

# **The Association of British Clinical Diabetologists (ABCD) Clinical Audit Programme 2009-10**

**An audit of Inpatient Diabetes Care across NHS Lothian;  
The effectiveness of the use of information technology, the Scottish Patient  
Safety Programme and 'Think Glucose'.**

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## **Background**

### **Inpatient diabetes Care**

It is well recognised that people with diabetes admitted to hospital for other reasons have a longer length of stay than those without diabetes. In addition, recent work by Diabetes UK and the NHS Institute for Innovation and Improvement has highlighted the often poor patient perception of their inpatient stay. This is a common problem, as 15-20% of inpatients will have diabetes. The Scottish Patient Safety Programme (SPSP) has highlighted insulin management as one of the top priorities within their workstreams. The importance of this has been highlighted at recent national inpatient conferences and at the Joint British Diabetes Societies (JBDS) Inpatient Care Committee.

Recent publications have demonstrated that inpatient diabetes nurses may decrease the length of stay (1-3).

### **NHS Lothian.**

NHS Lothian provides health care services for a population of around 810,000 people. Diabetes care is organised in a structured fashion through a managed clinical network (Lead clinician, Dr John McKnight). A population based register of people with diabetes has been in place for the last 8 years. This register automatically collects information about the care of each patient. The data collected has been defined in the Scottish National Dataset. The information is linked by the use of a unique patient identifier (Community Health Index number). We know that there are currently 30,987 patients with diabetes in Lothian.

Acute adult care is provided on three main sites, the Royal Infirmary of Edinburgh, the Western General Hospital, Edinburgh and St John's Hospital, Livingston.

The advanced information technology and the cooperative working across the hospitals of NHS Lothian offer a unique opportunity to implement and measure the effects of interventions to improve inpatient care. The support systems already in place include:

- A full population based register of patients
- An electronic register-linked system to immediately identify all inpatients with diabetes on each site (in a four day audit at one hospital, 36 new admissions had a diagnosis of diabetes and on any one day approximately 70 inpatients had diabetes [~15 % of the inpatient population])
- Centralised automatic collection of all glucose monitoring data in one hospital setting. The glucose results on each monitor download automatically to a central laboratory and can be analysed (see appendix 1)
- Active interest from the Patient Safety programme and audit teams of Lothian
- Links through the Scottish Diabetes Group to all managed clinical networks of Scotland and through JBDS across UK (J McKnight on both groups)
- The group has experience of introducing integrated care pathways for peri-operative diabetes care and diabetic ketoacidosis (ref 4).

## Proposal

- 1) Identification of patients with diabetes. We can ensure that our diabetes index system identifies all patients. We will audit three parameters relating to this:
  - The frequency of blood glucose measurement at the initial point of assessment
  - How frequently the diagnosis of diabetes was mentioned in the referral letter from primary care in those cases admitted to hospital via this route
  - How often are the diabetes team involved in the management of these individuals and does that affect outcomes? Are there patterns in diabetes service referrals – do some areas not refer, is that because they are doing well anyway or does that indicate 'lack of interest' or indeed insight.
  
- 2) Glucose management across the hospital sites in response to the introduction of 'Think Glucose' methodology. Currently we have collected eight months of data for each ward in one hospital (one month sample from one ward is demonstrated in appendix 1). The following will be measured:
  - Frequency of correctly scanning the individual patient identifier at the time of glucose measurement (for current data see appendix 2)
  - Within each ward area, the number and relative frequency of results below 4 mmol/l, above 12, 20 and 30 mmol/l
  - Recorded management of hypoglycaemia
  - Analyse adherence of ICP protocols.
  
- 3) Part of the 'Think Glucose' package includes a safe use of insulin tool. Audit team contacts and SPSP (Carolyn Rodger) can provide us with a breakdown of the DATIX incidents relating to insulin administration and storage.
  - DATIX forms audit before and after intervention.
  
- 4) An audit of patient satisfaction of their care whilst an inpatient, before and after our 'Think Glucose' intervention. Patient satisfaction questionnaires could be utilised. This may require ethical approval but we don't envisage a problem in getting this. We would intend to use the DIPSAT (diabetes inpatient satisfaction with treatment) methodology (Prof MJ Sampson) supported previously by ABCD. We will seek appropriate permission to use this.
  - Inpatient patient satisfaction questionnaire.
  
- 5) Length of stay in hospital
  - IT systems will easily supply information on inpatient hospital length of stay. We can measure this before and after the 'Think Glucose' intervention and compare changes to the non-diabetic population
  - If length of stay for patients with diabetes is reduced we will calculate the associated cost savings.

## Resources

Initial data collection is quite advanced but will require some added input and further development, as we wish to embed the measurements to enable collection through automatic data collection. This may require some IT expertise which will be provided through the quality improvement, audit and SPSP teams in the hospitals.

We wish to appoint one 0.8 whole time equivalent nurse initially for 1 year but with the likely need to extend for a further 6 months. The role of the band 6 nurse will be to;

- Lead the project under the supervision of the applicants
- Develop data collection systems through discussion and linking with the teams above
- Develop, implement and roll out structured education systems across the hospitals through education of local clinical staff and lead nurses within the units.

Support for this role will be provided by diabetes specialist nurses within the WGH and RIE, in conjunction with Anne Donaldson and Lynn Struthers, Clinical Nurse Managers. We will seek to encourage further links to Napier University Nursing School (We already have strong links to Napier University through a joint specialist nurse/lecturer appointment, Jacqui Charlton). The co-applicants will provide supervision and help with more detailed project design and analysis.

