Supporting Information

Supplementary figures and tables
This appendix was part of the submitted manuscript and has been peer reviewed. It is posted as supplied by the authors.

<table>
<thead>
<tr>
<th>Name of Participant</th>
<th>Conflict of interest</th>
<th>Expertise</th>
<th>Institution</th>
<th>Geographical Location</th>
<th>Member’s role</th>
<th>Membership of Australian professional societies</th>
</tr>
</thead>
<tbody>
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<td>Perth Children’s Hospital</td>
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<td>APEG ANZOS RACP</td>
</tr>
<tr>
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<td>None</td>
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<td>Catherine George BAppSc (Physiotherapy)</td>
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<td>APEG</td>
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<td>Sydney, New South Wales</td>
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<td>None</td>
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<td>Children’s Health Queensland</td>
<td>Brisbane, Australia</td>
<td>Contributor to screening and diagnosis section</td>
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<td>Alexia Peña MD, FRACP, PhD</td>
<td>None</td>
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<td>Dietitian</td>
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<td>Sydney, New</td>
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<td>Name of Participant</td>
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<td>Geographical Location</td>
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<td>Membership of Australian professional societies</td>
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<tr>
<td>Fiona Sellars BN, CDE, G Dip CCN, MN (Clinical)</td>
<td>None</td>
<td>Credentialled Diabetes Educator</td>
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<td>Contributor to diabetes education section</td>
<td>APEG Association of Australia</td>
</tr>
<tr>
<td>Jane Speight CPsychol, FBPsS, PhD</td>
<td>None</td>
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<td>None</td>
<td>Paediatric Endocrinologist</td>
<td>Royal Darwin Hospital</td>
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<td>APEG Australian Diabetes Society</td>
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<td>Dyane Wilson MBChB, FRACP</td>
<td>None</td>
<td>Paediatric Endocrinologist</td>
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<td>Cairns, Queensland</td>
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<td>Jencia Wong BHB, MBChB, FRACP, PhD</td>
<td>None</td>
<td>Adult Endocrinologist</td>
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<td>None</td>
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<td>Starship Child Health</td>
<td>Auckland, New Zealand</td>
<td>Contributor to healthy lifestyle section (Diet)</td>
<td>Dietitians New Zealand</td>
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</tbody>
</table>

APEG Australasian Paediatric Endocrine Group, ANZOS Australian and New Zealand Obesity Society, RACP Royal Australasian College of Physicians
Each member will reinforce implementation of the guidelines in Australasia and among their own professional societies
Section 1. Search strategies

Search strategies used for each section including databases searched are listed below. Searches were done until February 2019 except the pharmacotherapy one that was done until May 2019 to include the following manuscript published in New England Journal of Medicine in April 28th 2019 after the searches were performed (Tamborlane WV et al. Lira gludite in Children and Adolescents with Type 2 Diabetes. N Engl J Med. 2019. 381(7):637-646). This manuscript was considered by the whole group as landmark study that was going to impact on the guidelines and required to be included.

1. Screening and diagnosis

Database: Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations and Daily – search strategy
1 exp Diabetes Mellitus, Type 2/di (9047)
2 (diabetes adj3 (type2 or type 2 or type ii)).ti,ab,kw. (123911)
3 (non insulin dependent diabetes or NIDDM or T2DM or T2D).ti,ab,kw. (37241)
4 or/1-3 (138417)
5 exp Mass Screening/ (121639)
6 screen*.ti,ab,kw. (691574)
7 (diagnos* adj3 (test* or tool* or approach* or accuracy)).ti,ab,kw. (197686)
8 or/5-7 (907838)
9 Adolescent/ (1942118)
10 exp Child/ (1836527)
11 (adolescen* or child* or school-age* or schoolage* or pre?school* or youth* or juvenile* or p?ediatric* or girl* or boy*).ti,ab,kw. (1805947)
12 or/9-11 (3489072)
13 4 and 8 and 12 (1168)
14 13 not (Animals/ not (Animals/ and Humans/)) (1167)
15 limit 14 to yr="2010 -Current" (675)
16 limit 15 to english language (641)

Database: Embase - Search Strategy:
1 non insulin dependent diabetes mellitus/di [Diagnosis] (9502)
2 (diabetes adj3 (type2 or type 2 or type ii)).ti,ab (199956)
3 (non insulin dependent diabetes or NIDDM or T2DM or T2D).ti,ab,kw. (63183)
4 or/1-3 (3489072)
5 exp mass screening/ (226460)
6 screen*.ti,ab,kw. (977059)
7 (diagnos* adj3 (test* or tool* or approach* or accuracy)).ti,ab,kw. (283268)
8 or/5-7 (1308485)
9 adolescent/ (1442891)
10 exp child/ (2473249)
11 (adolescen* or child* or school-age* or schoolage* or pre?school* or youth* or juvenile* or p?ediatric* or girl* or boy*).ti,ab,kw. (2244150)
12 or/9-11 (3824830)
13 4 and 8 and 12 (1650)
14 13 not ((exp animal/ or nonhuman/) not exp human/) (1640)
15 limit 14 to yr="2010 -Current" (1131)
16 limit 15 to english language (1093)

Cochrane Central Register of Controlled Trials and Cochrane Database of Systematic Reviews
ID Search Hits
#1 MeSH descriptor: [Diabetes Mellitus, Type 2] this term only and with qualifier(s): [diagnosis - DI] 673
#2 (diabetes NEAR:3 (type2 or "type 2" or "type ii"):ti,ab 29870
#3 ("non insulin dependent diabetes" or NIDDM or T2DM or T2D):ti,ab 9701
#4 #1 or #2 or #3 32217
#5 MeSH descriptor: [Mass Screening] explode all trees 3619
#6 screen*.ti,ab 59665
#7 (diagnos* NEAR:3 (test* or tool* or approach* or accuracy)):ti,ab 9030
#8 #5 or #6 or #7 68190
#9 MeSH descriptor: [Adolescent] this term only 100107
#10 MeSH descriptor: [Child] explode all trees 1178
#11 (adolescen* or child* or "school-age" or schoolage* or preschool* or "pre-school" or youth* or juvenile* or pediatric* or paediatric* or girl* or boy*):ti,ab 142653
#12 #9 or #10 or #11 219691
2. Diabetes Education

