

Dr. Laura Kinlin answers your questions around **Obesity and Autism Spectrum Disorder.** 

25 February 2021



#### Would you start metformin in a non-obese patient?



As far as I'm aware, there is no evidence relevant to role of metformin in preventing weight gain with initiation of an atypical antipsychotic. The studies included in my presentation were focused on children and youth with ASD who had *already* experienced weight gain with psychotropic medication. More broadly, the role of metformin in paediatric obesity (not specific to children and youth with ASD) has also focused on treatment rather than prevention.

Although metformin is generally a safe medication it can have side effects (most commonly GI – diarrhea and cramping for example). Given the paucity of evidence regarding a preventive role for metformin and the potential for side effects, I would not start metformin in the situation you describe. I'd recommend close follow-up and consideration of metformin if weight gain is a concern.

#### At what age is bariatric surgery an option?

Guidelines for bariatric surgery used to include puberty maturity as an eligibility criterion. However, current guidelines do not recommend limiting access to surgery based on pubertal status or physical maturity. Bariatric surgery is typically considered an option in "adolescence," although there are no widely accepted cutoffs for defining adolescence. In their guidelines, the AAP defines adolescence from age 13 years to age 18 years (Armstrong, S., Bolling, C., Michalsky, M., & Reichard, K. (2019). Pediatric Metabolic and Bariatric Surgery: Best Practices. Pediatrics Evidence, Barriers, and (Evanston), 144(6), e20193223-. https://doi.org/10.1542/peds.2019-3223). The American Society for Metabolic and Bariatric Surgery defines adolescence similarly to the World Health Organization - between the ages of 10 and 19 years of age ((Pratt JSA, Browne A, Browne NT, et al. ASMBS pediatric metabolic and bariatric surgery guidelines, 2018. Surg Obes Relat Dis. 07 2018;14(7):882-901.). It is widely accepted that the individual should be developmentally able to understand the risks and benefits of surgery, and be able to adhere to the lifestyle modifications required.



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## Is there an age at which the weight problem becomes recognized?

Great question. The relationship between age and risk of obesity in children and youth with ASD isn't entirely clear. In at least one study, risk of obesity started as early as 2 to 5 years of age (*Hill AP, Zuckerman KE, Fombonne E. Obesity and Autism. Pediatrics. 2015;136(6):1051-1061. doi:10.1542/peds.2015-1437*). Other studies suggested that with increasing age there is higher risk of obesity (*Must A, Eliasziw M, Phillips SM, et al. The Effect of Age on the Prevalence of Obesity among US Youth with Autism Spectrum Disorder. Child Obes. 2017;13(1):25-35. doi:10.1089/chi.2016.0079*). I'm working with the Ontario data I presented to explore this question further. At what age risk of obesity is highest, relative to typically developing children and youth? Are growth trajectories (i.e., growth patterns over time) different in children and youth with ASD relative to typically developing children and youth?

## Any role for the stimulant med (Vyvanse) in the treatment of obesity?

As you are alluding to, stimulant medications can cause anorexia and weight loss. In children with obesity who have been diagnosed with ADHD, these may actually be desirable side effects of stimulant medications. That being said, as far as I am aware, there is not a clear role for stimulant medications in management of paediatric obesity without an ADHD diagnosis. When considering this question, the risk of cardiovascular side effects with stimulant medications would need to be considered.

### Is Bariatric surgery being performed on adolescents with

#### **ASD?** (Here at Calgary Program, ASD is considered an exclusion in adults)

The American Society for Metabolic and Bariatric Surgery suggests that ASD should not be a contraindication for bariatric surgery and surgical intervention should be considered on a caseby-case basis (*Pratt JSA, Browne A, Browne NT, et al. ASMBS pediatric metabolic and bariatric surgery guidelines, 2018. Surg Obes Relat Dis. 07 2018;14(7):882-901.*). Per guidelines from the AAP, "a medical, psychiatric, psychosocial, or cognitive condition that prevents adherence to postoperative dietary and medication regimens" is a contraindication to surgery; ASD is not specifically mentioned (*Armstrong, S., Bolling, C., Michalsky, M., & Reichard, K. (2019). Pediatric Metabolic and Bariatric Surgery: Evidence, Barriers, and Best Practices. Pediatrics (Evanston), 144(6), e20193223–. https://doi.org/10.1542/peds.2019-3223). Based purely on* 