The nursing resource required to undertake this challenging role would be a band six registered general nurse. This individual would evidence competencies in research [essential] and diabetes management [desirable].

## Costs

One band 6 nurse at 30hrs per week [0.8 whole time equivalent], including 'on costs', £27,295 per annum [costed at mid point]

We would estimate additional costs of £2,500 for IT equipment and support as well as travel and meeting costs.

## Summary

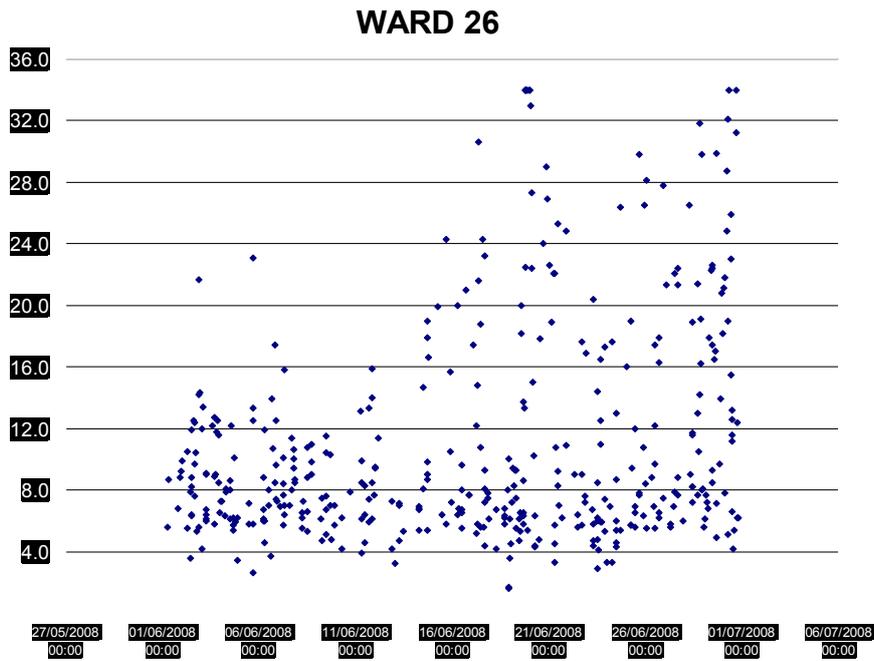
This project addresses an increasingly important area of diabetes care and one which is recognised as requiring improvement by both clinicians and patients. The literature is not extensive in this area but we have set realistic measures to ascertain what is achievable within NHS hospitals. The approach is multi-site, covering two central teaching hospitals and one district general hospital. The methodology and challenges identified will be similar to NHS hospitals across the UK. The goals are achievable within the resources requested and will produce publishable material. The applicants have a track record in producing publications and will publish the findings if funded.

## References

1. D. A. Cavan, P. Hamilton, J. Everett and D. Kerr. (2001) Reducing hospital inpatient length of stay for patients with diabetes. *Diabetic Medicine*. 18, 162-164.
2. M. Davies, S. Dixon, C. J. Currie, R. E. Davis and J. R. Peters (2001). Evaluation of a hospital diabetes specialist nursing service: a randomized controlled trial. *Diabetic Medicine* 18, 301-307.
3. M. J. Sampson, T. Crowle, K. Dhatariya, N. Dozio, R. H. Greenwood, P. J. Heyburn, C. Jones, R. C. Temple and E. Walden (2006). Trends in bed occupancy for inpatients with diabetes before and after the introduction of a diabetes inpatient specialist nurse service. *Diabetic Medicine* 23, 1008–1015.
4. S. L. Waller, S. Delaney, M. W. Strachan. (2007) Does an integrated care pathway enhance the management of diabetic ketoacidosis? *Diabetic Medicine* 24(4): 359-63.

## Appendix 1

Sample of glucose monitoring data from one general medical ward area, (26 beds) in June 2008. Similar data is available for all ward areas in Western General Hospital (470 beds). Note the wide distribution of results and number of hypoglycaemic results. There is a very large amount of data available increasing our ability to detect a statistically significant difference after intervention.



## Appendix 2

Increased recording of patient identifiers through raising this at nurse management level within the hospital. This will increase further with the education input associated with the project. Note the very large number of measurements in one month. The percentage figures have increased from <10 % in all wards over a six month period with little continuous support for wards.

### Patient Identification on Glucose Meters WGH - February 2009

Location	No. of Results	With CHI	Other ID(Name/Hosp No)	Without ID	% ID
ARAU	682	175	2	505	26
ITU & 21	2074	1691	27	356	83
Ward 2	274	52	0	222	19
Ward 3	207	13	0	194	6
Ward 4	175	15	0	160	9
Ward 6	90	54	0	36	60
Ward 22	168	45	4	119	29
Ward 23	173	1	0	172	0.5
Ward 24	130	6	0	124	5
Ward 25	181	90	1	90	50
Ward 26	402	319	0	83	79
Ward 27	177	115	1	62	66
Ward 31	115	16	0	99	14
Ward 32	192	68	1	123	35
Ward 33	346	64	1	281	19
Ward 42	56	41	0	15	73
Ward 43	49	26	7	16	67
Ward 50	229	28	2	199	13
Ward 51	299	78	0	221	26
Ward 52	102	4	0	98	4
Ward 53	294	49	0	245	17
Ward 54	567	326	9	232	57
Ward 55	128	33	0	95	26
Ward 56	310	86	0	224	28
Ward 57	424	37	0	387	9
Ward 58	110	84	0	26	76