Disability Related Health Supports - Policy Implementation

Bowel care consumables – *Addendum to CAPS and SAS information*

Bowel care consumables	• Review what would be considered for NDIS funded bowel care consumables; e.g. enemas, washouts, anal plugs etc.

This information is intended to be used in addition to the SAS and CAPS information.

Bowel care consumables

There is no specific 'bowel care consumables' subsidy scheme in Australia.

Bowel Care Australia is a Rotary initiative that provides an affordable $15 bowel care screening kit. They do not provide consumables[1].

The CAPS 'continence consumables' payment rate for 2019-20 is up to $609.70.

- As you do not need to provide receipts people may use this lump sum to contribute towards covering the cost of bowel care consumables as well. Often the purpose/scope of bowel care consumables and continence consumables are interchangeable.

Provide example: BrightSky Australia is your one-stop-shop for specialist healthcare products. BrightSky offers Australia-wide home delivery of an extensive range of everyday and "hard-to-find" healthcare products, including bowel care products[2].

A list of the bowel care consumables available through BightSky and the associated cost can be found here on the: Bowel Care Fibres, laxatives, enemas and bowel rinses page.

- In general the anal irrigation systems are the most expensive items ranging from $149- $368.

The issue for NDIS planners to consider is if these bowel care consumables meet the reasonable and necessary criteria when they are related to the person's disability.

- For example, a NDIS participant with a spinal cord injury, MS, CP, Spina Bifida or an ABI may require continence/bowel care consumables that are directly related to the participant's disability and are required for life.
- While for a participant with incontinence due to, for example, post-pregnancy muscle weakness, anxiety, or medication side effects, it would not be reasonable or necessary for the NDIS to fund continence/bowel consumables.

Bowel consumables pose a significant sustainability risk to the scheme if the reasonable and necessary criteria is not applied correctly. The Better Health Channel Victorian website states that:

- More than four million Australians regularly experience leakage from the bladder and bowel (incontinence)[3].
- That is 1 in 6 Australians with some form of incontinence. That ratio could reasonably be assumed to be higher for the expected 460,000 NDIS participants.

[1] http://www.bowelcare.org.au/
[2] https://www.brightsky.com.au/epages/shop.sf/en_AU/?ObjectPath=/Shops/shop/Categories/About_Us
[3] https://www.betterhealth.vic.gov.au/health/conditionsandtreatments/incontinence-and-continence-problems

Research Request – Definition of Early Intervention in health and rehabilitation

Brief	• Information on how 'early intervention' is defined in the context of a rehabilitation/treatment approach with adults with musculoskeletal conditions. • For context, we described that *"early intervention" is typically therapy supports provided early in a diagnosis, intended to reduce the long term functional impact or progress of the condition.* • The lawyers are seeking confirmation that this term is well known in the "industry" of health care and rehabilitation.
Date	12/08/19
Requester	Shannon s47F - personal p & Susan s47F - personal p
Researcher	Aanika s47F - personal p

Contents

Use of the term 'early intervention' and definitions

The term 'early intervention' is frequently referred to in the health, mental health, rehabilitation and work cover (workplace injury) fields.

The Allied Health Professions Australia website states that:

- *Musculoskeletal conditions affect muscles, joints, nerves, soft tissues, tendons and ligaments are common in our community. All ages can be affected and the conditions may be acute, arising from injury or unaccustomed activity, or due to a long-term condition. Allied health practitioners are key to prevention, diagnosis,* ***early intervention*** *and treatment of injuries and pain and the ongoing management of chronic musculoskeletal conditions*[1].

The Meriam-Webster dictionary defines **early** / **intervene / musculoskeletal** independently as[2]:

- *near the beginning of a period of time;*
- *to interfere with the outcome or course especially of a condition or process (as to prevent harm or improve functioning);*
- *of, relating to, or involving both musculature and skeleton.*

In March 2014 – a European Steering Group (ESG) on Sustainable Healthcare was developed by pharmaceutical research company, which brings together expertise from the policy community, civil society, healthcare professionals, scientific societies, academics and industry. This group published a paper titled *Acting Together: A Roadmap for Sustainable Healthcare*. This paper highlighted the importance of prevention and early intervention stating that:

- *Prevention means intervening before something becomes a serious health issue, including eradicating, eliminating or minimising the impact of disease and disability or, if this is not feasible, slowing the progression of disease and disability.* ***Early intervention, on the other hand, is the process of providing specialist intervention and support services for a person who needs them, either early in the life course or at the onset of the development of a health problem.***[3]

Early Intervention is also often used in the context of children with developmental disabilities. The Royal Australasian College of Physicians states that:

- *Early intervention for children with developmental disabilities involves timely provision of an optimal nurturing and learning environment that aims to maximise developmental and health outcomes and reduce the degree of functional limitations.*[4]

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[1] Australian Health Professions Australia, 'Musculoskeletal health', *Allied Health Professions [website],* 2019, <https://ahpa.com.au/key-areas/musculoskeletal-health/> accessed 12 August 2019.

[2] *Merriam Webster Dictionary [online], 2019, <* https://www.merriam-webster.com/dictionary/early> accessed 13 August 2019.

[3] AbbVie, 'Acting Together: A Roadmap for Sustainable Healthcare', *European Steering Group* 2015, <https://www.abbvie.com/content/dam/abbviecorp/us/desktop/sustainablehealthcare/images/EU-Call-To-Action.pdf> accessed 12 August 2019.

[4] Paediatric and Child Health Division, 'Positon Statement: Early Intervention for Children with Developmental Disabilities', *Royal Australasian College of Physicians [website*], 2013, <https://www.racp.edu.au/docs/default-source/advocacy-library/early-intervention-for-children-with-developmental-disabilities.pdf> accessed 12 August 2019.

Early Intervention is also used in the mental health space. The Australian Commonwealth Department of Health states that:

- *People with an emerging mental health problem or mental illness will be identified and treated as early as possible in the initial phase and any subsequent episode, to minimise the severity and duration of the condition and to reduce its broader impacts [and] early intervention can reduce the impact of mental health problems and mental illness*[5].

In 1993 a controlled study of the effects of an early intervention on acute musculoskeletal pain problems was conducted by the Department of Occupational Medicine at the Orebro Medical Center in Sweden[6]**.**

- The study demonstrated **that early active physical therapy intervention for patients suffering their first episode of acute musculoskeletal pain significantly decreased the incidence of chronic pain.**
- In this study, injured workers complaining of acute musculoskeletal pain were either seen by a physical therapist within the first few days after injury or had to wait a week or more to be seen. Both groups were seen by a general practitioner to rule out aggressive disease or problems that might require medical treatment. Patients in the early intervention group saw a physical therapist within the first three days following their injury.
- Of those people who were suffering their first episode of musculoskeletal pain who had early physical therapy intervention only 2% went on to develop chronic pain. Of those who did not get early intervention, 15% became chronic pain patients.

Definitions of early intervention in work injury space

In the Worksafe/cover space regarding musculoskeletal conditions and injuries, early intervention is often referred to as a prevention strategy when a health or safety risk has been identified, or an incident has occurred, and measures are consequently put in place to either prevent or reduce the impact of the risk[7].

For example, Comcare (the workers compensation insurer for the Australian Government) states that:

- *Early intervention is about identifying and responding to warning signs and reports of accidents and incidents in the workplace…The earlier you notice a worker is experiencing potential signs of ill health or injury, the sooner you can take steps to help them*[8].

[5] Australian Commonwealth Department of Health, *National Mental Health Policy 2008: Early Intervention [website]*, 2009, <https://www1.health.gov.au/internet/publications/publishing.nsf/Content/mental-pubs-n-pol08-toc~mental-pubs-n-pol08-2~mental-pubs-n-pol08-2-4> accessed 12 August 2019.
[6] SJ Linton, AL Hellsing & D Andersson, '*Department of Occupational Medicine, Orebro Medical Center*, Sweden, vol.54, no. 3, 1993, pp. 353-9, <https://www.ncbi.nlm.nih.gov/pubmed/8233552> accessed 13 August 2019.
[7] Queensland Government, Workplace Health and Safety Electrical Safety Office Workers' Compensation Regulator, *'Early interventions for musculoskeletal disorders',* Workcover Queensland [website], 4 May 2017, <https://www.worksafe.qld.gov.au/forms-and-resources/webinars/early-interventions-for-musculoskeletal-disorders> accessed 12 August 2019.
[8] Australian Government Comcare, '*Early intervention*', 6 Jun 2014, <https://www.comcare.gov.au/early_intervention> accessed 12 August 2019.

Comcare website also states that having Early Intervention Rehabilitation systems in place is important because:

- *Providing rehabilitation as soon as practicable after an injury or on the request of an injured employee sets an expectation of an early return to work. This reduces the human and financial costs associated with workers' compensation claims or other forms of leave. It demonstrates that the employer values its employees*[9].

Considering that injury and musculoskeletal disorders led to 90% of serious work compensation claims in 2014–15, it makes sense that the concept of early intervention is closely aligned with the workplace[10]**.**

Definitions of rehabilitation

The Royal Australian College of Physicians definition of rehabilitation is:

- *"Rehabilitation Medicine is the diagnosis, assessment and management of an individual with a disability due to illness or injury. Rehabilitation physicians work with people with a disability to help them achieve an optimal level of performance and improve their quality of life"*[11].

The National Health Data Dictionary, defines the rehabilitation classification and model of care as:

- *Care in which the primary clinical purpose or treatment goal is improvement in the functioning of a patient with an impairment, activity limitation or participation restriction due to a health condition. The patient will be capable of actively participating*[12].

[9] Australian Government Comcare, *'Early intervention – early intervention rehabilitation systems in place [website]'* 4 Nov 2013, https://www.comcare.gov.au/ accessed 13 August.
[10] Safe Work Australia, '*Disease and injury statistics [website],* 20 Sep 2018, <https://www.safeworkaustralia.gov.au/statistics-and-research/statistics/disease-and-injuries/disease-and-injury-statistics> accessed 13 Aug 2019.
[11] Royal Australian College of Physicians, *Australasian Faculty of Rehabilitation Medicine [website*], 2019, <https://www.racp.edu.au/about/college-structure/australasian-faculty-of-rehabilitation-medicine> *accessed 13 August 2019.*
[12] Australian Government Australian Institute of Health and Welfare Canberra, *'Development of nationally consistent subacute and non-acute admitted patient care data definitions and guidelines'*, 2013, <https://www.aihw.gov.au/getmedia/01d815ba-3d66-48c9-a9ec-aaa5825c19f2/15425.pdf.aspx?inline=true> accessed 12 August 2019.

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Linton SJ, Hellsing AL & Andersson D, '*Department of Occupational Medicine, Orebro Medical Center*, Sweden, vol.54, no. 3, 1993, pp. 353-9, <https://www.ncbi.nlm.nih.gov/pubmed/8233552> accessed 13 August 2019.

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Royal Australian College of Physicians, *Australasian Faculty of Rehabilitation Medicine [website*], 2019, <https://www.racp.edu.au/about/college-structure/australasian-faculty-of-rehabilitation-medicine> *accessed 13 August 2019.*

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Research Request – Contact Centre Guidelines

Brief	TAT TAPS : General information regarding contact centre operations eg. guidelines, OHS, standards, working operations, scheduling, staff breaks, time on calls etc.
Date	28/08/2019
Requester	Wendy s47F - pers
Researcher	Sean s47F - personal priv

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Summary

Health and Safety Considerations around Contact Centres

Primary identified concerns in call centres[1] are in the majority consistent with broader computer based work / TAT operations.

Significant differences include the increased emphasis on the use of headsets, additional scheduling constraints and an increased requirement to vocalise communication.

Metrics and KPI's for managing Call Centres

[1] VTHC Occupational Health and Safety Unit, 'Call Centres – The Problems', <https://www.ohsrep.org.au/call_centres_-_the_problems>, accessed 06/09/2019

Key metrics for management of call centres relate to both the performance of a call centre as a whole, and performance of individual agents. These metrics are collected from system infrastructure, agent and end user surveys, and organisational data calculations. Within the context of TAPS, this would include PANDA, The Taps Tool, and possibly other tools that would need to be developed for purpose.

Health and Safety

The reviewed literature identifies a relatively consistent set of risks across several sources.

Relevant to the TAPS project

- Headset factors
  - Hygiene
  - correct positioning
  - fit
  - Acoustic shock)[2],[3]

- Vocal fatigue
  - Strain / Injury
  - Potential Dysphonia

- Stress
  - Over monitoring for call centre metrics
  - Lack of consultation
  - Angry Callers
  - Repetitive work

Other risks

Other risks were identified, but are consistent with other TAT operations and should be addressed by existing considerations.

- Office Hygiene
- Visual Strain from using a Computer
- Shift work
- Other general office/computer work risks

Mitigation Factors

[2] Australian Services Union - Acoustic Shock Information Sheet, Accessed 06/09/2019 http://www.asu.asn.au/documents/doc_download/213-acoustic-shock-information-sheet

[3] Comcare - Call Centres: A Guide to Safe Work, July 2018 - https://www.comcare.gov.au/Forms_and_Publications/publications/services/safety_and_prevention/safety_and_prevention/call_cent_a_guide_to_safe_work

Concerning the risks that most prominently relate to call centre work for TAPS, mitigation factors suggested include:

- On boarding and periodic refresher training
    - Headset Hygiene, usage and maintenance
    - Acoustic shock awareness and management
    - Hygiene, vocal rests and regular consumption of water
- Regular rest periods
    - No consistent guidelines are given, but examples/emphatic principles include
        - 5 minutes per hour not speaking
        - Regular and planned breaks, established in consultation with call handling agents
        - Free access to toilets and water
- Avoid hot desks and shared headsets where possible
    - Ensure hygiene and ergonomic setup where hot-desking and shared headsets are necessary

Metrics and KPIS

There are no readily available published Australian standards or guides concerning metrics and KPI's. Some material, such as the Australian Services Union (ASU) Call Centre Good Practice Guide, recommends reducing the use of active call monitoring to rely on customer satisfaction surveys.

6 sources were reviewed regarding general call centre performance monitoring and these metrics may be considered with regards to Business Intelligence Reporting / the metrics generated by the data analyst.

