

**SAFETY AND QUALITY
REMINDER OF BEST PRACTICE GUIDANCE**

Subject	Misdiagnosis of Diabetic Ketoacidosis in Children
HSCB reference number	SQR-SAI-2019-045 (AS/MCH)
Programme of care	Acute Services (AS) and Maternal and Child Health (MCH)

LEARNING SOURCE			
SAI/Early Alert/Adverse incident	✓	Complaint	
Audit or other review		Coroner's inquest	
Other (Please specify)			

SUMMARY OF EVENT
<p>There have been 2 cases of misdiagnosis of Diabetic Ketoacidosis (DKA) in children aged 5 and under in Northern Ireland in the last 4 years. In both cases the children presented with abdominal pain, raised blood sugar and a metabolic acidosis. Both children were initially treated as DKA but their clinical condition did not respond to treatment. They were subsequently transferred to the Belfast Trust and required abdominal surgery.</p> <p>In neither case were blood ketones measured at the time the clinical diagnosis of DKA was made.</p>

REQUIREMENTS UNDER CURRENT GUIDANCE
<p>Guidance from British Society for Paediatric Endocrinology and Diabetes (BSPED) is that a diagnosis of DKA is made in children when there is</p> <p>acidosis (indicated by blood pH below 7.3 or plasma bicarbonate below 18 mmol/litre) and ketonaemia (indicated by blood beta-hydroxybutyrate above 3 mmol/litre)</p> <p>Blood glucose levels are generally high (above 11 mmol/l) but children and young people with known diabetes may develop DKA with normal blood glucose levels.</p> <p>BSPED 2015: https://www.bsped.org.uk/media/1557/dkaguidelinov18.pdf</p> <p>NICE 2016:</p>

<https://www.nice.org.uk/guidance/ng18/chapter/1-Recommendations#diabetic-ketoacidosis-2>

Blood ketone meters should be available in all locations where children are treated i.e. ED, in patient wards, theatre, out-patients, ambulatory settings, day surgery centres and community settings and incorporated into Trust near patient testing QA processes

Most available blood glucose meters in Northern Ireland are also ketone meters with different strips used to test for glucose and ketones. Staff need to be familiar with the different arrangements for measuring blood glucose and blood ketones using the same meter or using different meters.

Children with diagnosed Type 1 diabetes and their family members or carers (as appropriate) should be provided with clear individualised oral and written advice ('sick-day rules') about managing type 1 diabetes during intercurrent illness or episodes of hyperglycaemia, including:

- monitoring blood glucose
- monitoring and interpreting blood ketones (beta-hydroxybutyrate)
- adjusting their insulin regimen
- food and fluid intake
- when and where to seek further advice or help.
- blood ketone testing strips are not used after the specified ('use-by') date

ACTION REQUIRED

HSC Trusts and NIAS should:

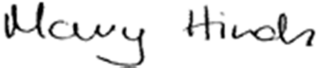

1. Disseminate this letter to all clinical areas where children are cared for in hospital and community settings.
2. Ensure that the diagnosis of DKA in children follows BSPED and NICE guidance
3. Ensure the availability of ketone meters in all clinical settings where children are looked after in hospital settings, that staff have been trained in their use and that these meters are included in Trust quality assurance programs for near patient testing
4. Please confirm by 7 March 2019 to alerts@hscni.net that these actions have been completed.

NIMDTA should:

1. Disseminate this letter to doctors in training in relevant specialties.

RQIA should:

1. Disseminate this letter to relevant independent sector providers.

Date issued	16 January 2019	
Signed:		
Issued by	Mrs Mary Hinds Director of Nursing, Midwifery & Allied Health Professionals	Dr Adrian Mairs Acting Director of Public Health

RE: SQR-SAI-2019-045 (AS/MCH) - Misdiagnosis of Diabetic Ketoacidosis in Children

	To – for Action	Copy		To – for Action	Copy
HSC Trusts			PHA		
CEXs	✓		CEX		✓
Medical Director		✓	Medical Director/Director of Public Health		✓
Directors of Nursing		✓	Director of Nursing/AHPs		✓
Directors of Social Services			PHA Duty Room		
Governance Leads			AD Health Protection		
Directors of Acute Services		✓	AD Service Development/Screening		✓
Directors of Community/Elderly Services			AD Health Improvement		
Heads of Pharmacy		✓	AD Nursing		✓
Allied Health Professional Leads			AD Allied Health Professionals		
NIAS			Clinical Director Safety Forum		
CEX	✓		HSCB		
Medical Director		✓	CEX		✓
RQIA			Director of Integrated Care		✓
CEX	✓		Director of Social Services		
Medical Director		✓	Director of Commissioning		
Director of Nursing		✓	Alerts Office		✓
Director for Social Care			Dir PMSI & Corporate Services		
NIMDTA			Primary Care (through Integrated Care)		
CEX / PG Dean	✓		GPs		✓
QUB			Community Pharmacists		✓
Dean of Medical School		✓	Dentists		✓
Head of Nursing School		✓	Open University		
Head of Social Work School			Head of Nursing Branch		
Head of Pharmacy School		✓	DoH		
Head of Dentistry School		✓	CMO office		✓
UU			CNO office		✓
Head of Nursing School		✓	CPO office		✓
Head of Social Work School			CSSO office		
Head of Pharmacy School		✓	CDO office		✓
Head of School of Health Sciences (AHP Lead)		✓	Safety, Quality & Standards Office		✓
Clinical Education Centre		✓	NI Social Care Council		
NIPEC		✓	Safeguarding Board NI		
GAIN Office			NICE Implementation Facilitator		
NICPLD			Coroners Service for Northern Ireland		