Diabetes Guidelines and Their Implementation

Dr Ketan Dhatariya MSc MD MS FRCP
Consultant in Diabetes and Endocrinology
Norfolk and Norwich University Hospitals

Disclosures

- I am the lead author of the updated 2013 edition of the JBDS guideline for the management of diabetic ketoacidosis
- I am the lead author of the JBDS guideline on the management of the adult patient with diabetes undergoing surgery or procedures
- I am a co-author on almost all of the other JBDS national guidelines
- I am on the clinical endpoint adjudication committee for the sotagliflozin trials implemented by Lexicon Pharmaceuticals
- In the last 24 months, I have received consulting fees and honoraria from Genentech, Novo Nordisk, Alimera pharma, diabetes.co.uk, and Specsavers International

JBDS – IP, Joint British Diabetes Societies for Inpatient Care.

Who is This Strange Man?

- I qualified in 1991
- I trained in Diabetes & Endocrinology and General (Internal) Medicine
- I worked in general practice for 2 years
- I worked in ITU/anaesthetics for a year
- I researched at the Mayo Clinic (DHEA anyone?)
- I have been in Norwich since 2004
- Current/former national roles are
  - Honorary Secretary of the Diabetes and Endocrinology Section of the Royal Society of Medicine
  - Executive Officer of the Association of British Clinical Diabetologists (meetings secretary)
  - Chair of the Specialist Clinical Exam in Diabetes and Endocrinology (UK 'Board exam')
  - JBDS-IP group member (inpatient diabetes guidelines)
    - Peri-operative, diabetic ketoacidosis, hypoglycaemia, HHS, enteral feeding, self management, e-learning on safe use of IV insulin, renal unit, peri-partum management, steroid induced hyperglycaemia, etc.

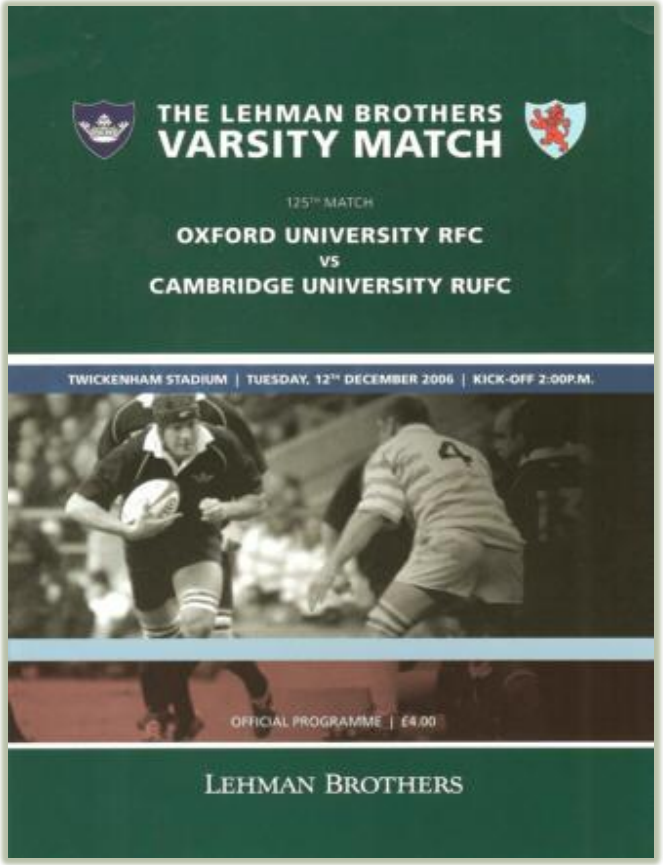
DHEA, dehydroepiandrosterone; HHS, hyperosmolar hyperglycaemic state; ITU, intensive therapy unit; IV, intravenous;
JBDS – IP, Joint British Diabetes Societies for Inpatient Care.

Hands Up……

- Anyone who has been involved in writing a guideline
  - Locally (for your own clinic/hospital)
  - Regionally
  - Nationally
  - Internationally

- What are your experiences?

How Did I Get into Guidelines?