Centre Wide metrics that may be useful

- Cost per Call - Operational cost divided by number of calls taken. Ideally considered in light of Conversion Funnel Progression.
- Conversion Funnel Progression – An industry term to discuss how often a call results in a benefit to the organisation. For example, how often a sales call makes a sale. In the taps context, this may reflect the number of delegate decisions made without the availability of TAPS, or the average time to make a delegate decision that requires TAT consultation. This metric would require assistance from PANDA / BI developers to calculate but may provide strong economic justification around TAPS staffing.
- Chanel Mix - % of calls handled by non-telephone medium, IE if the TAPS service opened to queries on Yammer or by Skype. Allowing channel mix would increase accessibility to hearing impaired staff
- Agent Turnover rate – Rate at which agents seek other roles as a gauge to agent satisfaction
- First call Resolution (percentage of callers who have to call back about the same issue)
- Customer Satisfaction (after call survey)

Agent specific metrics that may be useful

- Average speed of Answer (time between ringing start and agent pick up)
- First call Resolution (percentage of callers who have to call back about the same issue)
- Customer Satisfaction (after call survey)
- Adherence to Schedule (percentage of an agents time in a shift on a call or available to take a call)
- Call Emotion – Agent survey rating quality of calls in after call survey for trend/outlier analysis
- Agent Absenteeism - Number of days per year where an agent is not available to take scheduled calls. Average absenteeism rate can provide insight into scheduling risk or in identifying resources who may be more appropriately utilised in other tasks

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3	Comcare - Call Centres: A Guide to Safe Work, July 2018	https://www.comcare.gov.au/Forms_and_Publications/publications/services/safety_and_prevention/safety_and_prevention/call_cent_a_guide_to_safe_work
4	Commerce Western Australia – Code of Practice Occupational Safety and Health in Call Centres, Accessed 06/09/2019	http://www.commerce.wa.gov.au/sites/default/files/atoms/files/code_call_centre_0.pdf
5	Doellgast, V., and Sezer, L., 'Global Union - Making the Right call: Redesigning call centres from the bottom up', Accessed 06/09/2019	http://mail.union-network.org/Blogs/ccam.nsf/dx/CCAMreportEN.pdf/$file/CCAMreportEN.pdf
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8	Victoria State Government - Victorian Government Call Centre Policy, Accessed 06/09/2019	https://www.vic.gov.au/victorian-government-call-centre-policy
9	VTHC Occupational Health and Safety Unit, 'Breaks for Computer/VDU users?', accessed 06/09/2019	https://www.ohsrep.org.au/breaks_for_computer_vdu_users_kze9ju6nhy8r08umyifehw

10	VTHC Occupational Health and Safety Unit, 'Call Centres - More Information', accessed 06/09/2019	https://www.ohsrep.org.au/call_centres_-_more_information
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12	HR Management for CX, 'The 10 Best Metrics to Measure Call Center Agent Productivity', published 29/08/2019	https://blog.playvox.com/metrics-to-measure-call-center-agent-productivity
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16	Tech Target Essential Guide, 'A guide to call center metrics', published 12/2013	https://searchcustomerexperience.techtarget.com/essentialguide/A-guide-to-call-center-metrics

Research Request – Expected abilities / challenges for children <5

Note: will require revision if sharing at legal hearing

Brief	**Counsel's position "All parents of children of these ages face challenges, and that raising children of these age ranges is a challenging stage of life and what every family faces."** 1) What are the expected abilities / challenges for children for each stage up to the age of 5: • Babies 3 – 12 months • Toddlers 1 – 3 years • Pre-schoolers 3 – 5 years In the following areas: • Toileting • Feeding • Eating (inc fussy eaters, eating problems) • Dressing • Behaviours (i.e. tantrums, self-management) • Sleep/Bedtime • Multiple children (i.e. demand on parents time) • Parental Exhaustion (including resources that are recommended to support parents) 2) They have also requested information related to the above about the expected ease of access to and use of double prams for parents with multiple young children.
Date	30/09/19
Requester	Naomi
Researcher	Aanika

Contents

Summary

The information collated below details the typical development stages and behaviours for children up to age five. It also examines expected challenges that children and their families may experience during this 0-5 development phase.

The Raising Children website defines development as: **the changes in a child's physical growth, as well as their ability to learn the social, emotional, behaviour, thinking and communication skills they need for life. All of these areas are linked, and each depends on and influences the others**[1].

The majority of information below is taken from the **raisingchildren.net.au website**, which provides free, reliable, up-to-date and independent information to help Australians families. It is funded by the Australian Government, reviewed by experts and is non-commercial, so it can be considered a reliable source. Health information is also taken from **healthdirect.gov.au**, which is an Australian government funded service, providing quality, approved health information and advice.

These websites both highlight that all babies, toddlers and children grow and develop at different rates. The Raising Children website identifies the following key points about child development for ages 0-5 years:

- Development is how the child grows physically and emotionally and learns to communicate, think and socialise.
- In the first five years of life, the child's brain develops more and faster than at any other time in his life.
- The parent relationship with the child is one of the most important influences on the child's learning and development.
- In the early years, the child's main way of learning and developing is through play[2].

For each age bracket, development milestones for toileting, feeding, eating, dressing, behaviours and sleep/bedtime have been listed.

Babies 3 – 12 months

Toileting

Young babies can wee many times a day. Having lots of wet nappies is a good sign – it shows that a child is well hydrated. The wetting will happen less as the baby gets older, but it might still happen at least 6-8 times a day. Pooing anywhere between three times a day and three times a week is normal. Generally, a child will need up to 12 nappies changed a day for a newborn and 6-8 a day for a toddler[3].

Feeding

It is recommended that a mother breastfeed exclusively until the baby starts solid foods at around 6 months and keeps breastfeeding until at least 12 months. A baby needs only small amounts of food for the first few months of solids, and breastmilk is still a baby's main source of nutrition. Once a

[1] https://raisingchildren.net.au/newborns/development/understanding-development/development-first-five-years.
[2] Ibid.
[3] https://raisingchildren.net.au/newborns/health-daily-care/poos-wees-nappies/nappies

parent introduces solids, it's best for the baby if breastfeeding continues along with giving the baby solids until they are at least 12 months old[4].

In the early days, babies typically need to feed every 2-4 hours. Most babies establish a manageable pattern of demand feeding over the first few weeks of life. They learn to do most of their feeds during the day and have fewer at night[5].

Eating

Many children are fussy eaters. Fussy eating is normal, but it can be hard to handle. Most of the time fussy eating isn't about food – it's often about children wanting to be independent. Children's appetites are affected by their growth cycles. Even babies have changing appetites.

At 1-6 years, it's common for children to be really hungry one day and picky the next[6].

Dressing

Once a child reaches about 12 months old, they will be very energetic and might not want to stay still long enough even to put a nappy on, let alone several layers of clothes[7].

At one year children can usually:

- hold their arms out for sleeves and put their feet up for shoes
- push their arms through sleeves and legs through pants
- pull socks and shoes off[8].

Behaviours

The Raising Children Website identifies the following common behaviour concerns for babies 3-12 months:

- Fear of strangers
    - Fear of strangers is normal and common. It can start at around eight months and usually passes by around two years[9].
- Separation anxiety
    - Separation anxiety is a normal part of development from about eight months of age[10].
- Breath holding
    - Children might hold their breath when they're upset or hurt. They don't do it on purpose. Breath-holding spells usually end within 30-60 seconds[11].
- Fear of bath
    - Newborns might not like the feeling of being in the bath. Older babies and toddlers might be frightened of the bath[12].

[4] https://raisingchildren.net.au/babies/breastfeeding-bottle-feeding-solids/about-breastfeeding/breastmilk-breastfeeding-benefits
[5] https://raisingchildren.net.au/babies/behaviour/common-concerns/can-you-spoil-a-baby
[6] https://raisingchildren.net.au/toddlers/nutrition-fitness/common-concerns/fussy-eating
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[12] https://raisingchildren.net.au/babies/behaviour/common-concerns/fear-of-the-bath

- Biting, pinching and hair pulling
    - Babies bite, pinch and pull hair to work out cause and effect. Toddlers often do it to express feelings they don't have words for.[13]
    - Babies and toddlers might also pinch, bite or pull hair if they:
        - feel overwhelmed by too much noise, light or activity
        - need opportunities for more active play
        - feel overtired or hungry.
- Shyness
    - Some children are naturally shy. This means they're slow to warm up or uncomfortable in social situations[14].
- Overstimulation
    - A stimulating environment to play in and explore helps a child to learn and grow. But sometimes too many activities add up to overstimulation, so downtime is important.
    - If a newborn or baby is overstimulated, they might:
        - be cranky or tired
        - cry more
        - seem upset or turn her head away from you
        - move in a jerky way
        - clench her fists, wave her arms or kick.[15]

At 6-12 months, a baby starts to understand cause and effect and begins to have some control over their behaviour. This is a good time to start setting gentle limits to form the basis of teaching a child positive behaviour in the future[16].

Sleep/Bedtime

Most babies under six months of age still need feeding and help to settle in the night.

6-12 months:

- As babies get older, they need less sleep.
- From about six months, most babies have their longest sleeps at night.
- Most babies are ready for bed between 6 pm and 8 pm. They usually take less than 30 minutes to get to sleep, but about 1 in 10 babies takes longer.
- At this age, most babies are still having 1-2 daytime naps. These naps usually last 1-2 hours. Some babies sleep longer, but up to a quarter of babies nap for less than an hour[17].
- Most parents of babies under six months of age are still getting up in the night to feed and settle their babies. For many this keeps going after six months.

[13] https://raisingchildren.net.au/babies/behaviour/common-concerns/biting-pinching-hair-pulling
[14] https://raisingchildren.net.au/babies/behaviour/common-concerns/shyness
[15] https://raisingchildren.net.au/babies/behaviour/common-concerns/overstimulation
[16] https://raisingchildren.net.au/babies/behaviour/understanding-behaviour/baby-behaviour-awareness
[17] https://raisingchildren.net.au/babies/sleep/understanding-sleep/sleep-2-12-months

- Some parents find that this is OK as long as they have enough support and they can catch up on sleep at other times. For others, getting up in the night over the long term has a serious effect on them and their family life.
- There's a strong link between baby sleep problems and symptoms of postnatal depression in women and also postnatal depression in men. But the link isn't there if parents of babies with sleep problems are getting enough sleep themselves[18].

Toddlers 1 – 3 years

Toileting

A child might display signs that they are ready for toilet training from about **two years on**. Some children show signs of being ready as early as 18 months, and some might be older than two years.

The child will require assistance with timing, hygiene e.g. wiping, encouragement, reminding and dressing associated with toileting until they are able to self-manage.

Feeding

Weaning off breastfeeding is suitable for 1-4 years and it entirely dependent on the mother and child's preferences[19].

Eating

For this age it is the parent's responsibility to monitor eating habits and encourage healthy eating.

Children's appetites are affected by their growth cycles. Even babies have changing appetites. At 1-6 years, it's common for children to be really hungry one day and picky the next[20].

Messy eating is normal when children are learning to feed themselves. It's natural for them to start by using their hands and fingers and then move on to cutlery, cups and plates. Over time, their muscles and coordination improve, and mealtimes become less messy[21].

Dressing

At **two years** children can usually:

- take off unfastened coats
- take off shoes when the laces are untied
- help push down pants
- find armholes in t-shirts.

At **2½ years** children can usually:

- pull down pants with elastic waists
- try to put on socks
- put on front-buttoned shirts, without doing up buttons
- unbutton large buttons.

At **three years** children can usually:

[18] https://raisingchildren.net.au/babies/sleep/understanding-sleep/sleep-2-12-months
[19] https://raisingchildren.net.au/toddlers/nutrition-fitness/common-concerns/weaning-older-children
[20] https://raisingchildren.net.au/toddlers/nutrition-fitness/common-concerns/fussy-eating
[21] https://raisingchildren.net.au/toddlers/nutrition-fitness/common-concerns/messy-eating

- put on t-shirts with little help
- put on shoes without fastening – they might put them on the wrong feet
- put on socks – they might have trouble getting their heels in the right place
- pull down pants by themselves
- zip and unzip without joining or separating zippers
- take off t-shirts without help
- button large front buttons[22].

Behaviours

Tantrums

- Tantrums are very common in **children aged 1-3 years**. This is because children's social and emotional skills are only just starting to develop at this age. Children often don't have the words to express big emotions. They might be testing out their growing independence.
- So tantrums are one of the ways that young children express and manage feelings, and try to understand or change what's going on around them. **Older children** can have tantrums too. This can be because they haven't yet learned more appropriate ways to express or manage feelings.
- For both **toddlers and older children**, there are things that can make tantrums more likely to happen:
    - Temperament – this influences how quickly and strongly children react to things like frustrating events. Children who get upset easily might be more likely to have tantrums.
    - Stress, hunger, tiredness and overstimulation – these can make it harder for children to express and manage feelings and behaviour.
    - Situations that children just can't cope with – for example, a toddler might have trouble coping if an older child takes a toy away.
    - Strong emotions – worry, fear, shame and anger can be overwhelming for children[23].

Self-regulation

- Self-regulation is the ability to understand and manage behaviour and reactions. Children start developing it from around 12 months. As a child gets older, they will be more able to regulate their reactions and calm down when something upsetting happens, resulting in fewer tantrums.
- Toddlers can wait short times for food and toys. But toddlers might still snatch toys from other children if it's something they really want. And tantrums happen when toddlers struggle with regulating strong emotions[24].

Biting, pinching and hair pulling

- Toddlers might bite, pinch or pull hair because they're excited, angry, upset or hurt. Sometimes they behave this way because they don't have words to express these feelings.

[22] https://raisingchildren.net.au/toddlers/development/understanding-development/development-first-five-years
[23] https://raisingchildren.net.au/toddlers/behaviour/crying-tantrums/tantrums
[24] https://raisingchildren.net.au/preschoolers/behaviour/understanding-behaviour/self-regulation

- Some toddlers might bite, pinch or pull hair because they've seen other children do it, or other children have done it to them[25]

Fear of bath

- Older babies and toddlers might be afraid of the noise of the water draining or of slipping under the water. They might not like having their hair washed or getting water or soap in their eyes[26].

Over stimulation

- If a toddler or pre-schooler is overstimulated, they might:
    - seem tired, cranky and upset
    - cry and not be able to use words to describe feelings
    - throw themselves on the floor in tears or anger
    - tell you that they do not want to do a particular activity anymore
    - refuse to do simple things like putting on a seatbelt.

Lies

- Children can learn to tell lies from an early age, usually around three years of age[27].

Swearing

- Young children often swear because they're exploring language. They might be testing a new word, perhaps to understand its meaning[28].

Pestering

- Pestering is also common behaviour for 2 – 8 year olds and can sometimes lead to tantrums[29]. There are effective parenting techniques to reduce pestering behaviours.

Sleep/Bedtime

- Toddlers need about 12-13 hours of sleep every 24 hours. That's usually 10-12 hours at night and 1-2 hours during the day.
- Common toddler sleep problems include having trouble settling to sleep and not wanting to stay in bed at bedtime. Other common toddler sleep problems are night terrors, teeth grinding and calling out after bed time[30].
- Less than 5% of two-year-olds wake three or more times overnight[31].

[25] https://raisingchildren.net.au/babies/behaviour/common-concerns/biting-pinching-hair-pulling
[26] https://raisingchildren.net.au/babies/behaviour/common-concerns/fear-of-the-bath
[27] https://raisingchildren.net.au/toddlers/behaviour/common-concerns/lies
[28] https://raisingchildren.net.au/toddlers/behaviour/common-concerns/swearing-toddlers-preschoolers
[29] https://raisingchildren.net.au/toddlers/behaviour/common-concerns/pester-power
[30] https://raisingchildren.net.au/toddlers/sleep/understanding-sleep/toddler-sleep
[31] https://raisingchildren.net.au/school-age/sleep/understanding-sleep/about-sleep

Pre-schoolers 3 – 5 years

Toileting

Often, children are 3-4 years old before they're dry at night. One in 5 five-year-olds and one in 10 six-year-olds still uses nappies overnight. And bedwetting is very common in school-age children32.

Faecal incontinence - All children achieve bowel control at their own rate. Faecal incontinence isn't generally considered a medical condition unless a child is at least four years old.

Pre-school age children need to be taught about personal hygiene for washing, drying and toileting.

Feeding

The Raising Children website states that it is up to the parent how long a mother continues to breastfeed. If a mother decides to breastfeed for longer, the baby will get added benefits like protection against infections in the toddler years[33].

Eating

The Raising Children website provides information about healthy nutrition and fitness choices for children and teaching health habits. Children of this age are able to decide if they are hungry and what they would like to eat, but still require parent's to provide health options and monitor undereating or overeating[34].

Dressing

At **four years** children can usually:

- take off t-shirts by themselves
- buckle shoes or belts
- connect jacket zippers and zip them up
- put on socks the right way
- put on shoes with little help
- know the front and back of clothing.

At **4½ years** children can usually:

- step into pants and pull them up
- thread belts through buckles.

At **five years** children can usually:

- dress without help or supervision
- put on t-shirts or jumpers the right way each time
- Tying up shoelaces is a skill that most five-year-olds are still learning[35].

