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Outcomes of radioactive iodine treatment for benign thyroid disorders: insights from a UK Hospital Trust audit

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Objective: The objective of this audit was to describe the outcomes of radioactive iodine (RAI) treatment of benign thyroid disorders. We sought to identify the delay between a decision to treat with RAI and its actual administration, the factors associated with treatment success and also post-RAI treatment follow-up.

Methods: This was a retrospective study. We reviewed electronic medical records of adult patients treated with RAI for hyperthyroidism between 2016 and 2020 in York and Scarborough Teaching Hospitals NHS Trust. Participants were categorized by indication into Graves' disease, toxic multinodular goitre (TMNG) and solitary toxic adenoma (STA) groups. We compared the remission rates across the three groups using the chi-square test of independence.

Results: 184 participants (78% female) were included. Graves' disease (58%) was the most common indication, followed by TMNG (33%). Overall, 164 participants (89%) became euthyroid or hypothyroid within six months following one course of RAI treatment (described as treatment success). Treatment success was 88%, 100% and 88% for the Graves', STA and TMNG groups respectively. Patients waited on average 47 days between decision to treat and administration of RAI. No baseline or treatment-related factors were associated with remission. Patients who achieved remission had a mean follow-up duration of 264 days.

Conclusion: Fixed-dose RAI achieved 89% remission. Pre-treatment wait time was 47 days and patients were followed up for nine months on average after RAI treatment. These findings can be used to improve planning of RAI services and follow-up of patients post RAI.

HbA1c assessment and deintensification of diabetes management for inpatients with diabetes and moderate/severe frailty: audit results from a UK teaching hospital

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Introduction: Inpatient admission presents an opportunity to deintensify treatment in people with diabetes and frailty. The Joint British Diabetes Society recommends checking HbA_{1c} in people with diabetes and frailty during admission if HbA_{1c} has not been checked in the preceding six months. The aim of the audit was to identify the proportion of people who had their HbA_{1c} checked upon admission and, if appropriate, what proportion had their treatment deintensified.

Methods: We retrospectively collected data on people with diabetes and clinical frailty score (CFS) ⩾6 discharged from the medical unit in 2022. HbA_{1c} data before and during admission were collected. Deintensification was defined as any reduction in medication to lower blood glucose or switching of medications to those with less risk for hypoglycaemia. Descriptive statistics were performed.

Results: Two hundred and ninety patients [aged 80 (72-87) years] were included in our analysis. Of these 51.4% (n=149/290) were women and the CFS for all patients was 6(6-7). 33.8%(n=91/290) of the admissions were due to falls. 39.3 (n=114/290) of patients admitted to the hospital had not had their HbA_{1c} assessed in the preceding six months. Of these, only 10.5% (n=12/114) had it checked during this admission. Only 16.2% (n=47/290) of patients had their treatment deintensified during admission.

Conclusion: Despite national recommendations, only a small proportion of patients had their HbA_{1c} assessed during inpatient care, when appropriate, and there were low rates of treatment deintensification. Quality improvement programmes are warranted to improve inpatient care for patients with diabetes and moderate/severe frailty. They should include assessment of HbA_{1c} which, in turn, will guide decision-making regarding further deintensification.

Investigating annual follow-up rates for gestational diabetes and improvement strategies

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Introduction: Women with gestational diabetes have a 10-fold higher risk of developing type 2 diabetes mellitus (T2DM).[3] This project at Glasgow Royal Infirmary investigated the 5 year follow-up rates for women with gestational diabetes. The 2010 SIGN guidelines suggest a HbA_{1c} measurement six weeks postpartum and lifelong annual follow-up thereafter.[4] This research identifies the proportion of participants developing T2DM and discusses comparisons globally, with improvement strategies for long-term follow-up including education and automated recall systems.

Methods: A retrospective service audit examined the consistency of annual HbA_{1c} measurements taking place after a diagnosis of gestational diabetes. 100 patients identified from the antenatal diabetes clinic lists, Princess Royal Maternity Hospital in Glasgow, were diagnosed with gestational diabetes

in 2017. Using TrakCare the number of patients that had their HbA_{1c} tested annually between 2018 and 2022 was documented. The percentage of adherence to the 2010 SIGN guidelines was used as a measure of outcome.

Results: Only 4% of patients who had had gestational diabetes received an annual HbA_{1c} test. Of the remaining 96 women, 28 had been tested at least once in the previous five years. 12% of women had an HbA_{1c} measurement consistent with a diagnosis of T2DM over five years.

Conclusions: The follow-up management of women with a history of gestational diabetes is not in accordance with the SIGN guidelines, suggesting suboptimal clinical practice. Due to the long-term health implications of T2DM this is a serious concern, and improvement strategies should be further trialled and audited.

