Background Document

Type 2 Diabetes (T2DM) in Aboriginal Children

Rationale:

The current Kimberley Diabetes Type 2 in Children protocol was overdue for review – last reviewed April 14, 2011. Since the last iteration of the protocol, rates of T2DM among Aboriginal and Torres Strait Islander children are increasing, and at much higher rates than for non-Indigenous young people. Youth onset T2DM is now recognised as a severe progressive form of T2DM, with poorer response to treatment and faster progression of sequelae and complications, which significantly impair quality of life and reduce life expectancy.

Managing youth type 2 diabetes can be challenging in a complex environment, and research has indicated that there are opportunities to enhance support models to enhance the management of this condition. There is a current study being undertaken across the Kimberley, Far North Queensland, Northern Territory's Top End and Central Australia which investigates the experience of children and youth living with T2DM. The aim is to co-design and evaluate culturally appropriate, youth-friendly models of care for Aboriginal and Torres Strait Islander young people with type 2 diabetes across Northern Australia.

Clinicians have noted significant difficulty in co-ordination of care in the Kimberley Region and associated challenges in maintaining adherence to management. Thus, the focus of the protocol has been to put Lifestyle management considerations (including psychological health) at the forefront of patient care and to link all patients in with a local multidisciplinary team (MDT) including the Kimberley paediatric team. We hope that by initially focusing on the Kimberley based MDT we will have the best chance of compliance with lifestyle management, medications, and attendance at appointments.

One of the aims of the new protocol is to encourage primary health services to refer all patients in the first instance to the local Kimberley Paediatric team so we can be more closely involved with patients who are diagnosed with T2DM. The Kimberley paediatric team will then refer to the Perth Children's Hospital (PCH) Endocrine Team to enable their input into patient care and ensure a clear flow of information between the two paediatric teams, the local community services, and the patient and family. In the case of patients who require hypoglycaemic medications other than Metformin, advice on agent and dosing will be sought from PCH Endocrinology by the Kimberley Paediatric Team.

In July, 2020 the Australasian Paediatric Endocrine Group published new guidelines regarding the screening, assessment and management of type 2 diabetes mellitus in children and adolescents, including specific recommendations regarding care of children and adolescents from Indigenous backgrounds in Australia and New Zealand. The KAHPF protocol incorporates updates from these guidelines, as well as from the International Society for Pediatric and Adolescent Diabetes (ISPAD) 2018 Clinical Practice Consensus Guidelines for Type 2 diabetes mellitus in youth. Reference ranges included in the protocol have been taken from these guidelines and reviewed by PCH Endocrine Team.

Initial Working Group:

- Dr Ben Harkin (WACHS Paediatric Registrar, Broome Hospital, Protocol lead writer)
- Dr David Atkinson (GP, KAMS)
- Bernadette O'Brien (Boab Health, Diabetic Educator)
- Bernadeen Gibb (Boab Health, Paediatric Dietician)
- Kathryn Johnstone (WACHS, West Kimberley Senior Dietician)
- Raelene Lee (WACHS, Pharmacist, Kimberley Pharmacy Services)

Further review from:

- WACHS Paediatric Team: Dr Gavin Cleland, Dr Philippa Shilson (Kimberley Consultant Paediatricians)
- PCH Endocrinology: Dr Jacqueline Curran (Consultant Paediatrician, Diabetes and Endocrinology), Mr Mark Shah (Nurse Practitioner, Diabetes and Endocrinology)
- KAMS: Dr Caitlyn White (GP and Public Health Registrar)
- Boab Health: Lynda Marshall, (Diabetes Educator - East Kimberley)

Discussion Points

Layout

The general approach to the drafting of the protocol was to limit the document to 4 pages by streamlining layout and reference diagrams to consolidate essential information for screening, diagnosis and management to the first two pages, with supporting detail in the following two pages. This consolidation was assisted by the use of hyperlinks to information within the protocol, within the broader KAHPF guidelines and to external reference documents.

Case Definition and Screening

In line with current recommendations for tighter glycaemic control in children with T2DM, the cut off for diagnosis is HbA1c greater than or equal to 6.5%. Given the roll out of point-of-care (POC) HbA1c in the Kimberley, this is the preferred method of screening with diagnosis confirmed on Venous sample. For places where POC HbA1c is not available, then random POC glucose is 2nd line option with diagnosis confirmed with venous HbA1c. Given the often opportunistic nature of screening and poor tolerance of alternatives, it was felt that OGTT or fasting glucose levels were not a practical screening method in the Kimberley. Previously POC BGL cut off was 12.1 to allow for variance in capillary blood sampling, but given the desire to have a higher sensitivity when screening, the decision was made to have cut off 11.1 in line with the usual cut off in the literature.

