

## Clinical care and other categories posters: structure/ systems of care and healthcare delivery

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### Long-term risk of emergency hospital readmission and associated costs in adult intensive care patients surviving an episode of diabetic ketoacidosis in Scotland: a national data linkage cohort study

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### Diabetes and discharge: towards a health informatics approach

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### Poor quality non-centralised disintegrated diabetes data governance may spuriously add to the diabetes epidemic: WICKED project outcomes

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**Aims:** Estimates of UK diabetes prevalence are alarming. These estimates impact on resource allocation and must be accurate. Needless processes and interventions will arise amongst mis-registered patients. Are prevalence data correct?

**Methods:** In our audited centralised diabetes register, by systematic data governance, all new diabetes diagnoses are validated against biochemical markers, all coding checked, and mortality recorded.

**Results:** For 2012–2013, data were accurate for 16,761 people registered. In 2013–2014, 1,545 people were added: 1,037 newly diagnosed, biochemical diagnostic review removed 86 people; 508 had coding errors (178 gestational, 25 impaired glycaemia, 302 non-diabetes, three diabetes). The deceased numbered 388. Thus those registered rose to 17,327 (gained 566; removed 979). Additionally 723 established cases had an HbA1c <6.5%, on no treatment, without complications, mean duration of diabetes 7 years and probably have diabetes in remission whilst, of the newly diagnosed, 177 had a fasting blood glucose between  $\geq 7$  and <7.8 (new vs old criteria).

**Conclusions:** We removed 591 people not then subjected to diabetes-related activity, representing 2,955/5 years, potentially saving £1.5 million (at £500 per patient per annum). ‘Diabetes in remission’ adds another 4% of cases potentially saving £0.36 million annually if deregistered. It should be remembered that the diabetes epidemic was enhanced by 17% amongst the newly diagnosed as a consequence of debatable shifts in diagnostic criteria. Diabetes

database governance is imperative and may be highly cost effective whilst sparing large numbers of people the ‘burden of diabetes’.

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### Glucobrothers: closing the gap between acute and community inpatient care

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### Setting up an integrated diabetes service: experiences from North East Essex

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### Ontologies to improve the identification of ethnicity in people with Type 2 diabetes

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**Aims:** Prevalence and risk of Type 2 diabetes vary with ethnicity; and studies using routine data are limited by missing ethnicity data. Ontologies formally define concepts and relationships in a given domain. Ontologies improve case finding and using formal methods enables their consistent application across datasets.

**Methods:** We reviewed ethnicity and its related concepts (such nationality, language etc.) in a number of clinical terminologies in routine use and developed an overarching semantic information model. We graded the associated concepts to indicate the extent to which they act as proxies for ethnicity, and tested this on the >1 million patient records in the Royal College of General Practitioners Research and Surveillance Centre database. We compared ethnicity identification across all 2,011 English census groups using our ontology with the national code list recommended for primary care in the Quality and Outcome Framework (QOF).

**Results:** We developed an ethnicity ontology using basic formal ontology standards thus creating a shareable semantic resource. Utilising iterated proxy markers for ethnicity, language spoken and interpreter requirements, we increased identification of ethnic group. Across the whole database detection of White ethnicity increased from 17.01% [confidence interval (CI) 16.95%–17.06%]

to 51.49% (CI 51.42%–51.56%); for Black from 1.49% (CI 1.47%–1.51%) to 3.47% (CI 3.44%–3.5%); for Asian from 3.12% (CI 3.1%–3.15%) to 6.67% (CI 6.63%–6.71%); with similar improvements for ‘other ethnic groups’ and mixed ethnicity. The total classifiable increased from 23.6% to 65.0%.

**Conclusions:** Ontological approaches to improve identification of ethnicity across all census ethnicity categories. Researchers using routine data should consider adopting these methods.

## P485

### The Super Six model of diabetes care: five years on

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**Aims:** A redesigned diabetes service – known as the ‘Super Six’ (antenatal care, diabetic footcare, renal, insulin pumps/adolescent diabetes and inpatient diabetes) – was implemented from 2011.