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Putting EMPA-REG into practice: a data-driven intervention

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Aims: This project aimed to establish community SGLT2i prescription rates for people with diabetes (PWD) who meet EMPA-REG trial criteria and to assess interventions to improve SGLT2i prescription rates in this at-risk group.

Methods: PWD and a diagnosis of vascular disease or heart failure were identified from two GP practices using local databases. This was considered the absolute truth.

SCI-diabetes (Scottish database for diabetes care) 'flexible query' function was used to identify those who met the biochemical trial criteria.

Medical notes were reviewed to establish whether individuals met the remaining criteria and whether those who met the criteria and were not prescribed an SGLT2i had been contacted.

Results: A GP database search identified 273 individuals. Of these, 81 met trial criteria, and of these 43.2% were already on an SGLT2-i (35% - 59%). An HbA1c above or below the inclusion range was the most common reason for individuals not meeting EMPA-REG criteria.

Of the 81 PWD, 97% were on the SCI list. The 81 PWD accounted for 20% of the SCI list, suggesting high sensitivity and poor specificity of the flexible query function.

Forty-six individuals required review: 11 were not contacted as they were not suitable for medication change and two had died. Of the 17 telephone reviews: nine patients have started an SGLT2i, two declined, one did not engage, and five required specialist discussion. Of the 16 face to face reviews: 11 patients have started an SGLT2i, three failed to engage and two required specialist discussion.

Conclusions: Community rates of SGLT2i prescription are suboptimal. Data- targeted reviews are effective interventions to increase SGLT2i prescription, reducing the risk of cardiovascular events and death.

Assessing the impact of different factors on basal insulin adherence in people with diabetes in the UK using connected insulin pen data

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Background and aims: Managing multiple daily insulin injections is challenging for many people living with diabetes, potentially resulting in missed insulin doses and contributing to poor glycaemic control. This UK analysis aimed to investigate the probability of, and contributing factors for, missing basal insulin doses in people with diabetes on a basal-bolus regimen in a real-world setting.

Methods: Data were collected from individuals on a basal-bolus regimen using a connected insulin pen (NovoPen 6 or NovoPen Echo Plus) to deliver their basal insulin (degludec) injections. The daily probability of missing a degludec dose (⩾40 hours between injections) was estimated using a generalized linear mixed model with logistic link function. Data upload frequency over the previous 14 days was used as a measure of connected insulin pen engagement.

Results: Some1,678 individuals were included in the analysis (injection days=139,639). The daily mean probability of missing a basal dose was 3.6% (95% CI: 3.0–4.4%%). There was a significant age effect ($p<0.0001$), with the highest probability of missing a basal dose at around 20 years of age. The day of the week also had a significant effect ($p<0.0001$), with most missed basal doses occurring at the weekend. A statistically significant association was demonstrated between the number of connected insulin pen data uploads and the probability of missed basal doses ($p<0.0001$).

Conclusions: Connected insulin pen data generated insights into factors affecting basal insulin adherence. This could help clinicians provide specific guidance on managing basal insulin injections to increase adherence and improve clinical outcomes for people with diabetes.

A case of severe thyrotoxic storm with multiorgan failure secondary to Graves' disease

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Introduction: Thyroid storm is a rare life-threatening condition with a mortality rate of 8–25%. Treatment includes use of antithyroid medications, beta blockers, cholestyramine, iodine and steroids. The role of plasmapheresis in these patients is debatable. We present a case of severe thyrotoxicosis secondary to Graves' disease with multiorgan failure.

Case description: A 59-year-old woman presented with palpitations, breathlessness and generalised anasarca. On arrival at hospital, she had a narrow complex tachycardia and cardiogenic shock and she underwent DC cardioversion. She had evidence of severe heart failure, acute liver failure and a history of untreated non-toxic multinodular goitre. Clinically, she had a large goitre and jaundice. Thyroid function tests revealed hyperthyroidism (FT4: 50.8ng/dL, FT3: 9.9ng/dL, TSH: <0.01μU/mL, Burch-Wartofsky score 70). Thyroid stimulating hormone receptor antibodies were elevated at 6.13unit/L (RR 0–0.4 unit/L). Antimitochondrial antibodies were raised, compatible with primary biliary cirrhosis. Initial treatment included hydrocortisone, propylthiouracil and cholestyramine. After a good initial response, thyroid function test results remained elevated after day 3. Plasmapheresis was not possible due to haemodynamic instability. Unfortunately, she died from multiorgan failure.

