%	

Table 1. Comparison of Responders with Non-Responders

Pre treatment insulin use was not associated with any difference in response to GLP-1 analogue.

	Good Response to GLP1	Poor Response to GLP1	P value
Pre Rx insulin user	51	81	0.2899
Pre Rx no insulin	83	117	

Fisher’s test comparing insulin users response to treatment with those not treated with insulin.

Conclusions

Our results suggest younger patients and those with poorer glycaemic control may respond well to treatment with GLP-1 analogues. Duration of diabetes, and pre treatment weight, do not appear to be significant factors. Pre treatment insulin use is also not significant. Our analysis of routine care hence suggests that patients with longer duration of diabetes, already prescribed insulin regardless of weight may benefit from treatment with GLP1 agonist therapy.