Diabetic ketoacidosis

Saline should be used for fluid replacement rather than Hartmann's solution

Ketan K Dhatariya consultant in diabetes and endocrinology Norfolk and Norwich University Hospital NHS Trust, Elsie Bertram Diabetes Centre, Norwich NR4 7U
ketan.dhatariya@nnuh.nhs.uk

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Diabetic ketoacidosis is a life threatening condition caused by insulin deprivation or inadequate use of insulin in people with type 1 (or occasionally type 2) diabetes mellitus. Precipitants include deliberate insulin omission, intercurrent illness, surgery, trauma, alcohol, late presentation of previously undetected type 1 diabetes, and the use of drugs that alter carbohydrate metabolism.[1] People with diabetic ketoacidosis need swift intervention by specialists because of the substantial morbidity and mortality arising from the acid-base imbalance, profound fluid loss, and electrolyte disturbances.

Current guidelines written by diabetes specialists from the United States and the United Kingdom recommend initial replacement of fluids and electrolytes and intravenous insulin.[1 2] The fluid advocated in these guidelines is 0.9% saline. However, people may be treated by emergency and intensive care doctors as well as diabetes specialists, and the type of fluid used can vary.

During the first few hours of hospital admission many people with diabetic ketoacidosis are treated by emergency or intensive care doctors who commonly prefer to use Hartmann's solution (sodium lactate intravenous infusion).[3] Subsequent care is usually delivered by the diabetes team, who prefer to use 0.9% saline. The conflict arises because guidelines for fluid replacement in the acute setting are written by diabetes specialists,[1 2] whereas no widely accepted guidelines have been written by emergency or intensive care doctors for fluid replacement in diabetic ketoacidosis.

For decades, 0.9% saline has been the fluid of choice for diabetic ketoacidosis, and its use continues to be advocated in modern textbooks on diabetes.[4] Early studies on diabetic ketoacidosis in the 1970s used 0.9% saline,[5] and this approach was reinforced a decade later.[6] However, giving patients large amounts of chloride can cause a hyperchloraemic metabolic acidosis,[3 7] so administration of 0.9% saline for diabetic ketoacidosis could potentially worsen the metabolic acidosis. Thus, 0.9% saline may be the fluid of choice simply because evidence for the efficacy of other fluids is lacking. The question of which fluid replacement is optimal in patients with acute diabetic ketoacidosis is, therefore, still unanswered.

Dhatariya KK. *BMJ* 2007;334:1284–5

What is a Guideline?

- *"A principle put forward to set standards or determine a course of action"*

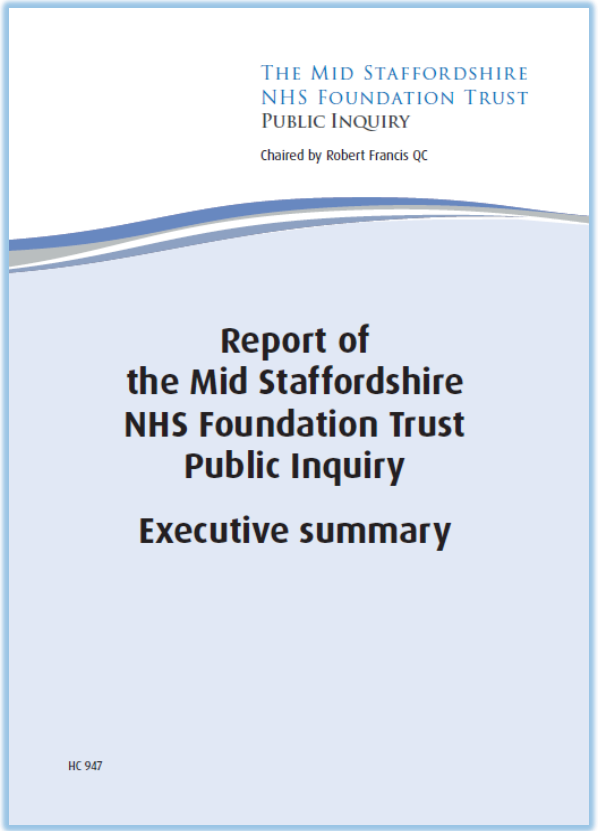
Collins English Dictionary – Complete and Unabridged, 12th Edition, Glasgow, Collins. 2014

Why Are They Needed?

- To standardise the care people receive
- A bit of history…..
- It used to be the incoming registrar's job to "rewrite the DKA guideline"
- Why? Because every hospital did something slightly different, which led to variations in care

DKA, diabetic ketoacidosis.