Discussion: The role of plasmapheresis in patients with thyroid storm is not well established due to lack of robust evidence and widespread use. A growing body of literature shows the value of plasmapheresis in rescuing patients in thyroid storm; the American Society for Apheresis (ASFA) recently reclassified thyroid storm to a category II indication for plasmapheresis.[1] It can be used as a bridging therapy. Plasmapheresis is generally safe and well tolerated, with the most common side effect being an urticarial reaction.

Conclusion: Plasmapheresis should be considered more often if conventional treatment is not effective in reducing the severity of thyroid storm.

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Management of steroid-induced hyperglycaemia (SIH) after hospital discharge: experiences and views of patients, their relatives and clinicians

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Introduction: Steroid-induced hyperglycaemia (SIH) presents challenges after hospital discharge, particularly as steroid doses reduce and the risk of hypoglycaemia increases. However, experiences of care provision after discharge are under-reported.

Methods: We searched hospital records to identify patients who required diabetes inpatient team input at East Surrey Hospital for SIH between February 2022 and March 2023. Patients, their relatives and clinicians were interviewed about their experiences of care and views on how to improve it. Patient characteristics were extracted from hospital records.

Results: We interviewed 23 patients (60% male, aged 40 – 88 years). Twenty patients (86%) had pre-existing diabetes, treated with oral hypoglycaemic agents (n=15), pre-mixed insulin (n=3), multiple daily injections (n=1) or basal insulin (n=1). The median (IQR) glucocorticoid daily dose (prednisolone-equivalent) was 40 mg (20-60 mg), for respiratory, rheumatological, gastrointestinal or haematological indications. New inpatient prescriptions were sulfonylurea (n=9), NPH (n=4), MDI (n=3), pre-mixed insulin (n=2) or rapid-acting analogue (n=1), while others required optimisation of usual insulins. Fifteen (65%) patients were followed up after discharge by the diabetes specialist team, the remainder being referred to primary care.

Patient interviews revealed frequent, significant anxiety about SIH and co-morbidities, and limited awareness of, and conflicting advice provided on, SIH management. Some patients reported feeling abandoned, and two experienced severe hypoglycaemia after hospital discharge. All groups reported willingness to adopt digital remote services, if this would safely improve glucose monitoring, communications, care provision and access to other services such as pharmacy and social support. Our findings emphasise the importance of robust, individualised, written care planning, and sharing of skills, resources and information between all partners in healthcare.

Conclusion: Managing SIH out of hospital is challenging for both patients and primary care professionals, and is exacerbated by the presence of multimorbidity and limited guidance resources. There is a need to improve care pathways by having a robust, individualised written care plan, and by sharing of skills, resources and information between all partners in healthcare.

Late delivery in gestational diabetes mellitus - does this have any effect on maternal and fetal outcomes? A case-control study

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Aims: Delivery is advised before 40+6 weeks in gestational diabetes (GDM) but some women inadvertently deliver later. We performed a case-control study in a single centre in the UK to assess maternal and fetal outcomes associated with late delivery.

Methods: Data on women who delivered between 1st January 2013 and 31st December 2017 were analysed. Women who delivered after 40+6 weeks' gestation were compared with controls (those who delivered ⩽40+6 weeks). Primary outcomes included macrosomia and a composite serious adverse outcome (intrauterine death, neonatal hypoglycaemia, shoulder dystocia, neonatal respiratory distress syndrome, jaundice, cardiac and miscarriage).

Results: From the total dataset of 2,265 women, 223 women delivered after 40+6 weeks' gestation, and 446 women were

randomly selected as controls. There was a significant increase in macrosomia when women delivered later (<40+6 weeks 20/445, 4.5% and >40+6 weeks 38/219, 17.4%, p<0.001). There was no change in composite serious adverse outcomes (<40+6 weeks 33/441, 7.5% and >40+6 weeks 13/218, 6.0%, p=0.746).

Late delivery was associated with diet-only management (<40+6 weeks 318/415, 76.6% and >40+6 weeks 203/212, 95.8% p<0.001), increased induction of labour (<40+6 weeks 117/435, 26.9% and >40+6 weeks 78/218, 35.8%, p=0.019), increased instrumental delivery (<40+6 weeks 54/444, 12.2% and >40+6 weeks 40/222, 18.0%, p=0.041)and increased emergency caesarean section (<40+6 weeks 70/117, 59.8% and >40+6 weeks 47/58, 81%, p=0.005).

Conclusions: Late delivery increased macrosomia, induction of labour, instrumental delivery and emergency caesarean section, though there was no increase in composite serious adverse outcomes. These data confirm that late delivery in GDM should be avoided if possible.