Behaviours (continuation from 1-3 year old)

Self-regulation

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[32] https://raisingchildren.net.au/preschoolers/health-daily-care/toileting/toilet-training-guide
[33] https://raisingchildren.net.au/babies/breastfeeding-bottle-feeding-solids/about-breastfeeding/breastmilk-breastfeeding-benefits
[34] https://raisingchildren.net.au/preschoolers/nutrition-fitness/healthy-eating-habits/healthy-eating-habits
[35] https://raisingchildren.net.au/preschoolers/health-daily-care/dressing/how-to-get-dressed

- Children develop self-regulation through warm and responsive relationships. They also develop it by watching the adults around them.
- Self-regulation starts when children are babies. It develops most in the toddler and preschool years, but it also keeps developing right into adulthood.
- Pre-schoolers are starting to know how to play with other children and understand what's expected of them. For example, a pre-schooler might try to speak in a soft voice if you're at the movies.
- School-age children are getting better at controlling their own wants and needs, imagining others people's perspectives and seeing both sides of a situation. This means, for example, that they might be able to disagree with other children without having an argument[36].

Tantrums

- If a child has tantrums, it might help to know that this behaviour is still very common among children aged 18-36 months. Hang in there – tantrums tend to lessen after children turn four.

Habits and lying

- Lying is part of a child's development, and it often starts around three years of age. Children aged 4-6 years usually lie a bit more than children of other ages.

Anxiety

- Anxiety is a normal part of children's development, and pre-schoolers often fear being on their own and in the dark.
- Children may also experience separation anxiety and social anxiety and phobias[37].

Imaginary friend

- It is common for children to have an imaginary friend at this age. Make-believe mates grow out of healthy, active imaginations, give children a great way to express their feelings, and give children someone to practise social skills with[38].

Sleep/Bedtime

- Most pre-schoolers need 11-13 hours of sleep a night, and some still nap during the day.
- Pre-schoolers sometimes have sleep problems like getting out of bed, as well as nightmares and night terrors[39].
- It is a parent's responsibility to establish a sleep schedule and minimise factors that prevent sleep[40].

[36] https://raisingchildren.net.au/preschoolers/behaviour/understanding-behaviour/self-regulation
[37] https://raisingchildren.net.au/preschoolers/health-daily-care
[38] https://raisingchildren.net.au/preschoolers/behaviour/understanding-behaviour/preschooler-behaviour
[39] https://raisingchildren.net.au/preschoolers/sleep/understanding-sleep/preschooler-sleep
[40] Health Direct, 'Sleep tips for children', December 2017, https://www.healthdirect.gov.au/sleep-tips-for-children, accessed 1 October 2019.

Parenting and stress

Parental Exhaustion

Parental burnout is a specific syndrome resulting from enduring exposure to chronic parenting stress. It encompasses three dimensions: an overwhelming exhaustion related to one's parental role, an emotional distancing from one's children and a sense of ineffectiveness in one's parental role[41].

Available information indicates that this is a relatively new area of research and the impacts of parental burnout have not been accurately measured. The research to date has mostly been measured by self-reporting about lived experience throughout a set period of time.

The Australian Institute of Family Studies have recently studied parenting efficacy, which is 'a parent's belief in their effectiveness as a parent'. This research has found a direct link between the parents perception of 'high parenting efficacy' with:

1) greatest level of community support
2) perceived financial status as being prosperous/very comfortable
3) high level of partner support; and
4) enough help from family and friends[42].

The research concluded:

- "The importance of local community support, financial support, family and friend support, and marital support for parenting efficacy. Parents with greater local community support, positive financial status, strong social network and a supportive partner reported higher levels of parenting efficacy.
- Local community supports and resources, such as community-based parenting services, play an important role in building parenting efficacy and should be accessible for all parents. Local councils could provide information about these services through newsletters and advertisements.
- Interventions that focus on helping parents have better financial capacity and help in relieving financial pressures for them are also important. For instance, current policies such as paid maternity leave and family tax benefits should help parents cope with decreased income when they need to reduce working hours to perform parenting tasks.
- An important part of support interventions can involve assisting parents to develop new relationships with people in their social networks and to help them enlarge their social networks by making new friends. For example, local community activities such as "street parties" or activities at neighbourhood houses can be encouraged as parents are often able to meet other parents who can help them to make friends and enlarge their social networks.
- Strengthening parents' partnerships is an effective aspect of parenting efficacy, and interventions could increase marital support through developing co-parenting awareness and skills to better support each other. For example, postnatal parenting support groups, parenting workshops and telephone helplines could be beneficial to parents"[43].

[41] Mikolajczak, M et al, 'Consequences of parental burnout: Its specific effect on child neglect and violence, Child Abuse and Neglect, vol. 80, June 2018, <https://www.ncbi.nlm.nih.gov/pubmed/29604504>, pp-134-145.
[42] Yu, M, Parenting efficacy: How can service providers help?, Family Relationships Quarterly, No 19, Australian Institute of Family Studies, 2011, https://aifs.gov.au/cfca/publications/family-relationships-quarterly-no-19/parenting-efficacy-how-can-service-providers-help
[43] Ibid.

Financial and other impact of disabilities on family

The Australian Institute for Professional Counsellors state that:

- "Some family members, especially mothers, experience more stress and a change to their wellbeing than families who do not have children with disabilities. Time and emotional commitments associated with raising a child with high support needs are usual sources of this stress. Mothers and fathers benefit significantly, both financially and emotionally, from receiving additional informal and formal support. While access to formal support services is crucial to parents, mothers have also described emotional support as possibly the most helpful coping factor"[44].

Multiple children (i.e. demand on parents time)

A recent study from 2018 published in the Journal of Marriage and Family, titled *'Harried and Unhealthy? Parenthood, Time Pressure, and Mental Health'*, investigated the effects of first and second births on time pressure and mental health and how these vary with time since birth and parental responsibilities. It also examines whether time pressure mediates the relationship between parenthood and mental health.

The research found that:

- Children have a stronger effect on mothers' than fathers' experiences of time pressure. These differences are not moderated by changes in parental responsibilities or work time following births. The increased time pressure associated with second births explains mothers' worse mental health[45].
- Researchers expected the introduction of a second and subsequent children to increase the demand of the parents' role, while bringing less pressure and stress due to developed parenting skills gained from their first child. However, research revealed significant time pressure increases for both parents following the birth of their first child (with mothers showing substantially larger time pressures than fathers). The birth of their second child doubled time pressure for both parents, further widening the gap between mothers and fathers[46].

The impact of multiple and complex needs on a family

The Victorian Government Department of Human Services have published a document titled 'Families with multiple and complex needs: best interests case practice model – Specialist practice resource', which is a practice model for professionals for working with children and families. While it is framed in a child protection context, it offers information about the dynamics of families for complex needs.

Some key passages from the resource about parenting stress factors:

[44] The Australian institute of Counsellors, Trends and Statistics of the Contemporary Family, 2012, https://www.aipc.net.au/articles/trends-and-statistics-of-the-contemporary-family/
[45] Ruppanner, L et al, 'Harried and Unhealthy? Parenthood, Time Pressure, and Mental Health, Journal of Marriage and Family, 2018, National Council on Family Relations, https://onlinelibrary.wiley.com/doi/abs/10.1111/jomf.12531
[46] Gifford, BE, 'research reveals having a second child worsens parental stress and mental health', Happiful, December 2018, https://happiful.com/research-reveals-having-a-second-child-worsens-parental-stress-and-mental-health/

- The main challenges for parents experiencing multiple and complex needs are the capacity to care for their children and parent effectively.
- Parents are likely to be preoccupied by attempts to deal with and manage pressures, so they are not able to give parenting the attention needed or to parent effectively, and their parenting capacity becomes depleted or compromised.
- Their parenting may include disengaged, unresponsive, inappropriate, harsh, punitive or abusive responses to children. Couple relationships may be under extreme pressure and subsequently become conflict-ridden and unstable, and both couples and single parents may lack sufficient family and social supports.
- Parents' own poor experience of parenting and absence of good parenting models to replicate, may also affect their responses to children and parenting capacity. To make matters more complicated, family members may be experiencing the same stressors but they present with different reactions, behaviours and problems linked to those stressors and linked to each other's behaviour and problems.
- Over time, the stress, compounding difficulties and cumulative impacts mean that a family can struggle to function, experiencing periodic crises, intensification of individual and family relationship problems, role disintegration or family fragmentation.
- As family members become increasingly overwhelmed, the effect on individual functioning and on family dynamics can exacerbate contexts in which family violence, substance abuse, mental illness and child abuse occur or escalate[47].

Where can parents get help?

The Better Health Channel (Victoria) suggests parents can seek help from the following sources:

- Your doctor
- Your partner
- Family members and friends
- Parentline Tel. 132 289
- **Family Relationship Advice Line** Tel. 1800 050 321 Monday to Friday, 8am to 8pm, Saturday, 10am to 4pm
- This way up - an online **Coping with Stress** and an **Intro to Mindfulness course** developed by the Clinical Research Unit of Anxiety and Depression (CRUfAD) at St Vincent's Hospital, Sydney and University of New South Wales (UNSW) Faculty of Medicine.
- Maternal and child health nurse
- Your local community health centre
- Professionals such as counsellors[48].

Most state and territory health and family support agencies have this information readily available.

[47]Victorian Government Department of Human Services, 'Families with multiple and complex needs: best interests case practice model – Specialist practice resource', 2012, https://www.cpmanual.vic.gov.au/sites/default/files/Families%20with%20multiple%20%26%20complex%20needs%20specialist%20resource%203016%20.pdf

[48] Better Health Channel, 'Parenting and Stress', 2014, https://www.betterhealth.vic.gov.au/health/healthyliving/parenting-and-stress

Double Prams

Overview

- Double prams/strollers are readily available for purchase throughout Australia. However it appears that the three leading department stores in Australia, Kmart, Target and BigW, whilst offering single prams and strollers and an array of other baby products, do not offer the double pram/troller.
- Although the consumer has the ability to purchase direct from a store, the stores are limited in number and mainly located within major or inner to major cities.
- Online purchase choice to the consumer is considerable within top to high end ranges of types and prices.
- There is an abundance of price, type comparison, and safety standards and regulations information available to the consumer
- Prices vary considerably depending on the type of pram/stroller and additional add on accessories.
- None of the retailers sourced gave regulatory standards information for their products, either within their advertising, online product descriptions or websites.

Ease of purchase access and pricing

In 2018 Choice Australia advised that the price ranch for double prams/strollers range from $150 to over $2000, although research indicates this is higher.

A search of the internet indicates the following major retailers who sell double prams in Australia. The table below gives the retailer, purchase access, price range and whether or not the retailer indicates the products adherence to Australian standards/regulations.

Retailer	Online/In store Purchase?	Number of stores by state	Price Range ($)	Regulations statement in product description or website
Baby Kingdom	In store and online	2 (NSW)	329-2570	No
Babyco	In store and online	1 (Victoria)	650	No
Baby Village	In store and online	1 (NSW)	630-2900	No
Baby Direct	In store and online	3 (Victoria)	270-2000	No
Baby & Toddler Town	In store and on line	1 NSW	263-1880	No
Baby Bunting	In store and on line	1 (Victoria)	339-999	No
Baby Barn Discounts	In store and on line	1 (Qld)	500-2000	No
Bubs & Grubs	On line only	0	320-1800	No

Retailer	Online/In store Purchase?	Number of stores by state	Price Range ($)	Regulations statement in product description or website
Baby Junction	On line only	0	369-2400	No
Baby Warehouse	In store and on line	1 (Victoria)	679-999	No
The Baby Gallery	On line only	0	700-2800	No
Baby Train	In store and online	2 (Victoria)	999-999	No

Availability of quality information

Choice, Australia's leading consumer advocacy group suggests that there are three main types of prams or strollers for those needing one set of wheels for two kids:

1. Side-by-side
2. Tandem
3. Single-seaters with a toddler seat attached [49]

The group also gives information on the pros and cons of each type and has tested double prams with the test results available on their website, indicating that their tests often go above and beyond the minimum safety requirements set by standards and regulations, and so have only recommend a few of the strollers we review.

A search of the internet concerning advice and comparison information by type of pram/stroller, indicated that there is a great deal of information available to the buyer to make an informed purchase decision.

None of the retailer websites sourced give an indication in the product summary or elsewhere on their website, as to a product meeting Australian standards or regulations.

Below are several organisations with links to their website, who offer purchase, safety and regulation type advice and information:

- Kidspot
- Choice
- Lifestyle Queensland
- HealthDirect
- Babyology
- Redsbaby

[49] Choice, Double Trouble, [website], 2018, https://www.choice.com.au/babies-and-kids/baby-transport/strollers-and-tricycles/buying-guides/double-strollers, accessed September 30, 2019

Standards and Regulations

The Australian New Zealand Standard AS/NZS 2088:2000 requires prams and strollers sold in Australia comply with provisions for:

- safety restraints
- brakes
- tether straps
- safety labelling
- testing procedures. [50]

The ACCC has completed a review on the mandatory safety standards for prams and strollers and is currently preparing advice to the Minister. The mandatory standard prescribes requirements for the performance testing, design, construction, safety warnings and labels of prams and strollers. [51]

Public transport departments also offer guidelines for safety of prams and strollers whilst using public transport, such as Kidsafe NSW, Public Transport Victoria and NSW Transport.

[50] NSW Government, Fair Trading: Baby Products, [website], 2019, https://www.fairtrading.nsw.gov.au/buying-products-and-services/product-and-service-safety/childrens-products/baby-products, accessed September 30 2019.
[51] ACCC, Product Safety Australia: Prams & Strollers, [website], 2019, https://www.productsafety.gov.au/standards/prams-strollers, accessed September 30 2019.

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Mikolajczak, M et al, 'Consequences of parental burnout: Its specific effect on child neglect and violence, Child Abuse and Neglect, vol. 80, June 2018, <https://www.ncbi.nlm.nih.gov/pubmed/29604504>, pp-134-145.

Multiple Raising Children web pages – as hyperlinked in footnotes.

NSW Government, Fair Trading: Baby Products, [website], 2019, https://www.fairtrading.nsw.gov.au/buying-products-and-services/product-and-service-safety/childrens-products/baby-products, accessed September 30 2019.

Ruppanner, L et al, 'Harried and Unhealthy? Parenthood, Time Pressure, and Mental Health, Journal of Marriage and Family, 2018, National Council on Family Relations, https://onlinelibrary.wiley.com/doi/abs/10.1111/jomf.12531

The Australian institute of Counsellors, Trends and Statistics of the Contemporary Family, 2012, https://www.aipc.net.au/articles/trends-and-statistics-of-the-contemporary-family/

Victorian Government Department of Human Services, 'Families with multiple and complex needs: best interests case practice model – Specialist practice resource', 2012, https://www.cpmanual.vic.gov.au/sites/default/files/Families%20with%20multiple%20%26%20complex%20needs%20specialist%20resource%203016%20.pdf

Yu, M, Parenting efficacy: How can service providers help?, Family Relationships Quarterly, No 19, Australian Institute of Family Studies, 2011, https://aifs.gov.au/cfca/publications/family-relationships-quarterly-no-19/parenting-efficacy-how-can-service-providers-help

Research Request – Weight Management Supports (Obesity)

Brief	Obesity: What weight management supports/services are effective and beneficial? The effectiveness of weight management interventions: surgery, dietetics, exercise physiology, psychology/CBT, community/group based programs etc.
Date	16 December 2019
Requester	Wendy [redacted] (Director – TAT)
Researcher	Craig [redacted] Tactical Research Advisor – TAT)

Contents

Clinical Practice Guidelines for the Management of Overweight and Obesity in Adults, Adolescents and Children in Australia

Overview

In 2013 The Department of Health and Ageing, commissioned The National Health and Medical Research Council (NHMRC) to review the 2003 "Clinical Practice Guidelines for the Management of Overweight and Obesity in Adults, Adolescents and Children in Australia". The review methodologist prepared a review protocol that outlined the key questions to be addressed in the systematic review and the methods to be used. Essentially the review focused on:

1. What are the health outcomes associated with weight loss in individuals with overweight or obesity?
2. What are the impacts of weight reduction interventions on degree and duration of weight loss?

Note that participants in the review were:

- Studies involving participants of any age with any degree of overweight or obesity were considered for inclusion.
- Studies involving participants with overweight or obesity due to a specific clinical condition e.g. Prader Willi Syndrome, were excluded.