Principles of Management

This section has had a shift of focus to highlight the role of local MDT and previous reference to 'PMH Diabetes Team' has been replaced with highlighted box for referral to Kimberley Paediatric Team. Given in some cases an child with very high blood glucose levels may need a period of observation / stabilisation in hospital, the reference to 'avoiding hospital' has been removed, but the focus on treating within the region has remained. Lifestyle management including psychological wellbeing and education has been given more prominence.

Management Flowchart

This section has been considerably altered and streamlined.

Pages 4 and 5 of the previous protocol have been condensed into a single flowchart incorporating baseline assessment from page 2 of the previous protocol. More prominence has been given to Education and Lifestyle and MDT role. The flowchart incorporates a stream for recognizing the unwell child, and to simplify the protocol and encourage clinicians to seek input from the Kimberley Paediatric team, the instruction is to contact the Kimberley Paediatrician on-call in the case of any unwell child or diagnostic uncertainty regarding Type1 vs Type 2 diabetes, rather than giving further detail within this protocol. The chart includes hyperlinks for resources within the document, other KAHPF guidelines and external resources. A Flow chart for initiation and titration of Metformin and follow up co-morbidity screening is included in this page to enable a quick reference for all aspects of the essential management.

Therapeutic Protocols

This section has been considerably altered and streamlined.

Lifestyle management has been given prominence and specific attention drawn to Psychosocial factors. A highlighted box suggests a 3 month trial of Lifestyle factors only if initial HbA1c is <7.5%. This is to enable time for a good therapeutic relationship to build between the local MDT and family prior to starting medications (which may have side effects that impact on compliance) if safe to do so. In addition it allows time for the patient and family to gain a greater understanding of the effect of lifestyle factors on glycaemic control and also to allow the opportunity to build some agency and improve self esteem for patient if good outcomes from Lifestyle management alone. This has been discussed with the PCH Endocrine team who agree this is a reasonable approach for HbA1c <7.5%.

Pharmacological management has focused on Metformin only with instruction to contact Paediatrician on-call if further agents are needed. This is also reflected in the flowchart on page 2. The intention is that the Kimberley Paediatric Team will contact PCH Endocrine to discuss the management of these cases, prior to initiating any additional medications beyond Metformin.

The complications and comorbities section has been streamlined in regard to detail, but also expanded to include a larger list of co-morbidities.

Follow up

This section has been largely unchanged except for indicating more frequent retinal screen – yearly, in line with the adult protocol. The follow up recommendations are also included in the page 2 flowchart for ease of reference when considering whole of management approach.

Refer / Discuss

Reference to contacting PMH (now PCH) removed, to reinforce that the Kimberley paediatric team is first line for paediatric support. The Kimberley paediatric team will seek advice from PCH Endocrine as needed.

More specific contact details for allied health including hyperlinks, and link to Kimberley Diabetic services flowchart for East and West Kimberley locations - which will be an associated document for the guideline on the KAHPF page. Mental Health specifically listed.

Resources

New section – consisting of hyperlinks to useful resources for clinicians.

Additional Practice Points

New section with additional detail for clinicians re management – Lifestyle Management, Engaging families, Differential diagnosis of Type 1 DM, Transition to adult care, and Medications – Metformin and Long Acting Insulin. There is minimal detail regarding Insulin and differential of Type 1 Diabetes (previously a one page flowchart on page 5 of 2011 protocol) – as the intention is for local clinicians to contact the Kimberley Paediatric team regarding these issues, rather than self-initiating management.

Resources used:

Guidelines

Alexia S Peña1, Jacqueline A Curran, Michelle Fuery, Catherine George, Craig A Jefferies, Kristine Lobley, Karissa Ludwig, Ann M Maguire, Emily Papadimos, Aimee Peters, Fiona Sellars, Jane Speight, Angela Titmuss, Dyanne Wilson, Jencia Wong, Caroline Worth, Rachana Dahiya. Screening, assessment and management of type 2 diabetes mellitus in children and adolescents: Australasian Paediatric Endocrine Group guidelines. MJA. 213(1), 6 July 2020

Zeitler P. Arslanian S, Fu J, et al. ISPAD Clinical Practice Consensus Guidelines 2018: Type 2 diabetes mellitus in youth. Paediatric Diabetes. 2018;19(Suppl.27): 28 – 46 https://doi.org/10.1111/pedi.12719

Other References

Department of Health, Western Australia. Type 2 Diabetes in Children and Adolescents Model of Care and Clinical Practice Guideline. Perth: Princess Margaret Hospital and Health Networks Branch, Department of Health, Western Australia; 2009.

Kung-Ting Kao, Matthew A Sabin. Type 2 diabetes mellitus in children and adolescents. Australian Family Physician - Clinical. VOL.45, NO.6, JUNE 2016

Russell Viner, Billy White, Deborah Christie. Type 2 diabetes in adolescents: a severe phenotype posing major clinical challenges and public health burden. Lancet - Review 2017; 389: 2252–60