The first UK case of CEL Diabetes (MODY 8)

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After entering data into the Exeter diabetes MODY calculator, a young man with new- onset diabetes was sent for MODY testing. This picked up a CEL genetic variant. The lack of first-degree family history suggested that it could be a de novo variant.

The pathogenic variants occur within a highly repetitive region of the CEL gene. This is difficult to sequence and the variants can be false positives. The DNA sample was therefore sent to the Norwegian CEL research team in Bergen, who confirmed the gene defect. The specific variant found has been reported previously in two unrelated patients with MODY from Norway. Our patient has no known Norwegian/Scandinavian ancestry.

Picking up the genetic variant led us to ask the patient whether he had any symptoms that would be consistent with a CEL mutation. Pathogenic variants in CEL cause MODY, pancreatitis and pancreatic exocrine insufficiency. Patients typically have gastrointestinal complaints such as abdominal pain, chronic diarrhoea or loose stools and low faecal elastase. Pancreatic imaging typically shows an atrophic pancreas with lipomatosis and cysts. The phenotype is variable, and patients may be picked up unexpectedly when tested for MODY.

Further discussion with the patient revealed a history of abdominal pain and occasional floaty stool, which he had been advised was IBS. A faecal elastase test showed a low level of 68 microg/g of stool, and pancreatic enzyme replacement with Creon was commenced. MRI pancreas is pending.

Interestingly, the other Norwegian families were also identified through testing for MODY rather than on the basis of their exocrine dysfunction.

In-patient management of hyperglycaemia in Covid-19 patients

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Aims: To assess management of hyperglycaemia in Covid-19 in-patients in accordance with National Diabetes UK/ABCD COVID guidelines.

Methods: Electronic records were reviewed for 76 in-patients with COVID-19 at Ealing Hospital who were admitted between November 2021 and February 2022. Primary outcomes included capillary blood glucose (CBG) monitoring documentation and clinical response, insulin prescribing and specialty referrals. Several PDSA cycles were conducted, leading to initiation of a multidisciplinary education plan and improved guideline visibility. Data were re-audited between November 2022 and January 2023.

Results: There were76 patients. 49 (64%) were started on dexamethasone, and of those 18 (36.7%) had four times daily (QDS) CBG monitoring. Hyperglycaemia was recorded in 17 (34.7%) patients, and nine (52.9%) received correction insulin doses. 47% patients with persistent hyperglycaemia were referred for specialist review.

Following re-audit, 39 patients with Covid-19 were initiated on dexamethasone. Of these, 17 (44%) had QDS CBG monitoring, nine (23%) had documented hyperglycaemia and two were prescribed corrective insulin. 62% of those with persistent hyperglycaemia were referred for specialist review.

Conclusions: Hyperglycaemia is a recognised complication of Covid-19 and is also a known side effect of steroid use. Hyperglycaemia is an independent risk factor for prolonged hospital stay, admission to intensive care and mortality. Our initial results highlighted the need for targeted education. A multidisciplinary education programme and publication of summary posters within Trust Covid-19 guidelines has resulted in moderate improvement in adherence. As COVID-19 continues to place a significant burden on health services in winter months, continued focus on targeted to ensure optimal care and outcomes.

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A rare case of diabetic myonecrosis: an uncommon complication of a common disease

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Introduction: Diabetic myonecrosis is a rare complication of diabetes mellitus associated with long-standing suboptimal glycaemic control. Usually it is self-limiting and responds well to conservative treatment.

It affects both type 1 (T1DM) and type 2 (T2DM) diabetic patients who have long duration of diabetes and frequently have other microvascular complications.[1] We report a case of diabetic myonecrosis admitted to our hospital.

Case report:

A 55-year-old male presented with sudden onset of pain and swelling in his right thigh after dialysis. He did not have any trauma to the thigh. He had a history of T2DM with micro- and macro-vascular complications, diabetic nephropathy leading to end-stage renal failure and ischaemic heart disease.

On examination, his right thigh was significantly bigger than his left and it was tender to palpation particularly on the inner and anterior side. Mild erythema was present, the skin was hot to touch and he was unable to flex his thigh. His investigations showed Hb 139g/L, WCC 7.0 x10^9/L, CRP 27 mg/L and CK 200 unit/L. He was treated with antibiotics to cover infection. Ultrasound Doppler of his right lower limb did not show any evidence of thrombosis; MRI T2W and STIR sequences displayed high signal heterogeneous intensity within the muscles of the anterior and medial compartments of the right thigh with relative sparing of the posterior compartment muscles, suggesting myonecrosis. Antibiotics were stopped and he was treated conservatively with clopidogrel, analgesics and physiotherapy for a few months. Unfortunately, the patient passed away with a cardiac arrest a few months after the presentation.