Effectiveness Hierarchy

The resulting substantial 2013 review study "Clinical Practice Guidelines for the Management of Overweight and Obesity in Adults, Adolescents and Children in Australia"[1], focused on the following primary interventions:

1. **Lifestyle interventions** (including dietary interventions, physical activity/exercise interventions and psychological interventions)
2. **Pharmacological interventions**
3. **Surgical interventions**

The study found the effectiveness of each intervention as follows:

Summary of effect	Intervention
Most effective (consistently > 10% weight loss across studies; weight loss likely to be maintained > 5 years)	Bariatric surgery

[1] Australian Government, National Health and Medical Research Council, Department of Health and Ageing, "Clinical Practice Guidelines for the Management of Overweight and Obesity in Adults, Adolescents and Children in Australia: Systematic Overview", 2013, https://www.nhmrc.gov.au/about-us/publications/clinical-practice-guidelines-management-overweight-and-obesity#block-views-block-file-attachments-content-block-1

Summary of effect	Intervention
Moderately effective (>10% weight loss across some but not all studies; weight loss maintained > 5 years in some but not all participants)	Combined pharmacotherapy and lifestyle change
Least effective (>10% weight loss in few studies; weight loss not likely to be maintained in participants)	Lifestyle change alone

Key points from the NHMRC Guidelines

- **Multicomponent interventions** that address all three lifestyle areas related to overweight and obesity—nutrition, physical activity and psychological approaches to behavioural change—are more effective than single component interventions.
- **Lifestyle approaches should focus on creating an energy deficit.** This can be achieved through reducing energy intake, increasing energy expenditure, or both. Creating an energy deficit needs to be supported by measures to assist behavioural change.
- For many overweight and most obese adults, achieving a 'healthy' weight is an unrealistic expectation—weight loss of 5% is achievable and will result in health benefits. **Treatment goals** should focus on behavioural change and improved health.
- **More intensive weight management interventions**—such as very low-energy diets, weight loss medication and bariatric surgery may need to be considered as adjuncts to lifestyle approaches, especially when a person is obese and/or has risk factors or comorbidities, or has been unsuccessful reducing weight using lifestyle approaches. The decision to use intensive weight loss interventions is made based on the individual situation.
- **Individuals should be well informed** and supported in changing health behaviours, and be assisted to manage overweight and obesity in partnership with one or more healthcare professionals. Interventions need to be individualised, and supported by self-management principles and regular review by a healthcare professional.
- **Influences on health behaviours** (e.g. social, physical and psychological factors) should be taken into account when planning interventions with individuals. [2]

[2] Australian Government, National Health and Medical Research Council, Department of Health and Ageing, "Clinical Practice Guidelines for the Management of Overweight and Obesity in Adults, Adolescents and Children in Australia", p. 30, 2013, https://www.nhmrc.gov.au/about-us/publications/clinical-practice-guidelines-management-overweight-and-obesity#block-views-block-file-attachments-content-block-1

Surgical Interventions (Bariatric Surgery)

The NHMRC study found that:

- Bariatric surgery is more effective than other treatment options in achieving significant weight loss in adult and adolescent patients with obesity. In adults, all classes of obesity are improved with various bariatric surgical types; in adolescents, available data from high quality research shows improvements in Class II and III obesity with LAGB. There are no high quality data available regarding the indications for bariatric surgery in children and the long-term impacts when bariatric surgery is performed.

- **Weight regain after bariatric surgery** occurs regardless of the bariatric surgical type. Achieving long-term weight loss therefore requires weight maintenance strategies to be applied after bariatric surgery has been performed.

- **The extent of the initial weight loss** and the degree and rapidity of weight regain varies according to the specific bariatric procedure.

- **Bariatric surgery is associated with significant short-term improvements** in some cardio-metabolic risk factors and in short-term resolution of metabolic syndrome and newly developed (< 2 years) type 2 diabetes. However, data from over ten years or greater duration follow-up suggest that these benefits are not maintained long-term. Numerous unanswered questions remain regarding the role of bariatric surgery in managing type 2 diabetes

Bariatric Surgery Types

According to the Australian Family Physician, the scholarly journal of the Royal Australian College of General Practitioners (RACGP), ***bariatric surgery is the most effective available treatment for obesity in terms of achieving and maintaining substantial weight loss long term***. The research article "Recommendations for management in general practice and beyond" suggests that:

"Bariatric surgery should be considered for patients with a BMI >40 or with a BMI >35 with obesity related comorbidities. The three most commonly performed procedures in Australia include:

1. Laparoscopic adjustable gastric banding (LAGB),
2. Roux-en-Y gastric bypass (RYGB) and
3. Sleeve gastrectomy (SG).

The article asserts that “alterations to the gastrointestinal tract, induced by bariatric surgery, reduce hunger, increase satiety and confer other metabolic benefits as well as sustained weight loss” [3] In other considerations, the article continues that:

[3] Australian Family Physician, "Obesity: Recommendations for management in general practice and beyond", Vol 42, No 8, pp. 532-541, 2013, https://www.racgp.org.au/afp/2013/august/obesity

- To date, the long term safety of LAGB and RYGB has been documented.
- Evidence on long term safety is lacking for the SG.
- Each procedure is accompanied by its own advantages and disadvantages, and these need to be taken into consideration when assessing a patient's suitability for surgery.
- Current medical and psychological comorbidities, as well as ability to provide informed consent, will all influence a patient's suitability for undergoing a particular procedure.
- Patients considering bariatric surgery should be made aware of the commitment to indefinite post-surgical care and long term monitoring from an experienced team.

The article summarizes the characteristics of current conventional bariatric procedures in the tables below:

Surgical Procedure: Description & Weight Loss

Surgical procedure	Description	Excess weight loss at 3–5 years*	Percentage mean weight loss	Pattern of weight loss	Morbidity at 1 year
Laparoscopic adjustable gastric banding (LAGB)	Involves placing an adjustable band around the gastroesophageal junction, thereby restricting food intake. The band can be tightened and loosened over time to alter the extent of restriction	54%	20–30%	Gradual; usually maximal at 2–3 years	4.6%
Roux-en-Y gastric bypass	Is a combination procedure in which a small stomach pouch is created to restrict food intake and the lower stomach, duodenum and first portion of the jejunum are bypassed to produce modest malabsorption of nutrients and energy intake	60% (75% with banded RYGB)	25–35%	Rapid; maximal at 1–2 years	14.9%
Sleeve gastrectomy	Involves removing the greater portion of the fundus and body of the stomach, reducing its volume from about 2.5 L to about 250 mL	50–60% (limited reports at ≥3 years)	20–30%	Rapid; maximal at 1–2 years	10.8%

Surgical Procedure: Nutritional Concerns, Follow up, Advantages & Disadvantages

Surgical procedure	Nutritional concerns	Follow up requirements	Advantages	Disadvantages
Laparoscopic adjustable gastric banding (LAGB)	Low (deficiencies in iron, vitamin B12, folate)	Lifelong (assessment and nutritional support), frequent in the first 12 months	Effective, with good long term weight maintenance Ability to adjust the degree of restriction Reversible Maintains gastric integrity	Gastric pouch dilatation, erosion of band into the stomach, leaks to the LAGB system, weight regain

Surgical procedure	Nutritional concerns	Follow up requirements	Advantages	Disadvantages
Roux-en-Y gastric bypass	Moderate (deficiencies in iron, vitamin B12, folate, calcium, vitamin D, copper, zinc)	Lifelong (assessment and nutritional support)	Very effective with good long term weight maintenance Few failures	Abdominal pain, staple line leak, stomach ulcer, intestinal obstruction, gallstones, nutritional deficiency, weight regain
Sleeve gastrectomy	Moderate (deficiencies in iron, vitamin B12, folate, calcium, vitamin D, copper, zinc, thiamine)	Lifelong (assessment and nutritional support)	Allows for rapid weight loss No dumping syndrome as pyloric portion of the stomach is intact Provides fixed restriction and does not require adjustment	Staple line leak, gastroesophageal reflux disease, dilatation of the gastric remnant, weight regain

Pharmacological Interventions (Weight Loss Medications)

According to the NHMRC Guidelines[4] :

- The use of weight loss medications in addition to lifestyle approaches has been found to increase weight reduction in adults who are overweight or obese.
- Medications that have been shown to increase weight loss include orlistat (Horvath et al. 2008), sibutramine (Horvath et al. 2008), rimonabant (Curioni & André 2006; Nissen et al. 2008; van Gaal et al. 2008), taranabant (Proietto et al. 2010), metformin (Knowler et al. 2009) and lorcaserin (Smith et al. 2010).
- Many of these medications have been associated with adverse effects and have been withdrawn (e.g. sibutramine) or were never approved (e.g. rimonabant, taranabant) in Australia.
- The evidence on the effects of weight loss medications on health outcomes other than weight loss is limited.

Orlistat

- **Orlistat** is currently the only medication registered for use in treating overweight (with comorbidities) and obesity that has been evaluated for long-term safety. Although it is listed on the Repatriation Pharmaceutical Benefits Scheme, it is not listed on the Pharmaceutical Benefits Scheme (PBS).
- **Cost-effectiveness** studies of orlistat use show that it is not cost-effective for population-based outcomes (Vos et al. 2010), but other data suggest that it is more cost-effective in

[4] Australian Government, National Health and Medical Research Council, Department of Health and Ageing, "Clinical Practice Guidelines for the Management of Overweight and Obesity in Adults, Adolescents and Children in Australia", p. 49, 2013, https://www.nhmrc.gov.au/about-us/publications/clinical-practice-guidelines-management-overweight-and-obesity#block-views-block-file-attachments-content-block-1

individuals who have numerous comorbidities (type 2 diabetes, hypertension, hypercholesterolaemia) (Lamotte et al. 2002).

- **Recommendations**: For adults with BMI ≥ 30 kg/m2 or adults with BMI ≥ 27 kg/m2 and comorbidities, orlistat may be considered as an adjunct to lifestyle interventions, taking into account the individual situation.

- There are **contraindications** for pregnant woman and those with reduced gall bladder function.

- **Adverse effects** include: steatorrhoea (oily, loose stools with excessive flatus due to unabsorbed fats reaching the large intestine), fatty faecal incontinence, frequent or urgent bowel movements.

- **Therapy with orlistat** should be continued beyond 12 weeks only if at least 5% of initial body weight has been lost since starting medication (SIGN 2010). Therapy should then be continued for as long as there are clinical benefits (e.g. prevention of significant weight regain). Continuing risks and benefits should be discussed.

Other Medications

- **Phentermine** is registered for use as a short-term (e.g. 3-month) adjunct to dietary management of obesity, under medical supervision.

- A number of medications for the treatment of other conditions have been found to have an effect on weight (e.g. fluoxetine, topiramate, metformin, glucagon-like peptide agonists). When relevant comorbidities are present, these medications may also be beneficial for weight management.

Lifestyle Interventions

The NHMRC guidelines review found that within the lifestyle therapies group, a variety of different approaches to lifestyle modification can be prescribed. The strength of evidence for lifestyle therapies and their impact on weight loss from studies included in this review are as follows:

Strength of effect	Intervention
Most effective (most likely to result in weight loss; most likely to be associated with sustained weight loss)	Combining dietary change with improved physical activity Reducing total energy intake (variety of means) Energy deficit of 500 – 700 kcal/day

Strength of effect	Intervention
Somewhat effective (results in weight loss in some studies; evidence regarding association with sustained weight loss less well defined)	Increasing intake of low energy-dense foods (especially fruit / vegetables) Reducing intake of sweetened beverages High protein diets Mediterranean diet pattern Limiting number of high energy - dense snacks Reduced time spent in sedentary behaviour
Insufficient evidence or inconsistent effects	Increased incidental or occupational physical activity Exercise in the absence of dietary change

Diet

According to the NHMRC Guidelines[5]:

- **Very low-energy diets** are a useful intensive medical therapy that is effective in supporting weight loss when used under medical supervision. They may be a consideration in adults with BMI > 30 kg/m2, or with BMI > 27 kg/m2 and obesity related comorbidities, taking into account the individual situation.
- Very low-energy diets involve replacing one or more meals each day with foods or formulas providing a specified number of kilojoules (e.g. 1675–3350 kilojoules).
- **Meal replacements** are defined in the Australia New Zealand Food Standards Code as 'a single food or pre-packaged selection of foods sold as a replacement for one or more of the daily meals, but not as a total diet replacement'.
- Meal replacements are largely protein based, and contain essential fatty acids, vitamins and minerals, but very little carbohydrates. They reduce portion size and, consequently, energy intake.
- **Food Standards Australia and New Zealand** is currently reviewing the regulations surrounding meal replacement products for weight loss.

[5] Australian Government, National Health and Medical Research Council, Department of Health and Ageing, "Clinical Practice Guidelines for the Management of Overweight and Obesity in Adults, Adolescents and Children in Australia", pp. 47-49, 2013, https://www.nhmrc.gov.au/about-us/publications/clinical-practice-guidelines-management-overweight-and-obesity#block-views-block-file-attachments-content-block-1

- **Advantages of very low-energy diets** include the motivating effect of rapid weight loss and a mild ketosis that may suppress hunger (Delbridge & Proietto 2006). Very low-energy diets have been associated with weight loss (Nield et al. 2007; Norris et al. 2005b; Tuomilehto et al. 2009), improvements in sleep apnoea (Tuomilehto et al. 2009) and improved glycaemic control in adults with type 2 diabetes (Nield et al. 2007; Norris et al. 2005b). They are commonly used in medically supervised weight reduction programs for people with BMI > 30 kg/m2 (or > 27 kg/m2 with obesity related comorbidities), or for whom rapid weight loss is necessary (Sumithran & Proietto 2008).

- **Costs are associated with the use of very low-energy diets:** Purchasing very low-energy diet items to replace meals may be costly for individuals and their use requires frequent monitoring by healthcare professionals. The relevant healthcare professional to monitor use may be a GP, dietitian or specialist nurse, depending on access to the type of provider.

- **Contraindications include:** pregnancy or advanced age, history of severe psychological disturbance, alcohol misuse or drug abuse, the presence of porphyria, recent myocardial infarction or unstable angina.

- **Common adverse effects** include cold intolerance, dry skin, hair loss, constipation, headaches, fatigue and dizziness. Other potential effects are gallstones, increased serum uric acid levels and precipitation of gout, and reduced bone mineral density (Sumithran & Proietto 2008). Although restrictive eating has been strongly associated with onset of binge eating (Polivy 1996), there is insufficient available evidence of an association between medically supervised very low-energy diets and new-onset eating disorders (Mustajoki & Pekkarinen 2001).

- **Treatment length** varies but is usually 8–16 weeks (Mustajoki & Pekkarinen 2001). There is evidence that in certain obese individuals and under close medical supervision, very low energy diets may be used safely for 12 months (Sumithran & Proietto 2008).

- Careful **monitoring** of people on very low-energy diets is required.

Exercise & Exercise Physiology

The NHMRC Guidelines asserts that[6]:

- Although it is accepted that physical activity is integral to weight management, the **evidence for a specified duration and intensity of exercise** is unclear given high individual variability in baseline levels of activity, eating patterns, medication use, and other lifestyle factors and comorbidities.

[6] Australian Government, National Health and Medical Research Council, Department of Health and Ageing, "Clinical Practice Guidelines for the Management of Overweight and Obesity in Adults, Adolescents and Children in Australia", pp. 42-44, 2013, https://www.nhmrc.gov.au/about-us/publications/clinical-practice-guidelines-management-overweight-and-obesity#block-views-block-file-attachments-content-block-1

- Studies that focus on the **association between physical activity and weight loss** have found that: increasing physical activity has a range of health benefits even if no weight is lost. Physical activity has little effect on weight unless it is combined with dietary change, a dose response exists between amounts of activity and weight lost, maintaining high levels of physical activity (approximately 60 minutes per day), combined with other behavioural strategies may reduce weight regain.