February 2013



"Commissioners…….must insist on quality and challenge the inefficiencies of providers, particularly unevidenced variations in clinical practice"

Mid Staffordshire NHS Foundation Trust Public Inquiry. Report of the Mid Staffordshire NHS Foundation Trust Public Inquiry. February 2013. Available from: https://www.gov.uk/government/publications/report-of-the-mid-staffordshire-nhs-foundation-trust-public-inquiry. Accessed 21 March 2017.

The Story So Far

- The Association of British Clinical Diabetologists, Diabetes UK, and the UK Diabetes Inpatient Specialist Nurse group all came together under the auspices of NHS Diabetes to form the Joint British Diabetes Societies for Inpatient Care group

What Can **You** Do

- Interested individuals!!
- All specialities – diabetes specialist nurses/diabetologists/ and anyone relevant to the guideline
- Get some money together (pharma/diabetes associations)
- Get the ball rolling by obtaining endorsements and early buy ins from the relevant bodies (RCOG/RCPath/RCoA/RCS)

RCoA, Royal College of Anaesthetists; RCOG, Royal College of Obstetricians and Gynaecologists; RCPath, Royal College of Pathologists; RCS, Royal College of Surgeons.

List of Published JBDS Guidelines (so far)

- Hospital management of hypoglycaemia in adults with diabetes
- The management of DKA in adults
- Management of adult patients with diabetes undergoing surgery
- Glycaemic management during enteral feeding in stroke
- Management of HHS
- Self-management of diabetes in hospital
- Admissions avoidance in diabetes
- Variable rate insulin infusion (VRII) for medical inpatients with diabetes
- Steroid use for inpatients with diabetes
- Management of adults with diabetes on the haemodialysis unit
- Managing diabetes during and after delivery
- New diagnosis of diabetes in inpatients
- Diabetes in inpatients with mental health issues

JBDS, Joint British Diabetes Societies.
Association of British Clinical Diabetologists. JBDS – IP. Available from: http://www.diabetologists-abcd.org.uk/JBDS/JBDS.htm. Accessed 21 March 2017.

Assessing Their Impact

- At the end of 2012, a survey was sent out by the ABCD and the DISN UK group asking the following questions:
  - Were you aware of the guidelines?
  - If so, have you adopted them for local use?
  - If so, did you get support from your Trust?
  - If so, what do you think of them (quality, usefulness, cost, patient safety)?
  - Have you audited the results of their implementation?
  - If you have not adopted them, why not?
  - If you have not adopted them, what do you now feel about their quality?

ABCD, Association of British Clinical Diabetologists; DISN, diabetes inpatient specialist nurses.

Awareness

	n/N	Awareness
Hospital management of hypoglycaemia	107/107	100%
The management of DKA	96/96	100%
Self management of diabetes in hospital	72/82	87.8%
Glycaemic management & enteral feeding in stroke	67/89	75.3%
Management of HHS	69/77	89.6%
Peri-operative diabetes care	84/92	91.3%

Overall Impact

- JBDS – IP guidelines appear to have been distributed actively (>21,000 hard copies, excluding downloads), with awareness in responding teams at 85–100%
- In 118 UK Trusts, adoption for older guidelines is >90% and for newer guidelines is approaching 70%
- Non adoption is usually due to lack of time **OR** local guidelines already being concordant with JBDS – IP guidelines

Overall Impact

- JBDS-IP guidelines rated highly in terms of patient safety, overall quality and clinical value with very few adverse comments (dissatisfaction with Trust processes)

- Costs (hypoglycaemia) and professional resistance (DKA, self management, peri-operative) are more common issues for some

What Can **You** Do?

- Audit their use
- Look at inpatient care
- Work together in your regions to get data
- Publish!!!!

DIABETICMedicine

DOI: 10.1111/dme.12875

Research: Care Delivery

National survey of the management of Diabetic Ketoacidosis (DKA) in the UK in 2014

K. K. Dhatariya[1], I. Nunney[2], K. Higgins[3], M. J. Sampson[1] and G. Iceton[4]

[1]Elsie Bertram Diabetes Centre, Norfolk and Norwich University Hospitals NHS Foundation Trust, Norwich, [2]Norwich Medical School, University of East Anglia, Norwich, [3]University Hospitals of Leicester NHS Trust, Leicester and [4]Clinical Audit and Improvement Department, Norfolk and Norwich University Hospitals NHS Foundation Trust, Norwich, UK