Discussion: Diabetic myonecrosis, or diabetic muscle infarction, is a rare manifestation of long-standing and poorly controlled diabetes mellitus. Most patients have long duration of diabetes (mean duration 14.3 years) and poor glycaemic status. In a systemic review of all reported cases of diabetic myonecrosis, it was found to be more common in women (61.5% of all cases), in T1DM (59% of all cases) and in long-standing diabetes (mean duration of disease 14.3 years).[1]

The exact pathogenesis is not well known but may involve atherosclerotic occlusion, hypoxia–reperfusion injury, vasculitis and thrombosis.[2]

The usual presentation is sudden onset of pain in the involved muscle. The thigh muscles are the most commonly affected, followed by the calf muscles are the most affected.

Routine laboratory investigations are not helpful. There is a lack of correlation between muscle involvement and creatine phosphokinase level. Evidence shows that medical diagnosis is usually delayed by approximately 4 weeks. MRI is the best investigation for diagnosis. The characteristic features of diabetic myonecrosis in MRI are an increased signal from the affected muscle area in T2-weighted, inversion-recovery and gadolinium enhanced images, and isointense or hypointense areas on T1-weighted images.[3]

CT and ultrasound are less specific, and biopsy is not recommended because of potential complications of delayed recovery.

Diabetic myonecrosis is a self-limiting disease that responds well to conservative management. Patients who undergo surgery have delayed improvement compared to those managed conservatively.[4]

Although the short-term prognosis of diabetic myonecrosis is good, the long-term prognosis is poor and most patients die within five years.

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Digitising diabetes education for a safer Ramadan: Design, delivery, and evaluation of massive open online courses in Ramadan-focused diabetes education

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Background: Ramadan-focused diabetes education is critical to facilitate safer Ramadan fasting amongst Muslim people with diabetes.[1] However, access to and engagement with education is variable, and many healthcare professionals (HCPs) are inadequately equipped to deliver it.[2,3] Digitisation can democratise high-quality diabetes education at low-cost.[4]

Methods: Two Ramadan-focused massive open online course (MOOCs) were developed and delivered for Ramadan 2023: one for HCPs in English, and another for people with diabetes in English, Arabic and Malay. A user-centred iterative design process was adopted, informed by a 2022 pilot MOOC. The

MOOCs featured interactive elements, videos, patient stories, and live multilingual Q&A sessions. Delivered from 7th March–24th April 2023; promotion occurred through diabetes organisations and health authorities. Evaluation included platform usage analysis and mixed-methods evaluation of user surveys.

Results: A total of 1531 users registered for the platform from >50 countries, 809 started a course (549 HCPs MOOC; 260 patients MOOC), and 387 completed a course. HCPs worked in mostly (60%) non-diabetes specialist roles, 55% identified as Muslim and most self-reported high baseline levels of diabetes and Ramadan awareness. Users found the course informative and useful. In the HCP MOOC, users reported improved post-MOOC Ramadan awareness, associated diabetes knowledge and ability to manage diabetes during Ramadan ($p<0.01$).

Discussion: We demonstrate the potential of MOOCs to deliver culturally tailored, high-quality, low-cost, multilingual Ramadan-focused diabetes education to HCPs and people with diabetes. Evaluation demonstrated MOOCs to be useful and educational among a diverse cohort of worldwide learners.

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Improving access to type 1 diabetes self-management education in England: user-reported eLearning outcomes from the 'MyType1Diabetes' platform

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Introduction: Type 1 diabetes (T1DM) requires hour-to-hour self-management to maintain safe glycaemia. Diabetes self-management education improves outcomes, yet access is limited by local variations in provision and formal re-education is limited.[1] Digital self-management education platforms offer a scalable and low-cost solution to improve educational access and consistency.[2,3] Here, we evaluate user-reported eLearning outcomes from MyType1Diabetes (mytype1diabetes.nhs.uk), a nationally commissioned digital self-management education platform for adults with T1DM in England.

Method: MyType1Diabetes was launched in July 2020, providing an open-access educational website and seven QISMET-accredited structured eLearning courses alongside regularly scheduled free massive open online courses (MOOCs). Pre-course and post-course surveys accompany eLearning courses for evaluation purposes.