Database: Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations and Daily - Search Strategy:
1  exp Diabetes Mellitus, Type 2/ (123956)
2  (diabetes adj3 (type2 or type 2 or type ii)).ti,ab,kw. (124493)
3  (non insulin dependent diabetes or NIDDM or T2DM or T2D).ti,ab,kw. (37459)
4  or/1-3 (175240) 
5  Education/ (20296)
6  Health Education/ (59123)
7  Health Promotion/ (70130)
8  Learning/ (61787)
9  Counseling/ (34360)
10 Patient Education as Topic/ (82428) 
11 Health Knowledge, Attitudes, Practice/ (104172)
12 ((patient* or client* or participant* or individual* or adolescen* or child* or family or families) adj3 (train* or educat* or teach* or learn* or instruct* or inform or counsel* or empower*)).ti,ab,kw. (170480) 
13 or/5-12 (518489) 
14 Adolescent/ (1946014)
15 exp Child/ (1839554)
16 (adolescen* or child* or school-age* or schoolage* or pre?school* or youth* or teen* or juvenile* or p?ediatric* or girl* or boy*).ti,ab,kw. (1820943) 
17 or/14-16 (3499866) 
18 4 and 13 and 17 (1015) 
19 18 not (Animals/ not (Animals/ and Humans/)) (1014) 
20 limit 19 to yr="2010 -Current" (598)
21 limit 20 to english language (581)

Database: Embase - Search Strategy:
1  non insulin dependent diabetes mellitus/ (236598)
2  (diabetes adj3 (type2 or type 2 or type ii)).ti,ab,kw. (200286)
3  (non insulin dependent diabetes or NIDDM or T2DM or T2D).ti,ab,kw. (63293) 
4  or/1-3 (284834)
5  education/ (387279) 
6  health education/ (91575) 
7  health promotion/ (92758) 
8  learning/ (183233)
9  counseling/ (61656)
10 patient education/ (108940) 
11 ((patient* or client* or participant* or individual* or adolescen* or child* or family or families) adj3 (train* or educat* or teach* or learn* or instruct* or inform or counsel* or empower*)).ti,ab,kw. (221014) 
12 or/5-11 (992771) 
13 adolescent/ (1443562)
14 exp child/ (2475187) 
15 (adolescen* or child* or school-age* or schoolage* or pre?school* or youth* or teen* or juvenile* or p?ediatric* or girl* or boy*).ti,ab,kw. (2258474) 
16 or/13-15 (3831864)
17 4 and 12 and 16 (1426)
18 17 not ((exp animal/ or nonhuman/) not exp human/) (1418) 
19 limit 18 to yr="2010 -Current" (902)
20 limit 19 to english language (885)

Cochrane Library (Wiley) searching: Cochrane Database of Systematic Reviews and Cochrane Central Register of Controlled Trials – ID Search Hits
#1 MeSH descriptor: [Diabetes Mellitus, Type 2] explode all trees 15389 
#2 (diabetes NEAR/3 (type2 or "type 2" or "type ii").ti,ab 29871 
#3 ("non insulin dependent diabetes" or NIDDM or T2DM or T2D).ti,ab 9701 
#4 #1 or #2 or #3 34957 
#5 MeSH descriptor: [Education] this term only 558 
#6 MeSH descriptor: [Health Education] this term only 3669 
#7 MeSH descriptor: [Health Promotion] this term only 5272 
#8 MeSH descriptor: [Learning] this term only 2136 
#9 #1 or #2 or #3 3861 
#10 MeSH descriptor: [Patient Education as Topic] this term only 8279 
#11 MeSH descriptor: [Health Knowledge, Attitudes, Practice] this term only 5583
Healthy lifestyle

Diet

Database: Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations and Daily-Search Strategy:

1 exp Diabetes Mellitus, Type 2/(124274)
2 (diabetes adj3 (type2 or type 2 or type ii)).ti,ab,kw. (125361)
3 (non insulin dependent diabetes or NIDDM or T2DM or T2D).ti,ab,kw. (37798)
4 or/1-3 (176195)
5 exp Diet/(265884)
6 exp Diet Therapy/(52046)
7 exp Food/(1233832)
8 exp Feeding Behavior/(162046)
9 (diet* or food* or nutrition* or (intermittent adj1 fast*) or ((feeding or eating) adj2 behavio?r*)).ti,ab,kw. (1058176)
10 or/5-9 (2097068)
11 Adolescent/(1948607)
12 exp Child/(1841780)
13 (adolescen* or teen* or child* or school-age* or schoolage* or preschool* or "pre-school*" or youth* or juvenile* or p?ediatric* or girl* or boy*).ti,ab,kw. (1827353)
14 or/11-13 (3508043)
15 4 and 10 and 14 (3328)
16 15 not (Animals/ not (Animals/ and Humans/)) (3277)
17 limit 16 to yr="2010 -Current" (1788)
18 limit 17 to english language (1721)

Database: Embase - Search Strategy:

1 non insulin dependent diabetes mellitus/(237494)
(diabetes adj3 (type2 or type 2 or type ii)),ti,ab,kw. (201061)
(non insulin dependent diabetes or NIDDM or T2DM or T2D),ti,ab,kw. (63559)
or/1-3 (285903)
exp diet/ (300741)
exp diet therapy/ (326827)
exp food/ (946054)
exp feeding behavior/ (164244)
(diet* or food* or nutrition* or (intermittent adj1 fast*) or ((feeding or eating) adj2 behavio?r*)),ti,ab,kw. (1305297)
or/5-9 (285903)
exp diet/ (300741)
exp diet therapy/ (326827)
exp food/ (946054)
exp feeding behavior/ (164244)
(diet* or food* or nutrition* or (intermittent adj1 fast*) or ((feeding or eating) adj2 behavio?r*)),ti,ab,kw. (1305297)
or/10-14 (2156728)
adolescent/ (1447259)
exp child/ (2482547)
(adolescen* or child* or school-age* or schoolage* or preschool* or pre?school* or youth* or teen* or juvenile* or pa?ediatric* or girl* or boy*),ti,ab,kw. (2266315)
or/11-13 (3842914)
4 and 10 and 14 (5338)
15 not ((exp animal/ or nonhuman/) not exp human/) (5021)
limit 16 to yr=2010 -Current" (3363)
limit 17 to english language (3265)