**Methods:** Event rates for front door admissions and vascular events from 2010–2011 were tracked, and projected rates have been applied to the diabetic population for subsequent years to calculate number of events saved.

**Results:** (1) Decrease in admissions for diabetic ketoacidosis (DKA) by 29.5%, hypoglycaemic episodes by 42% and hyperosmolar hyperglycaemic state by 27%. (2) Decrease in myocardial infarction (MI) rates for patients with diabetes by 22% (decrease from projected number of MIs for the population at the 2009 rate from 304 to recorded 243 for 2014–2015). (3) Decrease in cerebrovascular accident event rates by 22% (projected 261 down to 204 recorded). (4) Decrease in major amputations by 39% (projected 187 down to 114 recorded). A likely healthcare saving was calculated by multiplying average cost of an event by the number of events saved for 2014–2015. The cost saved from DKA (£82,000), hypos (£25,551), MI (£686,789), CVA (£246,292) and amputation (£887,886) would equate to a total of around £1.9 million.

**Conclusions:** In an era where technology and new therapeutics steal the headlines, it is easy to forget the fundamentals of diabetes care – good communication and education. The restructuring of services has shown the impact that these interventions can have on complications, amongst other things. This has resulted in cost savings, both in real time by reducing follow-ups and hospital bed days, and long term by optimising the health of our community.

## P486

### Is recurrent diabetic ketoacidosis a priority? Change in service organisation has diminished the perception of recurrent diabetic ketoacidosis: a qualitative study exploring experiences in management of recurrent diabetic ketoacidosis

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**Aims:** Recurrent diabetic ketoacidosis (rDKA) is a challenging presentation in a small, but high risk, sub-population of people

with Type 1 diabetes, with greater morbidity, mortality and healthcare use. Factors driving rDKA are poorly understood and specific treatment pathways are lacking. A qualitative study was conducted to explore the evolution of rDKA management since the 1980s.

**Methods:** Using purposive sampling, clinicians were invited for semi-structured interview. Interviews were transcribed and experiences identified in a thematic analysis.

**Results:** 23 interviews were conducted with clinicians and researchers in the diabetes field, 14 in current practice and nine retired. Amongst current practitioners the themes included a discrepancy between physicians and nurses as to whether rDKA is worthy of additional resources or research and a perception that rDKA management has not altered over time. Nurses deemed the group hard to manage, described ‘burn out’ long term and wanted more support or resources. Physicians were more ambivalent about prioritising rDKA, perceiving numbers of rDKA admissions as small and decreasing and emphasising areas of perceived greater importance, e.g. recurrent hypoglycaemia. Historically, evolution of health services has devolved responsibility of rDKA away from diabetes physicians. Key factors include loss of diabetes wards, the advent of acute medical assessment units and introduction of diabetes specialist nurses.

**Conclusions:** Evolution of health services appears to have led to changes in responsibility for rDKA patients, but little has changed in identification and management of underlying psychosocial issues. Differing experiences in managing rDKA could reflect underlying psychological difficulties and extent of clinical contact between different health professions.

## P487

### Root-cause analysis or audit? Working in partnership to understand the clinical pathway of people with diabetes who underwent lower limb amputations in our region

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**Aims:** Our region has a higher than national average rate for minor amputations. A retrospective root-cause analysis of 15 people with diabetes admitted to the local acute NHS foundation trust was conducted.

**Methods:** The vascular team identified 15 people with diabetes who had undergone a lower limb amputation during the previous 12 months. A pre-existing audit tool was adapted to capture data from primary care general practice, community podiatry service and hospital medical records. The podiatry team together with NHS England found that the audit tools were unsuitable for primary care and podiatry and mapped the data within patient time lines and completed individual root-cause analysis.

**Results:** Clear themes identified: (i) opportunities to intervene earlier within the pathway to improve patient outcomes, e.g. patients having to attend multiple hospital appointments to see different disciplines; (ii) time delays for patients; (iii) patients with previous podiatry attendances were not self-referring back; (iv) nursing teams were trying to manage the ulcerations independently.