Results: MyType1Diabetes attracted >1.37 million website page views from more than 380,000 unique users since launch. Non-English language resources were highly utilised. By 1st July 2023 some 9,099 courses (6018 eLearning, 3081 MOOC) were registered for and 4,552 courses were ⩾60% completed (50% completion rate). Carbohydrate counting eLearning accounted for 33% of eLearning registrations. eLearning evaluation showed that users found the courses to be highly useful, relevant and user-friendly, although between-course variation in feedback was evident. Overall, eLearning aided users in diabetes goal setting, and it improved self-management confidence and motivation among more than 70% of users. Paired pre- and post-course measures of self-reported health knowledge, diabetes management and life satisfaction improved following completion of a course (all $p<0.0001$).

Discussion: MyType1Diabetes is an effective and cost-efficient way to improve access and consistency to diabetes education in England, aiming to improve health outcomes and quality of life for people with T1DM.

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Arare case of diabetic striatopathy

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Introduction: Diabetic striatopathy (DS) is a rare disorder that usually presents with sudden onset of hemichorea or hemiballismus associated with hyperglycaemia and striatal abnormality. It is more common in elderly diabetic women with poor glycaemic control. We present a unique case of a middle-aged male with diabetic striatopathy.

Case report: A 54-year-old male with type 1 diabetes mellitus (T1DM) presented with severe DKA (diabetic ketoacidosis) and hyperkalaemia. His past medical history included hypertension and hyperthyroidism. He was noted to have sudden jerky movements and weakness of his left arm. His power was 3/5 in his left arm, with no reflexes. These jerky movements had started a few weeks before his hospital presentation.

After the neurology team's advice, CT and subsequent head MRI showed bilateral symmetric lentiform nuclei hyperintensity consistent with diabetic striatopathy. His symptoms of chorea improved with better diabetes control.

Discussion: The exact causative mechanism of this condition is unclear. It is thought to be due to a decline in oestrogen receptors in postmenopausal women, which causes increased sensitivity of the nigrostriatal dopamine system receptors and results in chorea. Cerebrovascular insufficiency, petechial haemorrhage, hyperviscosity and depletion of gamma-aminobutyric acid and acetylcholine secondary to metabolic changes have been suggested as possible mechanisms.

New onset of hemiballismus or chorea in a diabetic patient should alert the clinician to the possibility of DS.

Management includes correction of hyperglycaemic and symptom control. Chorea may improve with better glucose control in 25% of patients. The majority may need GABA-receptor agonists, selective serotonin reuptake inhibitors and dopamine-depleting agents.

Living with long-term conditions such as T1DM increases the risk of experiencing symptoms of anxiety or depression, which can compromise effective glycaemic control. Increased risk of diabetic complications can perpetuate this cycle through a negative effect on the quality of life, so recognition and provision of appropriate support are crucial.

This case additionally illustrates a range of neuro-psychiatric conditions which can be considered in people living with diabetes presenting with behavioural change.

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Fear of hyperglycaemia :Investigating neuropsychiatric differential diagnosis in a patient with Turner syndrome and T1DM

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Diabetes is associated with an increased risk of anxiety symptoms. There is a higher prevalence of neurocognitive and psychiatric disorders in patients with a diagnosis of Turner syndrome.

Case report: We present the case of a 44-year-old female with type 1 diabetes mellitus (T1DM), Turner syndrome and hypothyroidism who presented with confusion and hypoglycaemia. Her previous history included recurrent presentations with hypoglycaemia. There was no history of seizures. Her usual insulin regime was 16 units Levemir (insulin detemir) twice daily with Novorapid correction doses according to carb calculation. Blood tests showed normal renal and hepatic function; T4 22.9 and TSH 2.49; HbA_{1c} 39; C-peptide <27; and anti-GAD antibody 613500.

The anti-GAD result was significant in this case because, in addition to the association of a positive result with insulin-dependent diabetes, very high titres are associated with so-called 'anti-GAD antibody positive neurological syndromes' which include stiff-person syndrome, Miller-Fischer syndrome, limbic encephalitis and epilepsy. Upon assessment, her body weight was normal and no neurological signs, ataxia or stiffness were identified. There were no features on clinical assessment to implicate any neurological condition.

During her admission, it was recognized that she frequently augmented correction doses so they exceeded the recommended carb ratio, citing a fear of hyperglycaemia. A diagnosis of iatrogenic hypoglycaemia due to insulin administration was reached. She met with the psychiatry liaison team, who supported her to identify her anxiety around hyperglycaemia and provided an ongoing support plan.

A case of rapidly worsening and intractable dysglycaemia on commencing alpelisib for breast neoplasm

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Background: A 42-year-old woman with stable T2DM was referred to the diabetes team prior to a planned start of alpelisib for breast cancer.

Abstract: This woman had been diagnosed with ductal adenocarcinoma of the breast with metastasis. She was found to have the P1K3CA mutation and was offered palliative treatment with alpelisib.