Cochrane Library including: Cochrane Database of Systematic Review and Cochrane Central Register of Controlled Trials - 1D Search

Hits
#1 MeSH descriptor: [Diabetes Mellitus, Type 2] explode all trees 15458
#2 (diabetes NEAR/3 (type2 or "type 2" or "type ii"))):ti,ab,kw 33887
#3 ("non insulin dependent diabetes" or NIDDM or T2DM or T2D):ti,ab,kw 18854
#4 #1 or #2 or #3 36689
#5 MeSH descriptor: [Diet] explode all trees 17252
#6 MeSH descriptor: [Diet Therapy] explode all trees 5487
#7 MeSH descriptor: [Food] explode all trees 31439
#8 MeSH descriptor: [Feeding Behavior] explode all trees 8313
#9 diet* or food* or nutrition* or (intermittent NEAR/1 fast*) or ((feeding or eating) NEAR/2 (behavior* or behaviour*)):ti,ab,kw 133990
#10 #5 or #6 or #7 or #8 or #9 140530
#11 MeSH descriptor: [Adolescent] this term only 100420
#12 MeSH descriptor: [Child] explode all trees 1188
#13 (adolescen* or child* or school-age* or schoolage* or preschool* or pre?school* or youth* or teen* or juvenile* or pa?ediatric* or pediatric* or girl* or boy*):ti,ab,kw 237389
#14 #11 or #12 or #13 237389
#15 #4 and #10 and #14 825

CINAHL – Search Strategy
S1 (MH "Diabetes Mellitus, Type 2") 53,109
S2 TI ( diabetes N3 (type2 or "type 2" or "type ii")) OR AB ( diabetes N3 (type2 or "type 2" or "type ii")) 42,987
S3 ("non insulin dependent diabetes" or NIDDM or T2DM or T2M ) OR AB ( "non insulin dependent diabetes" or NIDDM or T2DM or T2M ) 5,965
S4 S1 OR S2 OR S3 65,954
S5 (MH "Diet+") 102,423
S6 (MH "Diet Therapy+") 27,134
S7 (MH "Food:+") 147,118
S8 (MH "Eating Behavior+") 34,430
S9 TI ( diet* or food* or nutrition* or (intermittent N1 fast*) or ((feeding or eating) N2 (behavior* or behaviour*)) ) OR AB ( diet* or food* or nutrition* or (intermittent N1 fast*) or ((feeding or eating) N2 (behavior* or behaviour*)) ) 225,411
S10 S1 OR S6 OR S7 OR S8 OR S9 347,377
S11 (MH "Adolescence") 463,141
S12 (MH "Child-") 583,505
S13 TI ( adolescent* or child* or school-age* or schoolage* or preschool* OR pre-school* or youth* or teen* or juvenile* or pediatric* or paediatric* or girl* or boy* ) OR AB ( adolescent* or child* or school-age* or schoolage* or preschool* or pre-school* or youth* or teen* or juvenile* or pediatric* or paediatric* or girl* or boy* ) 591,614
S14 S11 OR S12 OR S13 1,027,971
S15 S4 AND S10 AND S14 1,386
S16 S4 AND S10 AND S14 Limiters - Published Date: 20100101-20191231 872
S17 S4 AND S10 AND S14 Limiters - English Language; Published Date: 20100101-20191231 857

Physical Activity
**4. Considerations for children and adolescents of Indigenous backgrounds in Australasia special groups**

Database: Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations and Daily - Search Strategy:

1. exp Diabetes Mellitus, Type 2/ or diabetes Mellitus, type 2.mp. 127240
2. Exercise/ or Exercise.mp. 293508
3. physical activity.mp. 81706
4. 2 or 3 334112
5. child$.mp. 2181207
6. adolesc$.mp. 1963057
7. 5 or 6 3186895
8. 1 and 4 8928
9. 7 and 8 988
10. High-Intensity Interval Training/ 621
11. 7 and 10 123
12. 1 and 11 0
13. 1 and 10 32

Database: Embase - Search Strategy:

1. non insulin dependent diabetes mellitus/di [Diagnosis] 9502
2. (diabetes adj3 (type2 or type 2 or type ii)).ti,ab,kw. (200286)
3. (non insulin dependent diabetes or NIDDM or T2DM or T2D).ti,ab,kw. (63293)
4. 1 or 2 or 3 (175240)
5. Oceanic Ancestry Group/ and (Australia* or Queensland* or Northern Territory or Victoria* or New South Wales or Tasmania* or Torres Strait Island*).mp. (6163)
6. (((Aborigin* or Indigenous) and (Australia* or Queensland* or Northern Territory or Victoria* or New South Wales or Tasmania*)) or Torres Strait Island*).mp. (8997)
7. 4 and 7 and 11 (85)

Database: Embase - Search Strategy:

1. non insulin dependent diabetes mellitus/di [Diagnosis] (9502)
2. (diabetes adj3 (type2 or type 2 or type ii)).ti,ab,kw. (200286)
3. (non insulin dependent diabetes or NIDDM or T2DM or T2D).ti,ab,kw. (63293)
4. or/1-3 (220012)
5. indigenous australian/ (800)
6. (((Aborigin* or Indigenous) and (Australia* or Queensland* or Northern Territory or Victoria* or New South Wales or Tasmania*)) or Torres Strait Island*).mp. (11480)
7. 4 and 7 and 11 (85)

Database: Embase - Search Strategy:

1. non insulin dependent diabetes mellitus/di [Diagnosis] (9502)
2. (diabetes adj3 (type2 or type 2 or type ii)).ti,ab,kw. (200286)
3. (non insulin dependent diabetes or NIDDM or T2DM or T2D).ti,ab,kw. (63293)
4. or/1-3 (220012)
5. indigenous australian/ (800)
6. (((Aborigin* or Indigenous) and (Australia* or Queensland* or Northern Territory or Victoria* or New South Wales or Tasmania*)) or Torres Strait Island*).mp. (11480)
7. 4 and 7 and 11 (85)

Cochrane Library (Wiley) which covers: Cochrane Database of Systematic Reviews and Cochrane Central Register of Controlled Trials

**#1** MeSH descriptor: [Diabetes Mellitus, Type 2] explode all trees 15389
**#2** (diabetes NEAR/3 (type2 or "type 2" or "type ii")).ti,ab 29871
**#3** ("non insulin dependent diabetes" or NIDDM or T2DM or T2D).ti,ab 9701
**#4** #1 or #2 or #3 34957
**#5** MeSH descriptor: [Oceanic Ancestry Group] this term only 163
**#6** (Australia* or Queensland* or Northern Territory or Victoria* or New South Wales or Tasmania*) 47992
**#7** #5 and #6 115
#8 (Aborigin* or Indigenous) and (Australia* or Queensland* or Northern Territory or Victoria* or New South Wales or Tasmania*) or Torres Strait Island*) 555
#9 #7 or #8 563
#10 MeSH descriptor: [Adolescent] this term only 100107
#11 MeSH descriptor: [Child] explode all trees 1178
#12 (adolescen* or child* or "school-age*" or schoolage* or preschool* or "pre-school*" or youth* or juvenile* or teen* or pediatric* or paediatric* or girl* or boy*):ti,ab 143210
#13 #10 or #11 or #12 220109
#14 #4 and #9 and #13 12

5. Pharmacotherapy

Database(s): Ovid MEDLINE(R) 1946 to May 03, 2019 - Search Strategy:
# Searches Results
1 Biguanides/ (3140)
2 limit 1 to (yr="2000 - 2019" and "all child (0 to 18 years)") (55)
3 Metformin/ (12002)
4 limit 3 to (yr="2000 - 2019" and "all child (0 to 18 years)") (902)
5 Insulin/ (179527)
6 limit 5 to (yr="2000 - 2019" and "all child (0 to 18 years)") (8876)
7 2 or 4 or 6 (9610)
8 Diabetes Mellitus, Type 2/ (121929)
9 limit 8 to (yr="2000 - 2019" and "all child (0 to 18 years)") (7557)
10 2 or 4 or 6 (9610)
11 9 and 10 (1315)

Database(s): Ovid MEDLINE(R) 1946 to May 03, 2019 - Search Strategy:
# Searches Results
1 Diabetes Mellitus, Type 2/ (121929)
2 limit 1 to (yr="2010 - Current" and "all child (0 to 18 years)") (4498)
3 Guideline/ or Practice Guideline/ (31332)
4 limit 3 to (yr="2010 - Current" and "all child (0 to 18 years)") (1994)
5 Consensus/ (10390)
6 limit 5 to (yr="2010 - Current" and "all child (0 to 18 years)") (886)
7 4 or 6 (2786)
8 1 and 7 (44)

Search strategy for additional medications (not including metformin and insulin):
Database: Ovid MEDLINE(R) <1996 to May 03, 2019> Search Strategy:
1 exp Child/ (1012625)
2 exp Sulfonylurea Compounds/ (9902)
3 exp Thiazolidinediones/ (11091)
4 glitazone.mp. (175)
5 glucagon-like peptide 1/ or liraglutide/ (7590)
6 Exenatide/ (2223)
7 dulaglutide.mp. (173)
8 lixisenatide.mp. (268)
9 exp Dipeptidyl-Peptidase IV Inhibitors/ (4244)
10 Sitagliptin Phosphate/ (1252)
11 alogliptin.mp. (358)
12 saxagliptin.mp. (520)
13 exp Linagliptin/ (354)
14 exp Sodium-Glucose Transporter 2 Inhibitors/ (1607)
15 *gliflozin/ (1048)
16 dapagliflozin.mp. (544)
17 empagliflozin.mp. (666)
18 exp Canagliflozin/ (473)
19 ertugliflozin.mp. (24)
20 exp Glycoside Hydrolase Inhibitors/ (2908)
21 exp Rosiglitazone/ (4120)
22 exp Pioglitazone/ (3530)
23 glimiperide.mp. (3)
24 exp Glyburide/ (4170)
25 exp Glipizide/ (437)
26 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 (36202)
27 exp Diabetes Mellitus, Type 2/ (110770)
Search strategy for additional medications (not including metformin and insulin):

Database: Ovid MEDLINE(R) <1996 to May 03, 2019>

Search Strategy:
1. exp Diabetes Mellitus, Type 2/ (129450)
2. (diabetes adj3 (type2 or type 2 or type ii)).ti,ab,kw. (132099)
3. (non insulin dependent diabetes or NIDDM or T2DM or T2D).ti,ab,kw. (40335)
4. or/1-3 (184311)
5. Acarbose/ (1329)
6. acarbose.mp. (2758)
7. 5 or 6 (2758)
8. Adolescent/ (1994782)
9. exp Child/ (1881362)
10. (adolescen* or child* or school-age* or schoolage* or pre?school* or youth* or teen* or juvenile* or p?ediatric* or girl* or boy*).ti,ab,kw. (1883427)
11. or/8-10 (3594867)
12. 4 and 7 and 11 (18)
13. 12 not (Animals/ not (Animals/ and Humans/)) (18)
14. limit 13 to english language (16)

Search strategy also involved search the reference lists of articles for relevant studies, searching for publications reporting on the TODAY study data and searching clinicaltrials.gov for studies currently underway.