DIABETICMedicine

DOI: 10.1111/dme.13065

Research: Care Delivery

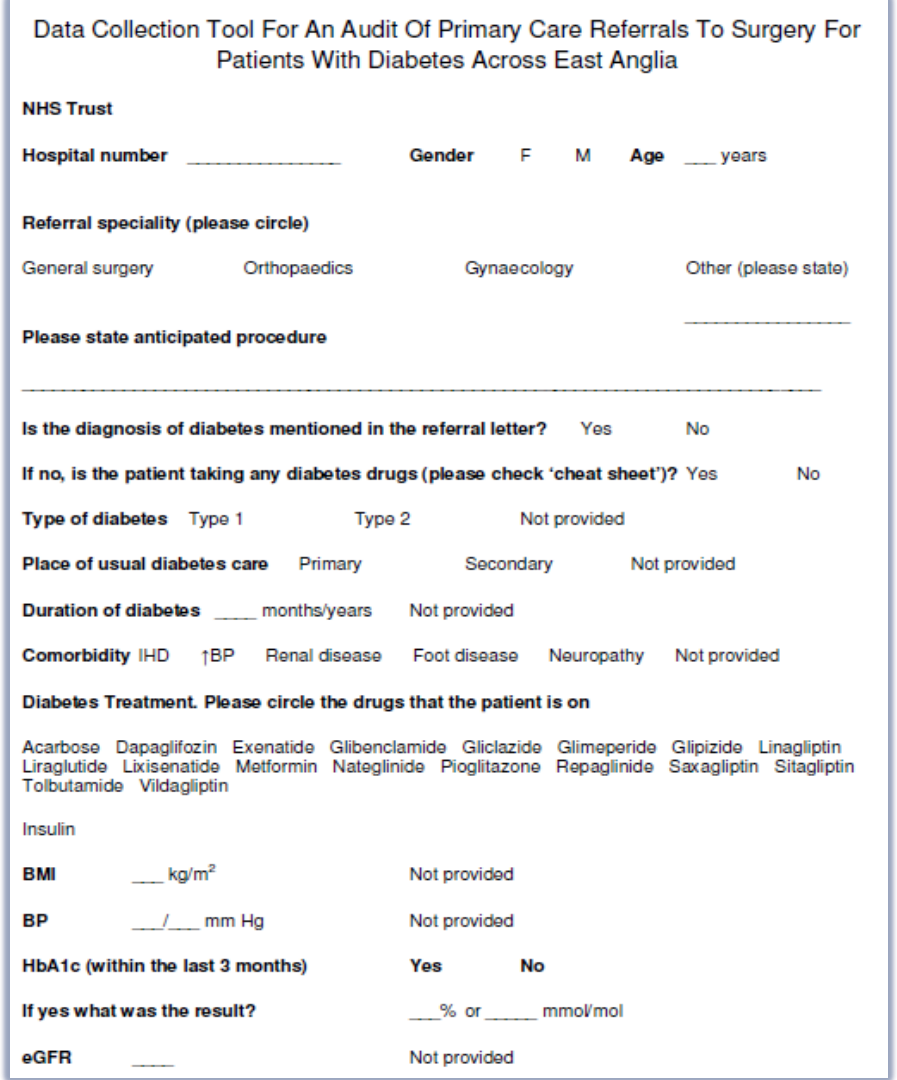
Diabetic ketoacidosis in an adolescent and young adult population in the UK in 2014: a national survey comparison of management in paediatric and adult settings

J. A. Edge[1], I. Nunney[2] and K. K. Dhatariya[3]

[1]Oxford Children's Hospital, Headington, Oxford, [2]Norwich Medical School, University of East Anglia and [3]Elsie Bertram Diabetes Centre, Norfolk and Norwich University Hospitals NHS Foundation Trust, Norwich, UK

Institutional factors in the management of adults with diabetic ketoacidosis in the UK: results of a national survey

Dhatariya KK, *et al*. *Diabetic Medicine* 2016;33(2):252–260
Dhatariya KK, *et al. Diabetic Medicine* 2016;33(2):269–270
Edge JA, *et al*. *Diabetic Medicine* 2016;33(10):1352–1359



Data Collection Tool For An Audit Of Primary Care Referrals To Surgery For Patients With Diabetes Across East Anglia

NHS Trust

Hospital number _____ **Gender** F M **Age** ___ years

Referral speciality (please circle)

General surgery Orthopaedics Gynaecology Other (please state)