Consensus-Based Recommendation:

- For adults who are overweight or obese, prescribe approximately 300 minutes of moderate-intensity activity, or 150 minutes of vigorous activity, or an equivalent combination of moderate-intensity and vigorous activities each week combined with reduced dietary intake.

Cost and resource implications:

- Brief advice on physical activity, delivered through primary health care in person, or by phone or mail, for sedentary people at risk of developing disease has a small beneficial effect, and has been shown to be cost-effective.

- While tools such as Lifescripts can help with physical activity assessment and prescription, exercise referral schemes may also provide a cost-effective option if no in-house program is available.

- Costs to the individual will vary depending on the selection of physical activity type that is appropriate, accessible and likely to be sustainable.

Exercise Physiology

- If functional mobility is an issue, referral to an exercise physiologist or physiotherapist may also incur costs to the individual and healthcare system.

Psychological Therapies

The NHMRC Guidelines[7] suggest that:

- In the context of overweight and obesity, the goal of psychological therapies is to assist individuals to make long-term changes to their lifestyle.

- A range of psychological interventions (e.g. behavioural therapy, cognitive-behavioural therapy) can facilitate weight loss and have been shown to have a more beneficial effect when combined with other lifestyle approaches.

- Individual or group-based psychological interventions may improve the success of weight management programs.

[7] Australian Government, National Health and Medical Research Council, Department of Health and Ageing, "Clinical Practice Guidelines for the Management of Overweight and Obesity in Adults, Adolescents and Children in Australia", pp. 45-46, 2013, https://www.nhmrc.gov.au/about-us/publications/clinical-practice-guidelines-management-overweight-and-obesity#block-views-block-file-attachments-content-block-1

- Psychological and behavioural therapies should be tailored to the individual and his or her situation.

- Lifestyle interventions can also be augmented by measures to reinforce behavioural aspects of care or provide incentives for adherence. Internet-based information and programs are increasingly popular. Delivery of evidence-based weight management programs via the internet should be considered as part of a range of options for people with overweight and obesity.

Community Group Based Programs

There appears to be no substantial community based weight management programs offered by commonwealth or state governments or other organisations. However, state and territory governments fund a range of activities that aim to educate and encourage Australians to adopt and maintain behaviours that will support healthy weight. The table below summarizes these services[8]:

State/ Territory	Programs Information	Links to programs
ACT	The Live Lighter program is targeted at Australian adults and aims to increase awareness of the link between being overweight and chronic disease, while promoting healthy eating and regular physical activity. Kids at Play is all about advancing the health and wellbeing of ACT children aged 0 – 5 years by promoting healthy eating and physical activity to families and the early childhood sector.	https://livelighter.com.au/ https://health.act.gov.au/about-our-health-system/healthy-living/kids-play-active-play
NSW	The Healthy Kids website provides a one-stop shop of information for parent, teachers and coaches on healthy food, being active and healthy weight for children and young people. The Get Healthy Information and Coaching Service® provides adults with free, evidence-based information and coaching on healthy eating, physical activity and weight loss.	https://www.healthykids.nsw.gov.au/ https://www.gethealthynsw.com.au/
NT	Nil	
QLD	Queensland government website page on healthy eating with a focus on obesity	https://www.qld.gov.au/health/staying-healthy/diet-nutrition/diet
SA	The Healthy Living website provides consumers with easy-to-understand information to support healthy eating and physical activity. The site also promotes action across the settings where	https://www.sahealth.sa.gov.au/wps/wcm/connect/Public+Content/SA+Health+Internet/Healthy+living/

[8] Australian Government, Department of Health, "State and Territory links", [website], 2019, http://tiny.cc/5ihlhz, (accessed 13 December 2019)

State/ Territory	Programs Information	Links to programs
	people live, learn, work and play, and includes a range of practical tools and case studies. The Health Services Finder provides comprehensive information about health and community services from the private, public and community sectors in South Australia.	https://www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/health+services/national+health+services+directory/national+health+services+directory
TAS	Move Well Eat Well provides a comprehensive, yet simple guide on how to create healthier environments for children within early childhood services, primary schools and families. Move Well Eat Well Awards are available to Tasmanian early childhood services and primary schools. The Community Nutrition Unit of the DHHS aims to make healthy food and drink choices the easiest choices for Tasmanians. Online resources are available for early childhood health and community workers, parents, teachers and schools, adults and older adults.	http://www.movewelleatwell.tas.gov.au/ https://www.dhhs.tas.gov.au/pophealth/community_nutrition/the_community_nutrition_unit
WA	Website information: Good nutrition is essential for healthy growth and development in childhood, and ongoing health and wellbeing, but many Western Australians' diets are inconsistent with national recommendations.	https://healthywa.wa.gov.au/Articles/F_I/Healthy-eating
VIC	VIC Health Healthy Eating website page: The Department of Health and Human Services is making it easier for Victorians to identify and choose healthier food and drink options in settings where they learn, live, work, dine and play. The Victorian Government's mandatory kilojoule labelling scheme and Healthy Choices policy guidelines are helping to better inform Victorians about available food choices and to create health-promoting environments throughout the state.	https://www2.health.vic.gov.au/public-health/preventive-health/nutrition

Complimentary Medicines & Nutritional Supplements

The NHMRC Guidelines suggest that "the use of complementary therapies is increasingly common in Australia. However, there is little evidence from recent reviews or randomised trials to support their use in assisting weight loss". [9]

[9] Australian Government, National Health and Medical Research Council, Department of Health and Ageing, "Clinical Practice Guidelines for the Management of Overweight and Obesity in Adults, Adolescents and Children in Australia", p. 46, 2013, https://www.nhmrc.gov.au/about-us/publications/clinical-practice-guidelines-management-overweight-and-obesity#block-views-block-file-attachments-content-block-1

Obesity Management Services in the public system/ Multidisciplinary Programs

There appears to be limited opportunity for people with obesity to seek support through the public health system. A recent 2018 research paper [10] investigated the availability of services within the Australian public health system, and found:

- The vast majority of Australians living with clinically severe obesity cannot access specialist healthcare in the public hospital system.
- Of the small number of specialist obesity services available, patient access is limited by strict entry criteria, prolonged wait times, lack of regional and rural services and out-of-pocket costs.
- Many services that do exist have more than 300 patients on waiting lists.
- Patients with severe obesity often had multiple health conditions that cannot be met by a GP alone.
- The researchers also identified gaps in clinic staff and services, as well as patient access to publicly-funded weight loss medication and surgery — approximately 88 per cent of bariatric surgery is performed in private hospitals. [11]

Public Hospitals offering Obesity Management Services / Eligibility & Referral Process

Below is a selection of public hospitals offering obesity management services including eligibility and referral process where given. Note that this is just an example and not all hospitals are listed.

State/ Territory	Hospital /Health Centre	Brief Details/Program	Eligibility / Referral Process
ACT	Belconnen Community Health Centre	Advice on physical activity and nutrition / Group education / Physical activity programs / Strategies to improve social and emotional wellbeing / Support for long term self-management / Care	Accepts patients who have been referred by their doctor if: • Over 18 years of age • Have a Body Mass Index (a measure of obesity) of 40kg /m2 or over

[10] E. Atlantis et al., "Clinical Obesity Services in Public Hospitals in Australia: a position statement based on expert consensus", Clinical Obesity, Vol 8, No 3, pp. 203-210, 2018, https://onlinelibrary.wiley.com/doi/abs/10.1111/cob.12249

[11] ABC News, "Australian public hospitals cannot meet rising demand for obesity care, experts warn", [website], 2018, https://www.abc.net.au/news/health/2018-04-24/hospitals-cannot-meet-demand-for-obesity-care-study/9689494, (accessed 13 December 2019)

State/ Territory	Hospital /Health Centre	Brief Details/Program	Eligibility / Referral Process
		coordination for those patients with a number of complex medical conditions. / In general, the Service will provide 12 months support. The service will not take over primary care from your general practitioner, nor provide specialist care for conditions other than obesity	• A degree of co-morbidity • Psycho-socially able to participate in the program
NSW	Westmead Hospital Obesity Clinic	Treatments Include: The Australian Guide to Healthy Eating, Low Carbohydrate and High Protein Diet, The 5 : 2 Diet, Very Low Calorie Diet, Appetite suppressant medication, Individual exercise program Most patients will be seen initially fortnightly, then monthly for 2-3 months then every 2-3 months for the long-term. As obesity is not curable, we believe follow-up should continue for years. Clinic Staff Include: Endocrinologist, Dietitians, Exercise physiologist	• Patients must have a current referral to Dr Jonathan Marks • No other information given
NSW	Blacktown Hospital Metabolic & Weight Loss Clinic	The program provides: intensive lifestyle coaching, consultations with our dietitian, doctor (endocrinologist),	• The referring clinician should be convinced the patient is motivated to commence the significant lifestyle changes required to lose weight and improve their health) Patients should have a BMI > 40 kg/m2

State/ Territory	Hospital /Health Centre	Brief Details/Program	Eligibility / Referral Process
		psychologist and exercise physiologist. For some patients, weight loss surgery is also performed by our surgeons at Blacktown Hospital.	plus 2 obesity-related comorbidities or characteristics (complete page 2 of our referral form) OR b) A BMI > 35 kg/m2 with co-existing type 2 diabetes • Patients with psychological (e.g. depression, anxiety), psychiatric (e.g. eating disorders, psychosis, bipolar disease), substance and/or alcohol excess/abuse issues, must be in active treatment and must have been assessed as clinically stable by their treating health professional. Letters of support from their treating professional(s) are required • Generally, patients should be non-smokers or must have quit smoking for at least 6 months prior to enrolling in the program. Current smokers can enrol in the program, provided they commence treatment to quit smoking. If indicated, metabolic-bariatric surgery will be delayed by at least 6 months from the date they quit smoking • Patients should not be planning pregnancy within the next 18-24 months • Patients must be able to attend the University Clinics at Blacktown Hospital at least twice a month • Patients should live within the Blacktown catchment area (e.g. Blacktown, Marayong, Mount Druitt, St Marys, Whalan, Quakers Hill, Rouse Hill, Seven Hills, Toongabbie, Prospect).

State/ Territory	Hospital /Health Centre	Brief Details/Program	Eligibility / Referral Process
VIC	Austin Hospital: The Weight Control Clinic	Austin Health's Weight Control Clinic is one of the few services in Australia that combines both medical and surgical treatments for obesity. Treats complex cases of obesity, or cases that do not respond to treatment in the primary care environment. Usual treatment regimen is modified very-low-energy diet (VLED) followed by dietician supervised transition to regular foods. For maintenance of weight loss, pharmacotherapy may be used if required, or if contraindicated or not tolerated, referral for bariatric surgery is made. Treatments focus on what evidence shows to be effective at reducing the hormonal drive to eat. Doctors who work in the Weight Control Clinic are also researchers within the Diabetes and Obesity Research Group at The University of Melbourne's Department of Medicine at Austin Health. They are at the forefront of global research efforts to better understand how	GP Referral Guidelines: • When to Refer: >18 years old and BMI >35 kg/m2 or BMI >30 kg/m2 + medical condition related to excess weight (e.g. T2DM, obstructive sleep apnoea, fatty liver) and previous unsuccessful attempt to achieve or maintain weight loss • Include: Diagnostics if available: fasting glucose, electrolytes/renal function, liver function tests, TSH, fasting lipid profile, HbA1c (if has diabetes) • Urgent: within 4-7 weeks, Routine: Patient will be treated in turn

State/ Territory	Hospital /Health Centre	Brief Details/Program	Eligibility / Referral Process
		obesity is caused and treated.	
VIC	Royal Children's Hospital: Weight Management Service	The clinic consists of a multi-disciplinary team; specialist doctors, a clinic nurse, a dietitian, a psychologist and a social worker. A comprehensive assessment of general health and growth, Clinical investigations as appropriate, Dietary assessment, Psychological and social assessment as required, Specialist advice and education on diet and lifestyle modification. In some cases, medical and or surgical treatments may be discussed	Accepts referrals for complex obesity not over age of 16 years BMI >95th percentile with: Neurological or physical disability (ASD, GDD, ID, Physical Disability) AND restricted eating with risk of micronutrient deficiencies (Iron, Vit A,C,E, B12) OR other medical diagnosis necessitating ongoing specialist paediatric care BMI >95th percentile with NO DISABILTY but with at least one established obesity related comorbidity: LFT abnormality Hyperlipidaemia Hypertension Impaired glucose tolerance Obstructive sleep apnoea (please also refer to Respiratory at the time of referral to Weight Management, faxed as separate referral) Orthopaedic complication (NB: SUFE must have Endocrinology referral and assessment prior to being referred to Weight Management Service)
QLD	Metro North Hospital and Health Service	Surgical intervention. This is not a management program.	The hospital gives a list of referral information for practitioners here. Minimum referral criteria (three categories): • Category 1 - Appointment within 30 days is desirable: Patients with a serious obesity-related comorbidity that is likely to deteriorate quickly, if urgent weight loss is not achieved / Patients requiring urgent lifesaving operation/procedure that

State/ Territory	Hospital /Health Centre	Brief Details/Program	Eligibility / Referral Process
			requires immediate weight loss for surgery/procedure to proceed (e.g. organ transplantation or assessment for organ transplantation, angiogram or cardiac surgery) / Serious obesity related comorbidities include (not an exhaustive list): severe liver disease with potential treatment,, severe pulmonary hypertension, recurrent venous thromboembolism, benign intracranial hypertension. • Category 2 - Appointment within 90 days is desirable: Patients with severe obesity-related comorbidities such as (not an exhaustive list): nephrotic range proteinuria or rapidly progressing renal impairment, chronic respiratory failure or obesity hypoventilation syndrome, severe OSA, recurrent cellulitis or venous ulcerations, recurrent hospital admission for an obesity related condition, patients requiring weight loss for a semi urgent or elective operation/procedure, poorly controlled diabetes with HbA1c > 9% with BMI >50, Patients with ***Prader Willi Syndrome (PWS)*** unless meet the criteria for Cat 1 • Category 3 - Appointment within 365 days is desirable: BMI >55 younger age i.e. 18-55 without co-morbidities listed in Cat 1 or 2

Effectiveness of Interventions for those with clinical conditions

Bariatric Surgery

Research into Bariatric Surgery for patients with cognitive impairment or developmental / intellectual disability is plentiful. Most of the research is general on the subject, however there is quality cohort focused research mainly on Prada Willi Syndrome, Down syndrome and Autism.

The general theme amongst the literature and research is that:

- Bariatric surgery among individuals with intellectual impairment is a controversial topic.
- Weight loss using Bariatric Surgery is successful for this population.
- Determining use for this population needs to be a case by case basis.
- Further research is necessary to deepen observations.