6. Complications and comorbidities

Database: Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations and Daily-Search Strategy:
1. exp Diabetes Mellitus, Type 2/ (123956)
2. (diabetes adj3 (type2 or type 2 or type ii)).ti,ab,kw. (124493)
3. (non insulin dependent diabetes or NIDDM or T2DM or T2D).ti,ab,kw. (37459)
4. 1 or 2 or 3 (175240)
5. exp Comorbidity/ (101021)
6. (comorbid* or co-morbid* or co-occur* or concurren*).ti,ab,kw. (322537)
7. 5 or 6 (382579)
8. Adolescent/ (1946014)
9. exp Child/ (1839554)
10. (adolescen* or child* or school-age* or schoolage* or pre?school* or youth* or teen* or juvenile* or p?ediatric* or girl* or boy*).ti,ab,kw. (1820943)
11. or/8-10 (3499866)
12. 4 and 7 and 11 (1069)
13. 12 not (Animals/ not (Animals/ and Humans/)) (1064)
14. limit 13 to yr="2000 -Current" (1033)

Database: Embase - Search Strategy:
1. non insulin dependent diabetes mellitus/ (236598)
2. (diabetes adj3 (type2 or type 2 or type ii)).ti,ab,kw. (200286)
3. (non insulin dependent diabetes or NIDDM or T2DM or T2D).ti,ab,kw. (63293)
4. or/1-3 (284834)
5. exp comorbidity/ (240420)
6. (comorbid* or co-morbid* or co-occur* or concurren*).ti,ab,kw. (506839)
7. or/5-6 (594512)
8. adolescent/ (1443562)
9. exp child/ (2475187)
10. (adolescen* or child* or school-age* or schoolage* or pre?school* or youth* or teen* or juvenile* or p?ediatric* or girl* or boy*).ti,ab,kw. (2258474)
11. or/8-10 (3831864)
12. 4 and 7 and 11 (1413)
13. 12 not ((exp animal/ or nonhuman/) not exp human/) (1390)
14. limit 13 to yr="2000 -Current" (1369)

Cochrane Library including: Cochrane Database of Systematic Reviews and Cochrane Central Register of Controlled Trials ID

ID #1 MeSH descriptor: [Diabetes Mellitus, Type 2] explode all trees 15389
ID #2 (diabetes NEAR/3 (type2 or "type 2" or "type ii")).ti,ab,kw 33686
ID #3 ("non insulin dependent diabetes" or NIDDM or T2DM or T2D).ti,ab,kw 18816
ID #4 #1 or #2 or #3 36486
ID #5 MeSH descriptor: [Comorbidity] explode all trees 3484
7. Transition to adult services

Database: Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations and Daily Search Strategy:
1. exp Diabetes Mellitus, Type 2/ (123956)
2. (diabetes adj3 (type 2 or type ii)).ti,ab,kw. (124493)
3. (non insulin dependent diabetes or NIDDM or T2DM or T2D).ti,ab,kw. (37459)
4. or/1-3 (175240)
5. Transition to Adult Care/ (1179)
6. Transitional Care/ (541)
7. (transition* adj2 (care or health?care or practice* or policy or policies or plan*)).mp. (6766)
8. or/5-6 (1691)
9. Adolescent/ (1946014)
10. Young Adult/ (757593)
11. (adolescent* or young people or young person* or young adult* or young men or young women or young male* or young female* or youth* or teen*).ti,ab,kw. (464891)
12. or/9-11 (2462822)
13. 4 and 8 and 12 (13)
14. 13 not (Animals/ not (Animals/ and Humans/)) (13)
15. limit 14 to yr="2010 -Current" (13)
16. limit 15 to english language (13)

Database: Embase - Search Strategy:
1. non insulin dependent diabetes mellitus/ (236598)
2. (diabetes adj3 (type 2 or type ii)).ti,ab,kw. (200286)
3. (non insulin dependent diabetes or NIDDM or T2DM or T2D).ti,ab,kw. (63293)
4. or/1-3 (284834)
5. transition to adult care/ (1646)
6. transitional care/ (2238)
7. (transition* adj2 (care or health?care or practice* or policy or policies or plan*)).mp. (11066)
8. or/5-7 (12144)
9. adolescent/ (1443562)
10. young adult/ (301296)
11. (adolescent* or young people or young person* or young adult* or young men or young women or young male* or young female* or youth* or teen*).ti,ab,kw. (585621)
12. or/9-11 (1875066)
13. 4 and 8 and 12 (36)
14. 13 not ((exp animal/ or nonhuman/) not exp human/) (36)
15. limit 14 to yr="2010 -Current" (32)
16. limit 15 to english language (32)

Cochrane Library including: Cochrane Database of Systematic Reviews and Cochrane Central Register of Controlled Trials ID Search Hits
#1 MeSH descriptor: [Diabetes Mellitus, Type 2] explode all trees 15389
#2 (diabetes NEAR/3 (type 2 or "type ii")).ti,ab 29871
#3 (*non insulin dependent diabetes* or NIDDM or T2DM or T2D).ti,ab 9701
#4 #1 or #2 or #3 34957
#5 MeSH descriptor: [Transition to Adult Care] this term only 16
#6 MeSH descriptor: [Transitional Care] this term only 38
#7 transition* NEAR/2 (care or healthcare or "health care" or practice* or policy or policies or plan*) 716
#8 #5 or #6 or #7 724
#9 MeSH descriptor: [Adolescent] this term only 100107
#10 MeSH descriptor: [Young Adult] this term only 226
#11 adolescent* or young people or young person* or young adult* or young men or young women or young male* or young female* or youth* or teen* 194219
#12 #9 or #10 or #11 194219
CINAHL – Search Strategy

S1  (MH "Diabetes Mellitus, Type 2")  (52,965)
S2  T1 ( diabetes N3 (type2 or type 2 or type ii) ) OR AB (diabetes N3 (type2 or type 2 or type ii) ) (42,855)
S3  T1 ( non insulin dependent diabetes or NIDDM or T2DM or T2M ) OR AB (non insulin dependent diabetes or NIDDM or T2DM or T2M) (5,917)
S4  S1 OR S2 OR S3 (65,781)
S5  (MH "Transitional Care") (1,159)
S6  T1 (transition* N2 (care or healthcare or "health care" or practice* or policy or policies or plan* ) OR AB (transition* N2 (care or healthcare or "health care" or practice* or policy or policies or plan*)) (6,352)
S7  S5 OR S6 (6,880)
S8  (MH "Adolescence") (461,917)
S9  (MH "Young Adult") (211,485)
S10 T1 (adolescen* or young people or young person* or young adult* or young men or young women or young male* or young female* or youth* or teen* ) OR AB (adolescen* or young people or young person* or young adult* or young men or young women or young male* or young female* or youth* or teen*) (194,193)
S11 S8 OR S9 OR S10 (615,167)
S12 S4 AND S7 AND S11 (9)
Table 2. Risk factors for type 2 diabetes