She had a BMI of 47 kg/m^2 and her HbA_{1c} was 53 mmol/mol prior to treatment. She was offered a Libre 2 sensor; pre-treatment TIR was 97%. Her average glucose was 6.4 mmol/L, which increased to 7.9 mmol/L after 2 days and 17 mmol/L after 12 days of alpelisib therapy.

She was started on metformin and pioglitazone with plans to start an SGLT2i. However, in view of the rapidly worsening glucose profile, insulin was started.

She was commenced on Lantus 10 units and Novorapid 6 units but the dose was rapidly up-titrated to Toujeo 40 units and Novorapid 18 units with meals.

Treatment had to be discontinued and her average glucose returned to baseline in six days.

Conclusion: Alpelisib induces significant peripheral insulin resistance. Risk factors include known diabetes, BMI> 30 kg/m^2 and age > 75 years.

It is advised to check the HbA_{1c} level before starting and at 4 weeks and 3 months in high-risk groups. There is a role for insulin sensitizers but not for insulin secretagogues in managing hyperglycaemia.

Our case history highlights the risk of sudden severe deterioration in metabolic control even when the above

guidelines are followed. The need for close glycaemic vigilance in these patients cannot be over-emphasised.

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Improving inpatient diabetes resources in NHS Lothian

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Approximately one sixth of hospital inpatients have diabetes. It is critical that non-diabetes specialists have the knowledge and confidence to manage basic diabetes care amongst inpatients. We re-designed inpatient diabetes resources to be concise and accessible via a QR code on posters, piloting this within medical departments at the Western General Hospital. Before and after releasing these new guidelines, we assessed ward clinicians' knowledge and confidence around prescribing using three hypothetical scenarios: insulin titration; use of a variable-rate insulin infusion (VRII); and steroid-induced hyperglycaemia. We scored each scenario out of three for accuracy of prescribing, as well as assessing it for safety issues, prescriber confidence and ease of access to resources.

Twenty-two ward clinicians were surveyed pre-intervention and fifteen post-intervention. The mean score for insulin titration improved from 1.8 pre-intervention to 2.2 post-intervention. In VRII, the mean score improved from 1.2 to 2.1. For steroid-induced hyperglycaemia, the mean score improved from 0.9 to 1.5. Potential safety issues were identified in some prescribing both pre- and post-intervention.

Post-intervention, diabetes resources were reported to be easier to access; 75% said that this was easy or very easy, compared with 32% prior. Confidence in prescribing increased.

Consolidating the existing diabetes guidelines has improved ease of access, accuracy of prescribing and confidence of non-diabetes specialist prescribers. We are refining the current guidance to address the safety issues identified. We plan to extend these guidelines across NHS Lothian hosted on a nationally available mobile application--Right Decisions.

Hybrid closed loop therapy in young people in NHS Lothian

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Hybrid closed loop systems (HCL) are increasingly popular for glycaemic management of type one diabetes (T1DM). Previous studies on HCL use have shown an HbA_{1c} reduction with their use.[1-3]

We sought to review the change in HbA_{1c} within our young person population in NHS Lothian commenced on HCL. Records of patients with T1DM aged between 16 and 18 years attending an NHS Lothian diabetes clinic were reviewed on SCI-Diabetes. For those on HCL, HbA_{1c} measurements prior to and at least three months after commencement were collected.

A total of 156 people aged 16-18 with TIDM attend our diabetes service, of whom 67 were on a HCL. Four people were started on HCL soon after diagnosis as part of the CLOuD study so were excluded from analysis. A further 16 patients recently commenced on HCL did not have an HbA_{1c} after starting so were also excluded from the HbA_{1c} analysis.

The median change in HbA_{1c} after HCL start was -5mmol/mol (interquartile range [IQR] -12 to 1). If the HbA_{1c} prior to HCL start was <=58mmol/mol, median change was 0mmol/mol (IQR -3.5 to 3.25). Those with an HbA_{1c} prior to starting HCL >=75mmol/mol had a median reduction of -12mmol/mol (IQR -19 to -6.5).

Our data suggest that those who have higher HbA_{1c} prior to starting HCL therapy have the largest reduction in HbA_{1c}. Those who already have good control do not appear to benefit as much in terms of HbA_{1c} reduction, although the improvements in quality of life measures (such as diabetes distress or hypoglycaemia frequency) were not recorded.