Patients with Cognitive Impairment or Developmental / Intellectual Disability

With concerns that youth with cognitive impairment or developmental disability (CI/DD) face higher rates of obesity and secondary medical issues, a recent 2019 observational study looked at bariatric surgery for adolescents with CI/DD and explored the association between cognitive functioning and weight loss outcomes. The results showed there was no significant difference between adolescents with or without CI/DD in terms of preoperative BMI, age, and sex, and having CI/DD did not significantly impact weight loss or weight loss trajectory in the 2 years after surgery, although modelling revealed a trend toward individuals with CI/DD losing more weight over time. It concluded that "Bariatric surgery may be a helpful tool for adolescents with severe obesity and CI/DD. They could benefit from the surgery as much as those with typical development, and having CI/DD should not be used as a criterion to deny surgery. Continuing research with this population can be used to determine long-term outcomes in addition to defining best practices". [12]

A 2018 case study observed two cases of a 25 year old patient with ***Prader-Willi syndrome*** who presented a 55% loss of excess weight one year after the surgery, and a 28-year-old with ***Down syndrome*** who presented a 90% loss of excess weight one year after the surgery. In concluding there observations the authors suggested that" Bariatric surgery among individuals with intellectual impairment is a controversial topic. There is a tendency among these individuals to present significant weight loss and comorbidity control, but less than what is observed in the general obese population. The severity of the intellectual impairment may be taken into consideration in the decision-making process regarding the most appropriate surgical technique. Bariatric surgery is feasible and safe among these individuals, but further research is necessary to deepen these observations". [13]

A comprehensive 2019 literature review investigated the outcomes of Bariatric Surgery for youth with cognitive impairments and/or developmental delays. The paper reviewed the literature on bariatric surgery within this population. "Fourteen studies published from 1975 to 2019 were identified. The majority (93%) of studies included patients with genetic disorders. Most studies reported no peri-operative complications (69%) and improved health outcomes (79%), with variable weight-loss results (29.2–86.2% excess weight loss). No significant differences were reported for youth with and without cognitive impairment and/or developmental delay in two studies". The study concluded that "bariatric surgery may promote weight loss and improve health comorbidities for

[12] S. Hornack et al., "Sleeve Gastrectomy for Youth With Cognitive Impairment or Developmental Disability", American Academy of Pediatrics, Vol 144, No 6, 2019, https://pediatrics.aappublications.org/content/early/2019/04/11/peds.2018-2908

[13] E. Cazzo et al., " Bariatric surgery in individuals with severe cognitive impairment: report of two cases", Sao Paulo Med J, Vol 136, No 1, pp. 84-88, 2018, https://www.ncbi.nlm.nih.gov/pubmed/28443951

youth, irrespective of cognitive or developmental functioning". [14]

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Preliminary Considerations: NDIS supports for weight management

Prepared by: Technical Advisory Branch

1. Issue

1.1. Currently, NDIS legislation and guidance does not effectively address how weight management supports associated with particular disability types and health conditions factor into reasonable and necessary considerations. The disability related health supports (DRHS) policy has actually drawn further attention to the matter through blurring the funding responsibilities for chronic health conditions and preventive health, as established in the NDIS Supports for Participants Rules 2013 (7.4, 7.5) and COAG Principles to Determine the Responsibilities of the NDIS and Other Service Systems - Health table.

1.2. See Appendix A for explanation of how weight management supports are not addressed in current legislation and guidance.

2. Purpose

2.1. The purpose of this paper is:

2.1.1. To provide a preliminary snapshot of the considerations that the NDIA need to make going forward to support NDIS participants who have complex weight-related disability and health care needs.

2.1.2. To present initial suggestions for a policy position to clarify under what circumstances NDIS funding may be used by participants to assist them with managing their weight issues, noting that there are a substantial number of NDIS participants that will require **weight management supports that are directly attributable to their disability**.

3. Recommendations

3.1. As this policy issue permeates across the workloads of multiple business areas, and also carries a significant level of risk, the key recommendation being put forward is that a small NDIA working group is established in early 2020 to clarify these funding and planning considerations.

3.1.1. Working group members will ned to be considered from the following teams: Scheme Policy, Planning Support, Operational Policy, Legal, Actuary, Technical Advisory, Early Childhood Early Intervention, Mental Health and Community Mainstream Engagement (possibly others).

3.2. This paper should be considered a starting point. The issues discussed will require further refinement, troubleshooting and endorsement. The working group will need to:

3.2.1. understand the key issues and risks (legislative, financial, risk to participant etc.) associated with funding these supports;

3.2.2. develop a clear policy position on NDIS supports for weight management supports that is aligned to current policy, particulry DRHS and Attribution policies; and

3.2.3. determine a clear pathway forward to communicate this position to key stakeholders and initiate any service delivery changes as required (e.g. price guide, practice guidance).

4. Key considerations

4.1. Note: For the purpose of this policy proposal:

4.1.1. **Weight management supports** refers to supports that are required by a NDIS participant to manage their **obesity or underweight condition** that are directly attributable to their disability, and causing significant functional impairment. However the main requirement for this policy is to address obesity, as delegates are more likely to receive requests for supports relating to this health condition.

4.1.2. Body Mass Index (BMI) is used to determine weight status for adults – overweight (BMI 25-29.9), underweight (BMI <18.5) and obesity (BMI >30). There is a separate BMI calculator for children (2-20 years) which factors in age. BMI calculators are indictaive, not a diagnostic tool.

4.1.3. Overweight, underweight and obesity are considered health conditions, rather than disabilities, noting all may result in functional impairments.

4.1.4. Overweight is intentionally excluded from these policy considerations. Being overweight is a common health condition that many Australians experience and , and providing supports to prevent or manage health conditions is not a NDIS responsibility (s34.1.f).

4.2. In 2017-18, the Australian Bureau of Statistics' National Health Survey showed that two thirds (67.0%) of Australian adults were overweight or obese (12.5 million people), an increase from 63.4% in 2014-15. Slightly more than a third (35.6%) were overweight and slightly less than a third were obese (31.3%). Just under one third (31.7%) were within the healthy weight range and one percent (1.3%) were underweight[1]. The National Health Survey also indicated that almost one quarter (24.9%) of children aged 5-17 years were overweight or obese in 2017-18 (17% overweight and 8.1% obese)[2].

4.3. These statistics highlight how common these weight related conditions are for all Australians and how important it is that the NDIS does not inadvertently absorb costs associated with managing and preventing these conditions, when circumstances make these health intervention supports more appropriately self-funded, or funded through other service systems.

4.4. This proposed 'NDIS supports for weight management' policy acknowledges that:

4.4.1. There are a considerable number of NDIS participants who will require weight management supports that are directly attributable to their disability.

[1] Australian Bureau of Statistics, National Health Survey: First Results, 2017-18, Overweight and Obesity, 4364.0.55.001, https://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/4364.0.55.001~2017-18~Main%20Features~Overweight%20and%20obesity~90, accessed 29 November 2019.
[2] Department of Health, Australian Government, 'Overweight and Obesity', 19 June 2019, https://www1.health.gov.au/internet/main/publishing.nsf/Content/Overweight-and-Obesity, accessed 8 November 2019.

4.4.2. NDIS participants with disability related weight issues will likely require different types of support to assist with weight management, during different stages of their life e.g. dietetics, exercise physiology, early intervention behaviour supports.

4.5. Consequently, this policy position will need to make unique considerations for three key age groups:

4.5.1. **Early Childhood 0-7 years**

4.5.2. **Adolescent 8-18 years**

4.5.3. **Adult 18+ years**

4.6. It is also important to note that a perceived correlation or commonality between a specific disability type and being overweight or underweight, does not necessarily imply causation. Many factors contribute to a person's weight status.

4.7. Similarly, just because a NDIS participant has an obese or underweight health status does not automatically mean their weight management supports will be most appropriately provided by the NDIS.

4.8. Acknowledging: 1) the objectives of the Scheme, 2) the insurance based approach focussing on early investment and intervention to improve outcomes for participants later in life and reduce longer-term costs, and 3) Scheme sustainability, it is important that this policy determines the line between supporting NDIS participants to reach a healthy weight to reduce associated functional impairment, and replacing public health treatment and prevention service responsibilities.

4.9. There are two causative scenarios where reasonable and necessary considerations need to be distinguished:

1. **NDIS weight management supports may be reasonable and necessary:** The participant's disability directly causes obesity/underweight status and in turn, their weight status causes or exacerbates functional impairment(s), resulting in further disability.

2. **NDIS weight management supports <u>not</u> reasonable and necessary:** The participant's health condition or lifestyle choices causes obesity or underweight status, and in turn causes or exacerbates functional impairment(s), resulting in further disability.

4.10. One is a disability related issue, while the other is a public health issue.

4.11. The Agency need to consider the obesity or underweight status of NDIS participants holistically, as part of their broader DRHS needs, paying particular attention to:

4.11.1. Functional impact of disability

4.11.2. Genetics and phenotypes

4.11.3. Family context/function/lifestyle (noting for a young child this would be difficult to assess as a factor for obesity)

4.11.4. Medication side effects, particularly for pyshciatric medication where there is a established link to weight gain.

4.11.5. Other social determinants of health

4.12. The determination comes down to the participant's capacity to self-regulate their weight and whether their disabilty impairs them from doing so.

4.13. This approach is consistent with the 'whole of person' approach that the DRHS policy is based upon. Weight management supports could be considered an addendum to the DRHS.

4.14. For some participants these are supports that we would fund anyway e.g dietetics [expand]

5. Work conducted to date

5.1. The Technical Advisory Branch have conducted preliminary literature review into 'syndromic obesity'[3] and the causative link to disability. Available research clearly demonstrates that several health conditions or syndromes have a genetic or metabolic predisposition to weight gain.

5.1.1. These include: Prader-Wili syndrome, Bardet-Biedl Syndrome, Alstrom syndrome, WAGRO syndrome, Albrights Hereditary Osteodystrophy, Fragile X syndrome and Down syndrome. Additionally, approximately 15% of people with Autism Spectrum Disorder (ASD) have a genetic deletion that is confirmed to increase likelihood of obesity. There is also a strong causative link between psychotropic medication usage and uncontrollable weight gain.

5.1.2. The literature review also indicates that for many of these disability types, early intervention in childhood to prevent weight gain and/or undesirable eating behaviours from developing is the most effective support method.

5.2. While likely to be less common than obesity (based on ABS data), there are some NDIS participants who will also have issues with malnutrition and underweight, which are directly attributable to their disability.

5.3. The Technical Advisory Branch also conducted a literature review into the most effective weight management interventions so that delegates are well resourced to make effective and beneficial having regard to current good practice determinations (s34.1.d).

5.4. While there are numerous weight management interventions available to the Australian population, different types of supports have varying degrees of evidence to substantiate that they are 'effective and beneficial'.

5.5. The National Health and Medical Research Council (NHMRC) provide the Clinical Practice Guidelines for the management of overweight and obesity in adults, adolescents and children in Australia (Clinical Guidelines).

5.6. Of particular importance to the NDIS, these Clinical Guidelines provide an outline of how physical and developmental factors may contribute to obesity stating that:

[3] *Syndromic obesity is obesity occurring in the clinical context of a distinct set of associated clinical phenotypes [the set of observable characteristics of an individual resulting from the interaction of its genotype with the environment].*

5.6.1. *"Impaired mobility (e.g. due to physical disability, advanced age or obesity) can affect an individual's capacity to adopt a healthy lifestyle and undertake physical activity. People with intellectual or developmental disability are at greater risk of obesity and obesity tends to occur at a younger age among people in this group. If there is no underlying syndrome to explain obesity, then dietary habits, physical inactivity and socioeconomic factors are thought to contribute to the risk"*[4].

6. Early Childhood 0-7 years

6.1. The Technical Advisory Branch have also held preliminary discussions with the Early Childhood Early Intervention (ECEI) team as it was identified early on that this policy will have the most significant implications for this age cohort.

6.2. The ECEI team have highlighted several considerations for children under 7 years:

6.2.1. Not all children have a clinical diagnosis that clearly identifies a causal link to obesity.

6.2.2. Children with a developmental delay (no diagnosis) may have a functional delay linked to obesity. For example:

6.2.2.1. A child with restricted eating habits may choose foods that result in weight gain.

6.2.2.2. A child with physical delays who cannot move with agility, may increase in weight due to inactivity.

6.2.2.3. A child with sensory sensitivities may select foods that are soothing or stimulating to their senses which results in weight gain.

6.2.3. There may be situations where it is identified that a child might be at risk of obesity if their nutritional intake is not altered to become more balanced. Early Intervention (EI) would be appropriate in this instance - such as dietetics support.

6.2.4. Children under 7 years of age with a diagnosis may experience obesity due to functional delays related to their disability diagnosis. For example:

6.2.4.1. A child with Cerebral Palsy who has physical disabilities may experience obesity as a result.

6.2.4.2. A child with ASD may gain weight due to their rigid preferences for activity and/or food.

7. Adolescent 8-18 years and Adult 18 + years

7.1. As with early childhood participants, adolescent and adult participants will have different weight management support needs due to what the most effective interventions are for their specific circumstances.

[4] National Health and Medical Research Council, *'Clinical practice guidelines for the management of overweight and obesity in adults, adolescents and children in Australia'*, Department of Health Australia, 2013, p.10.

7.2. For participants in the adolescent and adult age cohorts, their diagnosis is now likely known so the functional impairment can be understood. Unless the participant has an acquired brain injuy (ABI) or spinal cord injury (SCI), then the functional impairment may still be unknown.

8. Planning considerations

8.1. As with all DRHS, supporting evidence is required from medical experts or relevant health professionals to clearly explain how the requested support is directly linked to the participant's disability.

8.2. Annual plan reviews will need to assess whether the weight management supports that have been included in the participant's plan are effective. Outcome reports will need to be provided by the prescriber.

8.3. Role of LACs?

8.4. Role of support coorindation?

8.5.

9. Key deliverables

9.1. A clear strategic policy outlining the scope of NDIS funded weight management supports.

9.2. Targeted planning guidance outlining:

9.2.1. Specific considerations delegates need to make for each age cohort.

9.2.2. What supports are effective and beneficial for each age cohort.

9.2.3. Listed diagnosis that will likely result in a NDIS participant requiring weight management supports.

10. Demonstration of Legal Compliance

1.1.1. See Appendix A for explanation of link to legal compliance.

11. Demonstration of Scheme sustainability

1.1.2. The Scheme Actuary has done some preliminary costings in 2018 about the possible impact of chronic health conditions. However these may now be redundant post DRHS policy.

1.1.3. The cost of supporting children likely to be low – rationale from ECEI team?

12. Consultation and Participant centred design

1.1.4. The development of the internal working group will act as the internal consultation process.

13. Risks

13.1. As outlined in the Issue section, current legislation and internal guidance does not account for NDIS funded weight management supports. Consequently there is significant risk associated with not enacting a weight management supports policy.

13.2. The requirement for this policy is to address the risk to scheme sustainability that originates from the lack of guidance for funding of weight management supports.

13.3. While genetics and phenotypes are important and evident for some disability types, (e.g. Prader-Willi syndrome), it is both impractical and undesirable to place too much emphasis on genetics and phenotypes to determine what a reasonable and necessary support is. It is impossible to differentiate whether a physical characteristic such as weight is 100% caused by a person's genotype or whether it is personal preferences, learned behaviours or other social and environmental determinants of health.

13.3.1. There is a risk that if delegates begin to ask participants to provide genetic supporting evidence that more cases will escalate to the Administrative Appeals Tribunal and the Scheme will end up being asked to pay for expensive personalised genetic testing for hearings. Paying for specific medical tests and expert reports is common practice for current hearings.

13.4. Financial risk

13.5. etc

14. Change Management Plan and Communications

1.1.5. A change management plan will be developed once the policy position has been agreed and endorsed.

1.1.6. This will not require external consultation as it is an internal planning guidance matter and will be an addendum to the DRHS policy.

1.2. Implementation Timeframes

1.2.1. There is no critical timeframe to develop and enact this policy, however the longer this matter remains unresolved, and the higher chance that an undesirable precedent in funding weight management supports is set.

1.3. Key dependencies and enablers

1.3.1. This policy position is dependent on the outcome of the attribution policy, costings by scheme actuary and legal advice.

1.3.2. Collaboration between the working groups.

Sponsor: [Insert Name and title – must be General Manager or above]

Prepared by: [Name, Title, Contact]

Attachment(s):

A [Insert title]

Appendix A

Gap in current guidance and legislation re: obesity

In the context of the NDIS and the funding of Disability Related Health Supports (DRHS), disabilities and chronic health conditions that may lead to obesity (directly and indirectly) require further consideration. This is because of:

- the stated 'whole of person' approach that must be taken during NDIS planning; and
- the associated functional impairment(s) that obesity commonly cause.

As outlined in the current guidance, the NDIS will fund a DRHS when it:

- directly relates to a person's ongoing functional impairment, and
- is a regular part of daily life, and
- is most appropriately funded or provided by the NDIS, and
- is evidenced meaning supporting information can generally be obtained.