<table>
<thead>
<tr>
<th>Type of risk factor</th>
<th>Risk factors</th>
<th>Presence of risk factors in children and adolescents with type 2 diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Non Modifiable risk factors</strong></td>
<td>First or second degree relative with type 2 diabetes (1-3)</td>
<td>In 75 to 100% of cases</td>
</tr>
<tr>
<td>Genetics/Epigenetics</td>
<td>Minority race/ethnicity (3-5)</td>
<td>66% among Australian Indigenous Youth</td>
</tr>
<tr>
<td></td>
<td>Gestational diabetes offspring (6)</td>
<td>Odds ratio 5.7 to develop type 2 diabetes</td>
</tr>
<tr>
<td></td>
<td>Single nucleotide polymorphisms (7)</td>
<td>Genetic risk score for β-cell dysfunction</td>
</tr>
<tr>
<td></td>
<td>Specific genetic variants (8)</td>
<td>10% of heritability</td>
</tr>
<tr>
<td></td>
<td>Birth weight (9)</td>
<td>Intrauterine growth retardation, small for gestational age, large for gestational age</td>
</tr>
<tr>
<td><strong>Modifiable risk factors</strong></td>
<td>Overweight and Obesity (1-3)</td>
<td>Close to 100% of youth with type 2 diabetes had BMI &gt;85% with 50% reduction in peripheral and hepatic insulin sensitivity</td>
</tr>
<tr>
<td></td>
<td>– BMI ≥ 85th centile</td>
<td></td>
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<tr>
<td></td>
<td>– BMI ≥ 95th centile</td>
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<tr>
<td></td>
<td>Waist circumference (10)</td>
<td></td>
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<td></td>
<td>Sedentary lifestyle (1)</td>
<td></td>
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<tr>
<td></td>
<td>Maternal obesity (2,11)</td>
<td>Odds Ratio 2.8 to develop type 2 diabetes</td>
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<tr>
<td><strong>Other</strong></td>
<td>Insulin resistance - physiological insulin resistance of puberty (12)</td>
<td>Reduction in insulin sensitivity by ~30%</td>
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<td>Chronic stress, low mood (13)</td>
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<tr>
<td></td>
<td>Socioeconomic and educational status (5,14)</td>
<td>Higher risk of type 2 diabetes in lower socio-economic status</td>
</tr>
<tr>
<td></td>
<td>Population density (5,15)</td>
<td>Increased risk of type 2 diabetes in youth living in less densely populated residential areas (&lt;500 residents/square mile)</td>
</tr>
<tr>
<td></td>
<td>Use of psychotropic medications (16-18)</td>
<td>Children and adolescents are more vulnerable to metabolic effects compared to adults</td>
</tr>
</tbody>
</table>

BMI=Body mass index

References

9. Wei J, Sung, FC, Li C. Low birth weight and high birth infants are both at an increased risk to have type 2 diabetes among schoolchildren in Taiwan. *Diabetes Care* 2003;26:343-8.
<table>
<thead>
<tr>
<th><strong>Table 3. Diabetes self-management education content</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Education - at diagnosis and ongoing</strong></td>
</tr>
<tr>
<td>Simple explanation of how the diagnosis was made and the cause of symptoms. Reassure that treatment will help the child regain health and energy quickly</td>
</tr>
<tr>
<td>Explore feelings of guilt, shame or blame and discuss the uncertain cause of diabetes</td>
</tr>
<tr>
<td>Normalise grief and loss reaction to the diagnosis</td>
</tr>
<tr>
<td>Discuss risk for siblings and other family members; and interventions available to minimise risk</td>
</tr>
<tr>
<td>Simple explanation of glucose and the relationship between food, blood glucose, metformin and insulin</td>
</tr>
<tr>
<td>Simple explanation of the effect of metformin and insulin (long and short acting) on blood glucose levels</td>
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<tr>
<td>Discuss the role and responsibility of family in the delivery and supervision of self-management tasks and expectation for frequency of follow-up</td>
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<tr>
<td>Establish clear blood glucose levels and HbA1c targets; and goals of treatment</td>
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<tr>
<td>Focus on basic “survival” skills needed to manage the diabetes from day one</td>
</tr>
<tr>
<td>Accomplishment of these skills will increase the carers/child's confidence in their ability to manage</td>
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<tr>
<td>Basic dietetic advice including importance of healthy eating, and meal-time routines</td>
</tr>
<tr>
<td>Promotion of healthy body weight</td>
</tr>
<tr>
<td>Link between food and diabetes</td>
</tr>
<tr>
<td>Carbohydrate counting and glycaemic index if on prandial insulin</td>
</tr>
<tr>
<td>Explanation of hyperglycaemia and diabetes ketoacidosis (symptoms, prevention, management)</td>
</tr>
<tr>
<td>If on insulin, explanation of hypoglycaemia (symptoms, prevention, management), identity cards, necklets, bracelets, and other equipment</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Diabetes during illnesses</td>
</tr>
<tr>
<td>Advice not to omit insulin and to call the diabetes team for advice</td>
</tr>
<tr>
<td>May need to stop metformin if dehydrated, ill or require surgery</td>
</tr>
<tr>
<td>Diet and fluids on sick days</td>
</tr>
<tr>
<td>Sick day management plan</td>
</tr>
<tr>
<td>Integration of diabetes self-management tasks into family life, social activities, sporting activities, and school</td>
</tr>
<tr>
<td>Problem-solving and adjustments to treatment in everyday life, motivation, and coping with unexpected glucose fluctuations</td>
</tr>
<tr>
<td>Review and revise school management plan annually</td>
</tr>
<tr>
<td>Exercise, holiday planning and travel, including educational holidays and camps</td>
</tr>
<tr>
<td>Address questions about impact on future aspirations for child, that is, career, having children</td>
</tr>
<tr>
<td>Sexuality, pregnancy planning, contraception, employment</td>
</tr>
<tr>
<td>Teratogenic effects of oral/injectable agents, especially newer medications for management of type 2 diabetes</td>
</tr>
<tr>
<td>Membership of a diabetes association, joining National Diabetes Service Scheme, medic alert bracelet</td>
</tr>
<tr>
<td>Explore opportunities for peer support and family support</td>
</tr>
<tr>
<td>Details of emergency telephone contacts and follow-up arrangements</td>
</tr>
<tr>
<td>Update as required</td>
</tr>
</tbody>
</table>