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Enhancing service delivery and minimizing failures with insulin pump therapy: a quality improvement project (QIP) in a district general hospital

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Introduction: Continuous subcutaneous insulin infusion (CSII) is an efficient and flexible method of insulin delivery that can be associated with improved glycemic management and clinical outcomes.[1] Even with modern technology, the CSII pump is associated with a significant failure rate. Malfunctions occur in more than 40% of users each year,[2] which may give rise to hyperglycemia (⩾13.2 mmol/l), hypoglycemia, diabetic ketoacidosis, and need for hospitalization.

Methodology: A Plan, Do, Study Act (PDSA) model was used in this project. The cohort was randomized to choose every fourth patient from a list of 347 active insulin pump users. Telephone interviews were conducted for 25% of the total

registered insulin pump users by using a standardized questionnaire formulated by the team to assess their knowledge, experience and degree of confidence in using insulin pumps.

Results: Only 91% of patients had backup insulin pens, 72% had ketone strips and 61% had access to sick day rule guidance. As a part of the change, arrangements were made for backup insulins and ketone strips on repeat prescriptions and sick day rule guidance was issued.

Conclusion: In conclusion, pump users need the provision of backup insulin supplies, education on sick day rules and training in dealing with pump malfunction. This is especially important in pump users who are admitted with diabetic ketoacidosis. Systematic implementation of such interventions can ameliorate risk and reduce adverse events, and it improves the overall quality of care for individuals relying on insulin pump therapy.

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The association between the prevalence of food insecurity and diabetes, and the consumption of ultraprocessed foods

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Background: Food insecurity, defined as being unable to access sufficient food of nutritional quality, is a risk factor for chronic health conditions. Ultraprocessed food is associated with type 2 diabetes (T2DM). Using data from the 2021 Scottish Health Survey, we examined the cross-sectional association between food insecurity and diabetes and whether this is affected by ultraprocessed food consumption.

Methods: The study population included 5,603 adults, aged 19-94 years of age. Food insecurity was evaluated by whether participants would run out of food because they lacked money or other resources. Dietary intake was assessed from two 24-hour dietary recalls using the dietary tool "Intake24"; we created quintiles of ultraprocessed food consumption (percentage of total dietary intake) using the NOVA classification system. Diabetes was self-defined.

Results: 6.5% of people were living with food insecurity; 5% of people had a diagnosis of diabetes. Ultraprocessed foods accounted for 34% of dietary intake. Using logistic regression modelling, the odds ratio for the association between food insecurity and diabetes, adjusting for sociodemographic characteristics, was 1.8 (95% CI 1.1 to 3.0), suggesting 1.8 times increased odds of diabetes in people living with food insecurity compared to those living without food insecurity. When additionally adjusting for quintiles of ultraprocessed food consumption, the strength of the association was unchanged (OR 1.8 (95% CI: 1.1 to 2.9)).

Conclusion: Living with food insecurity is associated with living with diabetes. Consuming ultraprocessed food does not confound this relationship. Understanding the causal links relationships between food insecurity, diet and chronic disease requires longitudinal data.

Assessing the rates of complications and outcomes in DKA management following guidelines revision: results from the DEKODE study

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Introduction: Revised guidelines by the Joint British Diabetes Societies for Inpatient care (JBDS-IP) group on diabetes-related ketoacidosis (DKA) management recommend reducing the fixed-rate intravenous insulin infusion (FRIII) rate from 0.1units/kg/hr to 0.05units/kg/hr when blood glucose falls <14 mmol/L to avoid complications including hypoglycaemia and hypokalaemia.

Aim: We aimed to investigate the rate of adherence to the new JBDS-IP guidelines and to evaluate trends in complications and outcomes associated with implementing these guidelines.

Methods: We performed a retrospective review of DKA admissions between July 2021 and March 2023 across five hospitals in the UK. Data on demographics, complications and outcomes were collated and analysed using SPSS 29.0.

Results: We identified 753 DKA admissions. The practice of using reduced-rate FRIII prescriptions improved from 13.4% to 49.7%. We did not notice any significant differences in the rates of hypokalaemia (those with reduced rate FRIII vs. those without 33.5% vs. 30.7%, p=0.448), hyperkalaemia (29.4% vs. 29.9%, p=0.881), median [IQR] DKA duration in hours (17 [12-25] vs. 17 [11-27]) and median [IQR] length of admission in days (3.4 [2.4-5.6] vs. 3.4 [2.1-6.8]). There was no significant reduction in hypoglycaemia (16.5% vs. 13.8%, p=0.344) in any hospital except hospital D, which had an increase in the rate of hypoglycaemia (18.2% vs. 7.8%, p=0.016).

Conclusion: We did not find any favourable effect on the rate of complications or outcomes in individuals with reduced-rate FRIII. Further work is required to improve adherence rates and to understand the factors underlying the lack of clinical gain from this change in guidelines.