A DRHS support must still meet the NDIA's legislative framework. As outlined in the DRHS PG:

- The NDIA takes a whole of person approach when funding supports in a participant's NDIS plan. This means that funding for supports is based on the reasonable and necessary criteria in section 34 of NDIS Act and Rules and is *not* limited to the impairments which satisfy the criteria for accessing the NDIS.
- Specifically, in accordance with section 34(1)(f) of the NDIS Act, the NDIA needs to determine whether a disability-related health support for a participant is most appropriately funded or provided by the NDIS.
- The NDIS Supports for Participants Rules 2013, provide that the NDIS is responsible for supports *related to a person's ongoing functional impairment and that enable the person to undertake activities of daily living*, including maintenance supports delivered or supervised by clinically trained or qualified health practitioners, where these are directly related to a functional impairment and *integrally linked* to the care and support a person requires to *live in the community and participate in education and employment*.

The COAG APTOS states that:

- *The above health system will remain responsible for the diagnosis, early intervention and treatment of health conditions, including ongoing or chronic health conditions. This may involve general practitioner services, medical specialist services, dental care, nursing, allied health services, preventive health care, care in public and private hospitals, and pharmaceuticals (available through the PBS).*

This legislation and guidance does not effectively consider how weight management support interventions factor into reasonable and necessary considerations.

Appendix B

Matrix - NDIS funded weight management supports

Causative link to obesity				
Causative link to underweight				
Early intervention indicated				
Age Group	0-7 years		7-18 years	18 + years
NDIS funded supports that would already be included in participant plan				
Additional 'NDIS weight management supports'				
Mainstream supports available for obesity				

Appendix C – Effectiveness of weight management interventions

Research Request – Childhood Speech Apraxia

Brief	Best practice treatment of childhood speech apraxia
Date	09/10/2020
Requester	Wendy s47F - pers (Assistant Director TAB)
Researcher	Jane s47F - personal priva (Research Team Leader)

Contents

Please note:

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What is childhood speech apraxia?

Childhood apraxia of speech (CAS) is a developmental disorder of speech motor planning and/or programming. It is a rare condition, affecting only 0.1% of the general population. [1] The consensus based core features of CAS include: [2]

1) Inconsistent errors on consonants and vowels in repeated productions of syllables or words
2) Lengthened and disrupted co-articulatory transitions between sounds and syllables
3) Inappropriate prosody, especially in the realisation of verbal or linguistic stress

The long term functioning of people with CAS is largely unreported. Available longitudinal research suggests that CAS is a persistent disorder that requires therapy. Children with CAS are at risk for literacy, academic, social and vocational difficulties. [1]

Treatment Approaches

Treatment selection depends on factors such as the severity of the disorder and the communication needs of the child. Because symptoms typically vary both from child to child and within the same child with age, [3, 4] multiple approaches may be appropriate at a given time or over time. The most common approaches include motor programming, linguistic, prosodic facilitation and augmentative and alternative communication (AAC). [5]

At present, treatment approaches' for CAS have not been investigated using high quality randomised controlled trials (RCTs). A Cochrane Systematic review [1] was only able to locate one RCT which comparted two motor programming approaches' (Nuffield Dyspraxia Programme-3 and the Rapid Syllable Transitions Treatment). [6] Both approaches demonstrated improvement at one month post treatment for accuracy of production on treated words, speech production consistency and accuracy of connected speech. An earlier systematic review which included non-RCTs concluded that Dynamic Temporal and Tactile Cueing has the strongest evidence base, with replicated evidence of efficacy from several well-controlled single-case experimental design studies from different independent research group. [7]

A brief overview conducted by the American Speech-Language-Hearing Association (ASHA) of common motor programming (best evidence to date), linguistic, prosodic facilitation and AAC approaches is provided below. [5]

Motor Programming Approaches

Motor programming approaches are based on motor programming/planning principles. These approaches:

- provide frequent and intensive practice of speech targets;
- focus on accurate speech movement;
- include external sensory input for speech production (e.g., auditory, visual, tactile, and cognitive cues);
- carefully consider the conditions of practice (e.g., random vs. blocked practice of targets); and

- provide appropriate types and schedules of feedback regarding performance (Maas et al.,

Examples of motor programming approaches include the following:

- Dynamic Temporal and Tactile Cueing (DTTC) is an integral stimulation ("look, listen, do what I do") method that uses a cueing hierarchy (auditory, visual, and tactile) and systematically decreases supports as the child achieves success at each level of the cueing hierarchy. [8, 9] Movement gestures are shaped, beginning with direct imitation, moving to simultaneous production with tactile or gestural cues if direct imitation was unsuccessful, and then fading the simultaneous cue and again moving to direct imitation. The key element of this approach is that the clinician is constantly adding or fading auditory, visual, and tactile cues as needed after each practice trial. It is suggested for very young children with severe CAS.

- Nuffield Dyspraxia Program (NDP3®) is a motor skills learning approach that emphasizes motor programming skills and focuses on speech output. It is described as a "bottom-up" approach in which the aim is to "build" accurate speech from core units of single speech sounds (phonemes) and simple syllables. New motor programs are established using cues and feedback and through frequent practice and repetitive sequencing exercises. Phonological skills are incorporated into the treatment approach through the use of minimal word pairs. [10]

- Rapid Syllable Transitions (ReST) is a method that involves repetition of varied sequences of real or nonsense syllables to train motor planning flexibility. [11, 12] It uses intensive practice in producing multisyllabic, phonotactically permissible pseudo-words to improve accuracy of speech sound production, rapid and fluent transitioning from one sound or syllable to the next, and control of syllable stress within words. Pseudo-words are used to allow the development and practice of new speech patterns without interference from existing error speech patterns. [13, 14]

Linguistic Approaches

Linguistic approaches for treating CAS emphasize linguistic and phonological components of speech as well as flexible, functional communication. [11] These approaches focus on speech function. They target speech sounds and groups of sounds with similar patterns of error in an effort to help the child internalize phonological rules. It is important to note that linguistic approaches to CAS are intended as a complement to motor approaches, not as a replacement for them.

Examples of linguistic approaches include the following:

- The Cycles approach is a linguistic approach that targets phonological pattern errors. [15] It is designed for children whose speech is highly unintelligible and who have extensive omissions, some substitutions, and a restricted use of consonants. The goal is to increase intelligibility within a short period of time. Treatment is scheduled in cycles ranging from 5

to 16 weeks. During each cycle, the SLP targets one or more phonological patterns. After each cycle is completed, another cycle begins that targets one or more different phonological patterns. Recycling of phonological patterns continues until the targeted patterns are present in the child's spontaneous speech. [16] The goal is to approximate the gradual typical phonological development process. There is no predetermined level of mastery of phonemes or phoneme patterns within each cycle; cycles are used to stimulate the emergence of a specific sound or pattern, not produce mastery of it.

- Integrated Phonological Awareness (IPA) is designed to simultaneously facilitate phonological awareness, letter–sound knowledge, and speech production in preschool and young school-age children with speech and language impairment. Specific approaches to facilitate the development of phonological awareness include (a) developing knowledge that positively influences phonological awareness development (e.g., teaching nursery rhymes and focusing on sound properties of spoken language) and (b) integrating phonological awareness activities into treatment sessions (e.g., phoneme awareness and letter game activities). [17, 18]

Prosodic Facilitation

Prosodic facilitation treatment methods use intonation patterns (melody, rhythm, and stress) to improve functional speech production. **Melodic intonation therapy** (MIT) [19] is a prosodic facilitation approach that uses singing, rhythmic speech, and rhythmic hand tapping to train functional phrases and sentences. Using these techniques, the clinician guides the individual through a gradual progression of steps that increase the length of utterances, decrease dependence on the clinician, and decrease reliance on intonation. [20]

Augmentative and Alternative Communication (AAC)

AAC involves supplementing or replacing natural speech or writing with aided symbols (e.g., picture communication, line drawings, Blissymbols, speech-generating devices, and tangible objects) or unaided symbols (e.g., manual signs, gestures, and finger spelling). [5] Whereas aided symbols require some type of transmission device, production of unaided symbols requires only body movements.

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Research Request – Learning Supports for children with a disability in public and catholic school system

Brief	Investigation into support available in the Catholic and public school systems for a child with a learning impairment in particular funding for specific programs in this case the Arrowsmith program.
Date	07/12/2020
Requester	Lee s47F - personal pr (Director – TAB)
Researcher	Jane s47F - personal priva (Research Team Leader – TAB)

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The Research Team are unable to ensure that the information listed below provides an accurate & up-to-date snapshot of these matters

The Arrowsmith Program

The Arrowsmith Program is one of a number of commercial programs developed by learning consultants. It is offered to schools as resources to assist schools to meet their educational responsibilities according to the curriculum offered. Like many others, the Arrowsmith Program offers a structured range of progressive tasks that support a student towards automaticity in learning tasks.

The Arrowsmith program is not funded by the State and Territories or the Catholic Education system. Schools choose to adopt the program and offer it to parents at an additional fee (see costs below).

Arrowsmith Program Option	Cost on top of school fees
• **Full Arrowsmith program assessment** *($1,000 credited back to fees if enrolled in the program within 90 days)*	$2,000
• **Symbol Relations** - Clocks only *Clocks post assessment*	$ 2,100
• **Motor Symbol Sequencing** (MSS) only *MSS assessment*	$ 2,100
• **One program** (1 period per day) *Including pre & post assessment*	$ 3,700
• **Two programs / Part time program** (2 periods per day) *Including pre & post assessment*	$ 7,400
• **Two programs + MSS** (2 periods per day + home work) *Including pre & post assessment*	$ 9,100
• **Four programs / Full time program** (4 periods per day) *Including pre & post assessment*	$13,100

Below is a list of schools and 'centres' listed on the Arrowsmith website who have adopted the program.

Victoria

Brain Athletics

St Catherine's Primary School

Oakleigh Grammar School

New South Wales

3Bridges Community

Sydney Catholic Schools

CoreSenses | Awakening Capabilities

Queensland

Blackheath and Thornburgh College

Darling Downs Christian School

Brisbane Boys College

Silkwood School

Empowering Lives

The Southport School

Western Australia

Cognitive Strengthening Centre

Funding support in public and catholic school systems

Each State and Territory delivers different programs and resources to assist students with a disability. Most commonly, funding is provided at a regional/whole school level, rather than a specific amount for each individual student. Schools make the decision on how this funding is used. The States and Territories clearly state what programs and services are available for students with learning difficulties and how to apply for assistance.

The Catholic education system provides little information about what services they offer. Most direct enquires to individual diocese or schools for information on obtaining additional assistance.

ACT

Public School System

The ACT education department provides a range of programs and supports for students from preschool to year 12 who meet the ACT Student Disability Criteria.

Student Centred Appraisal of Need

When a student is eligible for Disability Education support, their needs will be assessed in a Student Centred Appraisal of Need (The Appraisal). The Appraisal meeting is held once the student has commenced in the disability program. The meeting determines the extent of the student's needs at their school, in a variety of areas including communication, mobility, personal care and safety, social development and curriculum.

Individual Learning Plans

An Individual Learning Plan (ILP) is developed for all students who access Disability Education support. The plan is developed within the school in collaboration with families and other support staff. The ILP outlines agreed goals and strategies to support your child to access the school curriculum.

Programs and supports offered

Support at Preschool (SAP) program works with schools to support the inclusion of children with developmental delay and disability in their preschool year. SAP support is provided to schools where substantial or extensive adjustments are required to support the child in the play-based preschool program.

Hearing and Vision support is provided for students from preschool to year 12. Specialist staff work with the child's school and other involved services to support the student's access to the curriculum.

Inclusion Support Program (ISP) provides additional resourcing to schools to facilitate reasonable adjustments to meet the needs of students at their local school from kindergarten to year 12.

Specialist Schools (SS) provide educational programs for students with high and complex needs who have a moderate to profound intellectual disability or Autism.

Small group programs are provided at a range of public schools across the ACT for students from kindergarten to year 12:

- **Learning Support Centres (LSC)**
  LSCs are small group programs for students with a significant learning delay, a mild intellectual disability or who meet the ACT Student Disability Criteria for Autism. They are located in various primary schools, high schools and colleges.
- **Learning Support Units (LSU)**
  LSUs are small group programs located in primary schools, high schools and colleges. Students must meet the ACT Student Disability Criteria for Intellectual Disability or Autism to be eligible for a placement in these programs. They are located in various primary schools, high schools and colleges.
- **Learning Support Units Autism (LSUA)**
  LSU-As are small group programs located in primary and high schools for students who meet the ACT Student Disability criteria for Autism. They are located in various primary schools and high schools.
- **P-10 School Disability Program**
  These schools provide a range of flexible programs and supports to meet the needs of students living in their Priority Enrolment Area, who are eligible to access LSU and LSUA programs, from the time of their enrolment through to their transition to year 11.

Catholic Education

Unable to locate any information on what support is offered to students with a disability who attend a Catholic school in the ACT.

NSW

Public School System

The NSW Education Department provides a 'personalised learning and support,' which is a process that supports a wide range of students with additional learning and support needs.

Personalised learning and support is underpinned by evidence of four key elements or areas of activity:

- The assessed individual education needs of the student
- The provision of adjustments or support to meet the students' assessed needs
- Monitoring and review of the impact of the adjustment or support being provided for the student

- Consultation and collaboration – of teachers with parents, support staff and other professionals where required.

Programs and services

Learning and support

Every mainstream NSW public school has a learning and support resources package (also known as low level adjustment for disability) that gives the school a specialist teacher and an allocation of flexible funding as part of the school budget.

Integration funding support

Integration Funding Support helps schools to provide adjustments for students with disability in mainstream classes who have moderate to high learning and support needs – as defined by the Department's disability criteria.

Funding is used:

- for additional teachers and school learning support officers to assist with personalised learning and support for students in their own classrooms
- to provide relief for classroom teachers to undertake professional learning and to plan adjustments with parents and carers and other school staff

Most students with disability and additional learning and support needs can be supported through resources at their local school, allocated through a learning and support resource package as part of the school budget.

Integration Funding Support is only considered when a school learning and support team determines that:

- additional resources are required to develop and provide adjustments to personalise learning and support
- extra teacher and/or school learning support officer time is the most appropriate resource

Itinerant support teachers

Itinerant support teachers visit schools and other approved educational centres to help support students and young children with confirmed disability.

Itinerant support teachers work directly with students and in partnership with the school's learning and support team, parents and carers, and other support agencies to plan personalised learning and support.

Specialist support classes in mainstream schools

Specialist support classes located in some mainstream primary schools, high school and central schools across NSW are available for students with moderate to high learning and support needs - as defined by the Department's disability criteria.

Specialist support classes cater for students with moderate to high learning and support needs including students with:

- intellectual disability
- mental health issues
- autism
- physical disability

- sensory impairment
- Behaviour disorders

Specialist support classes in mainstream schools have fewer students than mainstream classes. Class sizes depend on the class type and, in some cases, the students' additional learning and support needs.

Every specialist class has a teacher and a school learning support officer. Class teachers - in consultation with parents and carers and allied health professionals, where appropriate - are responsible for planning personalised learning and support for each student.

Catholic Education

The Catholic Schools NSW website doesn't explicitly state what support is provided to students with a disability. It mentions that all schools adhere to the Disability Standards for Education (DSE) 2005. All teachers undertake the DSE e-learning module to ensure that students with disability are able to access and participate in education **on the same basis** as other students.

NSW Centre for Effective Reading

The NSW Centre for Effective Reading is a joint NSW Department of Education and NSW Health initiative.

The Centre provides direct assessment and intervention services for students in rural and remote primary schools who are experiencing complex reading difficulties, professional learning and resources for teachers and other key participants and undertakes research and development in the area of complex reading difficulties.

NT

Public School System

The Northern Territory Department of Education provides various support services including specialist education advisors, specialised equipment and resources.

The range of support services available cover all of the following:

- autism spectrum disorder (ASD)
- counselling
- disability
- early childhood intervention
- hearing
- psychology
- transition from school
- vision

Support at school

Disability advisors can assist in developing support strategies for your child to promote equitable access and participation in education.