Section 2. Available resources for children and adolescents and/or for type 2 diabetes mellitus

Education materials and a lifestyle program used in Treatment Options for type 2 Diabetes in Adolescents and Youth (TODAY) study: https://portal.bsc.gwu.edu/web/today/tdematerials


Resources for Aboriginal/Torres Strait Islanders adults with type 2 diabetes: (https://healthinfonet.ecu.edu.au/learn/health-topics/diabetes/resources/)
<table>
<thead>
<tr>
<th>Pharmacotherapeutic agent class</th>
<th>Route of administration</th>
<th>Mechanism of action</th>
<th>Side effects</th>
<th>Safety in pregnancy</th>
<th>Evidence for use in children</th>
<th>Trials currently underway</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Biguaniides</strong>&lt;br&gt;Metformin [1-13] *</td>
<td>Oral</td>
<td>Decreases gluconeogenesis in the liver and hence glucose release by the liver, increases insulin stimulated glucose uptake by muscle and fat. Renally excreted (unchanged)</td>
<td>Gastrointestinal (GI) side effects (abdominal pain, nausea, diarrhoea), headache, lactic acidosis (rare), lowering of Vitamin B12 levels causing anaemia</td>
<td>Consider safe to use in pregnancy</td>
<td>RCT (n=82) showed superior effect of metformin over placebo reducing HbA1c, fasting glucose and cholesterol in metformin group. No weight gain or safety issues with metformin. [4] NHMRC Level II evidence Observational study Pre-randomization (n=927) 90% of youth able to achieve HbA1c &lt;8%, 8.5% intolerant of metformin. [13] NHMRC Level IV Grade A recommendation for its use</td>
<td>-</td>
</tr>
<tr>
<td><strong>Insulins</strong>&lt;br&gt;Glargine * [3]&lt;br&gt;Detemir * [14]&lt;br&gt;Pre-mix 30/70 * [15]&lt;br&gt;Aspart *&lt;br&gt;Isophane *&lt;br&gt;Degludec 70/ aspart 30</td>
<td>Subcutaneous injection, Continuous subcutaneous insulin infusion</td>
<td>Binds to insulin receptors to increase glucose uptake and to inhibit hepatic glucose output</td>
<td>Hypoglycaemia, weight gain, oedema, hypersensitivity at injection site and generalised hypersensitivity to insulin</td>
<td>Consider safe to use in pregnancy but there is no data on Degludec</td>
<td>RCT (n=91) of glargine (3mths) followed by metformin (9mths) versus metformin (12mths). Neither treatment halted the deterioration of β-cell decline [3]. NHMRC Level II Grade B recommendation (Glargine) for its use</td>
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</tr>
<tr>
<td><strong>Sulfonylureas</strong>&lt;br&gt;Glimepiride [5]&lt;br&gt;Glyburide [16]&lt;br&gt;Glipizide</td>
<td>Oral</td>
<td>Closes K-ATP channel to stimulate insulin release from beta cells Increases insulin sensitivity in peripheral tissues</td>
<td>Hypoglycaemia, weight gain and possible acceleration of beta-cell loss Limited information in relation to pregnancy, alternative agents are preferred Glyburide may be used but metformin/insulin are preferred</td>
<td></td>
<td>RCT (n=285) of glimepiride vs metformin showed similar reduction in HbA1c, similar safety profile but significant weight gain in glimepiride group [5]. NHMRC level III-1 evidence RCT (n=167) of glyburide alone or in combination with metformin showed combination therapy was not superior to monotherapy with either agent [16]. Grade B recommendation against its use as causes significant weight gain and not superior to metformin alone or in combination</td>
<td>-</td>
</tr>
<tr>
<td><strong>Thiazolidinediones</strong> (glitazones)&lt;br&gt;Rosiglitazone [6-12]&lt;br&gt;Pioglitazone</td>
<td>Oral</td>
<td>Improves insulin sensitivity in adipose tissue, muscle and liver via activation of the Peroxisome</td>
<td>Weight gain, fluid retention, anaemia, possible reduction in bone mineral density</td>
<td></td>
<td>RCT (n=699) found metformin plus rosiglitazone resulted in better durability of glycaemic control compared with metformin alone or metformin plus lifestyle change. Similar safety profile but</td>
<td>-</td>
</tr>
<tr>
<td>Glucagon-like peptide 1 (GLP-1) receptor agonists [18-23]</td>
<td>proli ferator-activated receptor gamma receptor</td>
<td>and increased risk of heart failure</td>
<td>limited information in relation to pregnancy, alternative agents preferred</td>
<td>small increase in BMI in patients taking rosiglitazone [12, 17] NHMRC level II evidence Rosiglitazone is not used in adults due to cardiovascular side effects with no data about these side effects in children. Grade D recommendation against its use due to potential side effects</td>
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<tr>
<td>Exenatide [19, 22] **</td>
<td>Subcutaneous injection</td>
<td>incretin effects: increases insulin secretion, suppresses glucagon, prolongs gastric emptying, increases satiety</td>
<td>Acute pancreatitis, GI side effects (nausea, vomiting, diarrhoea) and potential increased risk of medullary cell carcinoma</td>
<td>RCT (n=134) found liraglutide plus metformin resulted in improvement in HbA1c and fasting glucose at 26 and 52 weeks compared with placebo plus metformin [21]. NHMRC level II evidence RCT (n=19) reported greater decline in HbA1c over 5 weeks in patients treated with liraglutide compared with placebo. No major side effects [22]. NHMRC level III-1 evidence RCT (n=13) reported lower post-prandial glucose after a single dose of exenatide compared with placebo [23]. NHMRC level III-2 evidence Grade C recommendation for its use</td>
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<tr>
<td>Liraglutide [20 - 22] **</td>
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<tr>
<td>Dulaglutide Lixisenatide</td>
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</tbody>
</table>