_____

Please state anticipated procedure

_____

Is the diagnosis of diabetes mentioned in the referral letter? Yes No

If no, is the patient taking any diabetes drugs (please check 'cheat sheet')? Yes No

Type of diabetes Type 1 Type 2 Not provided

Place of usual diabetes care Primary Secondary Not provided

Duration of diabetes ____ months/years Not provided

Comorbidity IHD ↑BP Renal disease Foot disease Neuropathy Not provided

Diabetes Treatment. Please circle the drugs that the patient is on

Acarbose Dapaglifozin Exenatide Glibenclamide Gliclazide Glimeperide Glipizide Linagliptin Liraglutide Lixisenatide Metformin Nateglinide Pioglitazone Repaglinide Saxagliptin Sitagliptin Tolbutamide Vildagliptin

Insulin

BMI ___ kg/m^2 Not provided

BP ___/___ mm Hg Not provided

HbA1c (within the last 3 months) **Yes** **No**

If yes what was the result? ___% or _____ mmol/mol

eGFR ____ Not provided

Example of an audit form designed for surgeons to assess the quality of the referral letters sent by GP's to the surgeons

Photi E, *et al*. Under review

Drive, Commitment and Collaboration

An Example of Collaboration

Clinical Endocrinology (2016) **84**, 771–788 doi: 10.1111/cen.12857

GUIDELINES

Society for Endocrinology UK guidance on the initial evaluation of an infant or an adolescent with a suspected disorder of sex development (Revised 2015)

S. Faisal Ahmed*, John C. Achermann†, Wiebke Arlt‡, Adam Balen§, Gerry Conway¶, Zoe Edwards**, Sue Elford††, Ieuan A. Hughes‡‡, Louise Izatt§§, Nils Krone¶¶, Harriet Miles***, Stuart O'Toole†††, Les Perry‡‡‡, Caroline Sanders§§§, Margaret Simmonds¶¶¶, Andrew Watt**** and Debbie Willis††††

S. Faisal Ahmed	British Society of Paediatric Endocrinology & Diabetes, Society for Endocrinology, Chair & Corresponding Author
John C. Achermann	British Society of Paediatric Endocrinology & Diabetes, Society for Endocrinology
Wiebke Arlt	Society for Endocrinology
Adam Balen	British Society for Paediatric & Adolescent Gynaecology
Gerry Conway	Society for Endocrinology
Zoe Edwards	Chartered Member of the British Psychological Society
Sue Elford	CLIMB CAH Support Group
Ieuan A. Hughes	British Society of Paediatric Endocrinology & Diabetes, Society for Endocrinology
Louise Izatt	British Society for Genetic Medicine, Clinical Genetics Society
Nils Krone	British Society of Paediatric Endocrinology & Diabetes, Society for Endocrinology
Harriet Miles	British Society of Paediatric Endocrinology & Diabetes
Stuart O'Toole	British Association of Paediatric Urologists
Les Perry	Association for Clinical Biochemistry, Society for Endocrinology
Caroline Sanders	Royal College of Nursing
Margaret Simmonds	AIS Support Group
Andrew Watt	British Society of Paediatric Radiology
Debbie Willis	Society for Endocrinology

Gynaecologist

Patient advocates

Psychologist

Geneticist

Biochemist

Radiologist

Specialist Nurse

Faisal Ahmed *et al*. *Clin Endocrinol* 2016;84:771–788

Confidence

Confidence……or Arrogance?

Comment

Guidelines for management of diabetic ketoacidosis: time to revise?

Guidelines and position statements from medical organisations are widely used by clinicians to guide the care of their patients. The 2009 American Diabetes Association (ADA) position statement for diagnosis should be changed to a blood glucose concentration of 11·1 mmol/L (200 mg/dL) or higher.

The key diagnostic laboratory feature of DKA is the increase in circulating ketone concentrations.

Lancet Diabetes Endocrinol 2017
Published Online
March 31, 2017
http://dx.doi.org/10.1016/
S2213-8587(17)30093-1

Dhatariya KK & Umpierrez GE Lancet Diab Endocrinol 2017;5(5):321-323

Back to You

- If you were to consider writing a guideline
  - What challenges do you think you might face?
    - Financial?
    - Colleague inertia / resistance?
    - Organisational?
    - Challenging dogma?
    - Something else?

- What do you want to do now?

Diabetes Guidelines and Their Implementation

www.norfolkdiabetes.com

ketan.dhatariya@nnuh.nhs.uk

@ketandhatariya