Disability advisors can provide all of the following:

- information on how to manage your child's disability
- information on the range of support available
- working with you and your child's school to identify access needs and appropriate adjustments to curriculum delivery, so that your child can access programs on the same basis as their peers
- support a student's transition between schools

Catholic Education

The Catholic Education NT Diocese of Darwin have developed a students with disabilities policy. The policy statements include:

Identification, Referral and Assessment

- Schools have the responsibility to follow the recommended procedures for the identification, referral and assessment of students with disabilities (ISSF).
- Additional resource allocation will be considered provided that the provision of the additional resources does not constitute unjustifiable hardship.
- In the event of a dispute about the specific needs of a student, a review by an independent and appropriately qualified third party may be sought.

Educational Options

- This policy, in recognition of the assessed needs of students with disabilities, supports the commitment to providing high levels of consultative and additional support.
- Quality educational outcomes can be optimised through:
    - provision of all relevant information to families, guardians and/or caregivers to enable them to come to a timely decision on the best options, and to actively support them in that decision
    - a range of educational options to provide for the learning and curriculum needs of students

Available Educational Options

Inclusion in Regular Classrooms with Consultative Support

This type of provision is appropriate for students with disabilities who can successfully participate in all or most classroom activities, with minimal intervention. The Principal may seek guidance, advisory and/or therapy consultative support from specialist personnel.

Inclusion in Regular Classrooms with Additional Support

In order for some students with disabilities to achieve quality outcomes in their regular class, additional support may be needed. This support may be given from a special education support teacher, advisory personnel, teacher assistant or an inclusion support assistant.

Inclusion in Regular Classrooms with Withdrawal Support

Some students with disabilities may receive support from staff within the regular classroom and on a withdrawal basis. This may include a special education support teacher, advisory personnel, teacher assistant or an inclusion support assistant. The support may be short term, transitional or long term.

Queensland

Public School System

The Queensland Government provides various funding and programs at a school/regional level rather than providing funding for individual students.

Support services and resources

Targeted resources are provided to schools to assist them so that they can address the diverse learning needs of their students. Additional targeted resources are provided either directly to schools or to regions. The department provides resourcing directly to schools to allow greater flexibility, and to enable schools to explore innovative ways to tailor programs to maximise students' potential. These resources are, in addition to the classroom teachers and general teacher aide time, already allocated to schools. Schools are also able to request access to a range of specialist services.

The department supports school autonomy and believes that decisions about the needs of students are best placed at the school level, by professionals who know their students. Direct to school resourcing is delivered through a number of models:

- Whole School Support—Student Learning Resource (WSS-SLR)
- Education Adjustment Program (EAP)

Targeted funding is not allocated directly to students. Schools are allocated the resources, with principals responsible for supporting the educational programs of all students with disability in their school.

Other funding to assist students with disability includes Investing for Success.

Targeted intervention and other support services

Regions and schools provide a continuum of support and services for students with disability and learning difficulties. This may include:

- guidance officers
- support teachers (literacy and numeracy)
- speech-language pathologists
- behaviour support teachers
- English as an additional language or dialect
- Auslan support
- nurses
- teacher aides
- chaplains
- assistive technology
- alternative format materials
- special provision for assessment

- other supports available at the school level as determined by the school

Students who meet EAP criteria may also have access to:

- specialist teachers (disability specific)
- physiotherapists
- occupational therapists
- state-wide services for students with vision impairment

In addition, schools have access to regional inclusion coaches, autism coaches, mental health coaches, principal advisors' student protection and advisory visiting teachers specialising in hearing, physical or vision impairment. Regions may also provide other support services to meet local context.

Catholic Education

Students with disability program (SWD)

All Queensland schools are required to adhere to the *Disability Discrimination Act 1992* and the *Disability Standards for Education 2005*. All schools must therefore make reasonable adjustments to ensure students with disability are able to participate in education on the same basis as students without disability.

The purpose and objectives of the SWD program are to:

- support the education of students with disability in non-state schools
- promote the educational outcomes of these students

Target group – eligibility

Students with disability who are eligible for support under the program are those who meet the Queensland criteria used by all 3 education sectors, including students with:

- autism spectrum disorder (ASD)
- hearing impairment (HI)
- intellectual disability (ID)
- physical impairment (PI)
- speech–language impairment (SLI)
- vision impairment (VI)

An additional category of disability is also eligible for support in non-state schools only:

- social emotional disorder (SED)

Students with temporary medical conditions, or long-term episodic conditions such as epilepsy, are not eligible to receive support under this program.

Use of funds

The funds are to be used to support eligible students through:

- the improvement of in school resourcing for students with disability. In school support may include: teacher aide time, professional development for teachers working with students with disability, purchase of external support services (including therapists and other specialist support), the purchase of specialised equipment and resources for the student and/or their teachers

- the provision of centralised or regionalised services to support students with disability

South Australia

Public School System

Children with special needs or a disability may be eligible for additional support through the South Australia Department of Education at primary and high school through a range of internal and external options, including:

- year level classes
- special classes located within schools
- disability units located within schools
- special schools located in stand-alone specialised settings

A referral from the student's current school is required before special education options can be explored.

Special Education Resource Unit

The Special Education Resource Unit (SERU) provides a range of learning and teaching materials and specialised services which support children and students with disabilities and learning difficulties such as:

- equipment for use in schools
- special supports for children at school
- resources and publications

A negotiated education plan (NEP) or learning plan is a learning support plan that describes the support that will be provided.

Support with education and to explore future opportunities

The Better Pathways Program helps students remain engaged with school and successfully transition to their chosen post school options.

The program was designed to improve engagement, transition and post-school outcomes for young people with:

- disabilities
- learning difficulties
- mental health issues
- complex needs

Catholic Education

Catholic Education South Australia has developed an Enrolment and Support Process (ESP) to identify any additional needs a child with a disability may have in the school setting.

When an Enrolment and Support Process is required.

- the Principal informs the Special Education Consultant from the Catholic Education Office
- information about the student's needs is gathered, analysed and discussed by the Special Education Consultant, parents or legal guardians, Principal and relevant school staff
- Information about the adjustments, support and resources required as well as training and development for school staff are collated and forwarded to the Senior Education Adviser at the Catholic Education Office
- Following advice from the Catholic Education Office the Principal communicates with the parents or legal guardians regarding the next steps in the enrolment and transition process.

Continuing Support and Transition

An Individual Education Plan for the student is developed. This includes:

- Information about the student
- Reasonable adjustments or accommodations required
- Ongoing monitoring of the student's needs
- Evaluation of the student's program and regular case reviews.

The school works with the parents or legal guardians and Special Education Consultant in this process. School personnel, parents or legal guardians and specialised support providers work together at points of transition. If requested, the Special Education Consultant provides information to the parents or legal guardians, **regarding other schooling options.**

Tasmania

Public School System

The Tasmanian Department of Education provides support for students with disability across 'resourcing for schools' and 'specialist services'.

Resourcing for schools

Funding is used to make educational adjustments to teaching and learning programs to ensure students with disability can participate and engage in quality educational programs. A large component of this is individually targeted funding for students with disability aligned to meeting the needs defined within student Learning Plans.

There are centrally funded programs to provide assistance for students with disability with information on eligibility and referral at the links below:

- Transport Assistance
- Minor access works and building modifications
- Assistive technology
- Provision of Specialist Equipment
- Consultative Physiotherapy and Occupational Therapy Program
- Mediation and Liaison Services

The following specialist services to support students with a disability are also available:

- Autism consultants
- Consultative physiotherapy and occupational therapy in school
- Hearing services
- Inclusion and access coordinators
- Mediation and liaison service

- Respectful schools support team
- School psychologist
- Social workers
- Speech pathologists
- Student wellbeing
- Support teachers
- Vision services

Catholic Education

Tasmanian Catholic schools and colleges have access to a centralised Student Support Services to deliver appropriate support to students with additional needs and/or disabilities. A range of expertise, personnel, and resources are provided to support all students' access to and participation in learning. Each school provides a range of pastoral care and well-being programs and strategies designed to assist and support our students and families.

Victoria

Public School System

The Victoria Education Department has a range of programs and resources to assist students with a disability. This includes the Program for Students with Disabilities (PSD).

The PSD gives government schools extra funding to help them support students with disability and high needs.

Schools use the funding in different ways, depending on the needs of each child.

This can include:

- specialist staff, such as occupational therapists, physiotherapists and speech pathologists
- specialist equipment like assistive technology
- training for teachers so they know more about your child's disability or additional needs
- specialist teachers
- education support staff such as teacher aides

PSD funding is available for schools who are supporting children with disability and high needs. There are seven categories of eligibility criteria.

- Physical disability
- Visual impairment
- Hearing impairment
- Severe behaviour disorder
- Intellectual disability
- Autism
- Severe language difficulties and critical education needs

If the individual student is assessed as not being eligible for PSD funding a student support group can be set up. A student support group gives you the opportunity to work with your child's school to make decisions about their education and check their progress.

The group includes:

- You – as your child's parent or carer
- the teacher or teachers who have responsibility for your child
- the school principal or a nominee – for example, the assistant principal

At the meetings, you may work with the rest of the group to:

- consider your child's learning needs and views
- make an individual education plan for your child
- plan reasonable adjustments to support your child's participation
- plan your child's personal or medical care at school
- plan transitions – for example, from primary to secondary school
- check your child's progress

Student Resource Package

Schools also get funding through the Student Resource Package for every child. This funding is provided so that schools can meet the needs of all students. The Student Resource Package includes the Language and Learning Disabilities Program funding.

They also have access to student support services such as:

- speech pathologists
- psychologists
- visiting teachers
- social workers

Catholic Education

Catholic schools in Victoria provide a range of student support services to assist students with additional learning needs.

To obtain further information about these programs and services the local diocesan Catholic education office or your child's school needs to be contacted. No information on these 'support services' could be sourced online.

Western Australia

Public School System

The Western Australian Department of Education will develop a support team for all children found to have special educational needs or a learning disability. The support team includes the parents/carer and may include the child's teacher, principal, school psychologist, medical practitioners and specialist service providers.

Together, the support services and programs that are right for the child are determined, ensuring they receive the best education and support available, tailored to their unique needs.

School staff will develop an individual education plan. This plan is written specifically for each child to address their academic and personal needs. All staff working with the child at school will use the plan.

Student Centred funding model

Public school funding is allocated to schools based on the learning needs of students and school characteristics. It delivers funding for each student enrolled and additional funding for students needing extra support.

The objectives of the funding model are to:

- allocate resources based on the learning needs of students
- ensure funding is responsive to the needs of individual schools and their students
- increase flexibility for principals in relation to financial and workforce management decisions
- provide a simple and transparent funding mechanism

Education support school

Specialist schools for children from the beginning of Kindergarten to the final year of their schooling. Students have access to multi-disciplinary teams including nursing and therapy staff. Specialist teachers and support staff to ensure appropriate and responsive learning in a safe and accessible environment.

Education support centres

Located alongside primary and secondary schools. In addition to the individualised programs delivered by specialist staff, students benefit by interacting and participating in programs with their mainstream school peers.

Catholic Education

Catholic Education Western Australia is committed to embedding inclusive practices in all school environments for students with disability and additional needs.

Students with disability who are enrolled in a Catholic school receive assistance through a range of options including, among others:

- individualised learning plans
- access to specialised programs, resources and equipment
- small group or individual instruction
- teacher assistant support

Education Support Centres have been established in designated primary and secondary Catholic schools for students with disability whose educational needs require the provision of additional support and resources. This includes special education teacher/s and additional teacher assistants, as well as specialised resources and facilities. The centres offer educational service provision for children whose disability might limit their ability to gain access to the regular curriculum without specialist support. Depending on individual needs and abilities, some students will receive the major part of their academic program in the Education Support Centre while others will spend the majority of their time in regular classes with varying levels of support.

Research Request – Frequency modulation (FM) systems for ASD literature review

Brief	The University of Melbourne - Autism Spectrum Disorder (ASD) Listening Clinic, make very strong statements (See position paper attached) suggesting that all children with ASD have central auditory processing problems and all need to be fitted with an FM system which needs to be worn all day for 2 years. Is this true? They present a list of research articles to back up their claims. They are very vocal about the need for these FM systems. We receive many of these support requests in TAB. Our position has been that they do not meet R&N. We have a meeting with Melbourne Uni in the planning stages. The meeting will probably happen in early 2021. Your expert opinion is very welcome to allow us to have informed discussions.
Date	24/12/20
Requester	Jane s47F - personal p (Assistant Director – TAB) Peta s47F - personal privac (Senior Technical Advisor – TAB)
Researcher	Jane s47F - personal privac – (Research Team Leader – TAB)

Contents

Please note:

The research and literature reviews collated by our TAB Research Team are not to be shared external to the Branch. These are for internal TAB use only and are intended to assist our advisors with their reasonable and necessary decision making.

Delegates have access to a wide variety of comprehensive guidance material. If Delegates require further information on access or planning matters they are to call the TAPS line for advice.

The Research Team are unable to ensure that the information listed below provides an accurate & up-to-date snapshot of these matters

Summary

- Abnormal responses to sensory stimuli across multiple modalities are a consistently reported feature of ASD and are now a recognised component of diagnosis.
    - Hearing impairment is relatively common in this population with 2–10% of cases presenting with impaired sound detection thresholds [1, 2]
    - A high proportion (>50% of paediatric cases) show auditory processing deficits which are thought to be related to a distorted representation of temporal cues in the central auditory pathways [3, 4]
- The resources provided in the position paper are mainly of low quality. Those that conducted an investigation using FM systems are case studies (mainly without a control group, use subjects as own control) with very small sample sizes. The remaining literature are editorials, narrative reviews or thesis
- A systematic review has been conducted on FM system use in those with ASD. The authors concluded that;
    - Further research is clearly needed into improving SNR to improve classroom performance in children with ASD, and at least two warnings from the studies reviewed here should be heeded – these were
        1) Some children with ASD are unable to tolerate the personal FM systems used. This promotes the need to further investigate other technologies that could increase the signal level in the classroom without challenging the tactile sensitivities found in many students with ASD, such as the Soundfield amplification systems
        2) There is a need to include functional outcome measures in studies involving children with ASD (such as video classroom observation, sensory and listening experience-focussed questionnaires, etc) as some children included in the studies were not able to complete some of the more widely used behavioural outcome measures
- Studies commonly investigated FM systems over 5-6 weeks and for 45mins to 6 hours per day (some studies didn't even record use time). **Based on this, hard to justify 2 year usage.**

Given the level and quality of evidence provided, and the fact that less than 50 participants have been investigated in total across all studies I would not support FM systems as evidence based practice. However, the results are promising and require further investigation with bigger samples using study designs which are less prone to bias.

Author	Aim/Objective	Methods	Results	Level & Quality of evidence
Glaaser [5]	Investigate the effects of improved classroom acoustics on the educational and behavioural performance of individuals with **ADHD-Inattentive Type or Combined-Type.**	**Thesis** – unpublished, non-peer reviewed 7 participants (aged 14-18) Multiple baseline across participants design with a reversal component was used to assess the effects of the Soundfield Amplification System on the participants' educational and behavioural performance. Participants were observed across four phases: • baseline • intervention (implementation of the Soundfield system) • reversal • re-implementation of the Soundfield system Dependent variables • on-task behaviour • verbal disruptions • work accuracy	Soundfield system increased the on-task behaviour (by 10.5%) and decreased verbal disruptions (48.7%). The data on work accuracy was highly variable. Six of the seven participants, did not demonstrate improvements consistently when the intervention was implemented	**Level: N/A** **Quality = Very Low** (The true effect is probably markedly different from the estimated effect) Non-peer reviewed and unpublished. These results should not be considered accurate or reliable Very small sample. Investigated ADHD not autism or CAPD
Johnston, John [6]	Evaluate the potential benefits in speech perception and	**Case-Control study**	no longer a significant difference between the control group and APD group	**Level: III-2** **Quality: Low** (The true effect might be