| Dipeptidyl peptidase-IV (DPP-IV) inhibitors | *Oral* | inhibition of DPP-IV which reduces breakdown of incretins including GLP-1. Do not have the same effect on satiety, gastric emptying and weight loss as GLP-1 agonists. | acute pancreatitis, GI side effects limited information in relation to pregnancy for liraglutide (no information for other agents in this class) alternative agents preferred | only single dose pharmacokinetics studies available on sitagliptin [24] and alogliptin [25] showing similar doses can be used in children and adults RCT of linaagliptin (n=39) over 12 weeks improve HbA1c [26] NHMRC Level II No serious adverse events. Grade D recommendation for its use |
| Sitagliptin | | | | |
| Alogliptin | | | | |
| Saxagliptin | | | | |
| Linagliptin [26] | | | | |

| SGLT-2 inhibitors | *Oral* | inhibits renal tubular reabsorption of glucose causing glycosuria and reducing plasma glucose. Promotes weight loss. | urinary tract infection, euglycaemic diabetic ketoacidosis and vulvovaginal candidiasis No published information in pregnancy alternative agents preferred | only single dose pharmacokinetics studies available on empagliflozin [29] and dapagliflozin [27] showing similar doses can be used in children and adults. No serious adverse events. Very limited data (pharmacokinetics studies) to be able to make a GRADE recommendation |
| Dapagliflozin [28, 29] | | | | |
| Empagliflozin [30] | | | | |
| Canagliflozin | | | | |
| Ertugliflozin | | | | |

| Alpha-glucosidase inhibitors | *Oral* | inhibits breakdown of oligosaccharides delaying absorption of carbohydrates | GI (flatulence, abdominal pain, diarrhoea) | no trials in children and adolescents unable to GRADE as no evidence available in children |
| Acarbose | | | | |

**Tabulated Table:**

<table>
<thead>
<tr>
<th>Glucagon-like peptide 1 (GLP-1) receptor agonists</th>
<th>Proli ferator-activated receptor gamma receptor</th>
<th>and increased risk of heart failure</th>
<th>Limited information in relation to pregnancy, alternative agents preferred</th>
<th>Small increase in BMI in patients taking rosiglitazone [12, 17] NHMRC level II evidence Rosiglitazone is not used in adults due to cardiovascular side effects with no data about these side effects in children. Grade D recommendation against its use due to potential side effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exenatide [19, 22] **</td>
<td>Subcutaneous injection</td>
<td>Incretin effects: Increases insulin secretion, suppresses glucagon, prolongs gastric emptying, increases satiety</td>
<td>Acute pancreatitis, GI side effects (nausea, vomiting, diarrhoea) and potential increased risk of medullary cell carcinoma</td>
<td>RCT (n=134) found liraglutide plus metformin resulted in improvement in HbA1c and fasting glucose at 26 and 52 weeks compared with placebo plus metformin [21]. NHMRC level II evidence RCT (n=19) reported greater decline in HbA1c over 5 weeks in patients treated with liraglutide compared with placebo. No major side effects [22]. NHMRC level III-1 evidence RCT (n=13) reported lower post-prandial glucose after a single dose of exenatide compared with placebo [23]. NHMRC level III-2 evidence Grade C recommendation for its use</td>
</tr>
<tr>
<td>Liraglutide [20 - 22] **</td>
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<td></td>
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<tr>
<td>Dulaglutide Lixisenatide</td>
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</tbody>
</table>

| Dipeptidyl peptidase-IV (DPP-IV) inhibitors | Oral | Inhibition of DPP-IV which reduces breakdown of incretins including GLP-1. Do not have the same effect on satiety, gastric emptying and weight loss as GLP-1 agonists. | Acute pancreatitis, GI side effects limited information in relation to pregnancy for liraglutide (no information for other agents in this class) alternative agents preferred | Only single dose pharmacokinetics studies available on sitagliptin [24] and alogliptin [25] showing similar doses can be used in children and adults RCT of linaagliptin (n=39) over 12 weeks improve HbA1c [26] NHMRC Level II No serious adverse events. Grade D recommendation for its use |
| Sitagliptin | | | | |
| Alogliptin | | | | |
| Saxagliptin | | | | |
| Linagliptin [26] | | | | |

| SGLT-2 inhibitors | Oral | Inhibits renal tubular reabsorption of glucose causing glycosuria and reducing plasma glucose. Promotes weight loss. | Urinary tract infection, euglycaemic diabetic ketoacidosis and vulvovaginal candidiasis No published information in pregnancy alternative agents preferred | Only single dose pharmacokinetics studies available on empagliflozin [29] and dapagliflozin [27] showing similar doses can be used in children and adults. No serious adverse events. Very limited data (pharmacokinetics studies) to be able to make a GRADE recommendation |
| Dapagliflozin [28, 29] | | | | |
| Empagliflozin [30] | | | | |
| Canagliflozin | | | | |
| Ertugliflozin | | | | |

| Alpha-glucosidase inhibitors | Oral | Inhibits breakdown of oligosaccharides delaying absorption of carbohydrates | GI (flatulence, abdominal pain, diarrhoea) | No trials in children and adolescents Unable to GRADE as no evidence available in children |
| and reduces post-prandial hyperglycaemia | Limited information in pregnancy alternative agents preferred |

* Therapeutics Goods administration (TGA) approved for children
** Recent Foods and Drugs Administration (FDA) approval for children (June 2019)
† As the majority of the trials underway will be available in 5 years and update of the guidelines will be required then using the similar process.
References