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guidelines, then, a decision regarding candidacy for bariatric surgery would very much depend on the severity/functional impact of ASD and whether the individual can adhere to the modifications required pre- and post-surgery (plus ability to understand risks and benefits).

Of course, institutional practice might be different. I am relatively new to STOMP and am not aware of any adolescents with ASD who have had surgery. That being said, my colleagues in STOMP – who have been with STOMP for much longer than me – can recall one adolescent with ASD who had surgery!

Whether there is a role for bariatric surgery in paediatric patients with cognitive impairment and/or developmental disability is still being debated. Some have argued that in the context of a well supervised and structured home setting, and a situation where the patient would always be reliant on caregivers and not live alone, surgery might be helpful in reducing hunger and improving comorbidities. Some literature has looked at outcomes in cognitive impairment/intellectual disability/developmental disability (not specifically ASD). Below are a few relevant papers.

Matheson BE, Colborn D, Bohon C. Bariatric Surgery in Children and Adolescents with Cognitive Impairment and/or Developmental Delay: Current Knowledge and Clinical Recommendations. Obes Surg. 2019 Dec;29(12):4114-4126. doi: 10.1007/s11695-019-04219-2. PMID: 31637672.

Goddard GR, Kotagal M, Jenkins TM, Kollar LM, Inge TH, Helmrath MA. Weight loss after sleeve gastrectomy in developmentally delayed adolescents and young adults. Surg Obes Relat Dis. 2019 Oct;15(10):1662-1667. doi: 10.1016/j.soard.2019.07.029. Epub 2019 Aug 12. PMID: 31522981.

Gibbons E, Casey AF, Brewster KZ. Bariatric surgery and intellectual disability: Furthering evidence-based practice. Disabil Health J. 2017 Jan;10(1):3-10. doi: 10.1016/j.dhjo.2016.09.005. Epub 2016 Sep 16. PMID: 27720223.

#### What are indications for surgery in ASD with obesity?

I think the indications for bariatric surgery in youth with ASD would be the same as in the 'general population' of youth. Generally, this would include having severe obesity (in STOMP, defined as BMI > 35 plus comorbidity, or BMI > 40) and being assessed as a potentially successful candidate (commitment to healthy lifestyle changes; family support before, during and after surgery; ability to consistently attend appointments pre- and post-surgery etc).

It is the contraindications to surgery that are probably more relevant for youth with ASD:

- Ability to understand risks and benefits (i.e., decision making capacity)
- Ability to adhere to required lifestyle modifications



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Potential contraindications would need to be assessed on a case-by-case basis. Some youth with ASD would have the ability to adhere to modifications/recommendations, while others would not.

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#### Can you talk about safety and side effects of metformin?

When discussing a trial of metformin in the context of ASD and atypical antipsychotic use, I typically discuss – in general terms – the evidence suggesting that metformin may be helpful in reducing weight gain related to medications. I describe metformin as being a relatively safe medication, with low risk of serious side effects. Even though it is sometimes used to treat type II diabetes, it does not cause low blood sugar. GI side effects (e.g., cramping, diarrhea) are common. We start with a low dose and titrate up (usually to a goal of 1000 mg BID in STOMP), to hopefully minimize GI side effects. In Anagnostou *et al.*'s trial, metformin was well tolerated by participants; GI side effects did not result in treatment discontinuation in any participant, and there was no evidence that BMI benefits were due to GI side effects (*Anagnostou E, Aman MG, et al. Metformin for Treatment of Overweight Induced by Atypical Antipsychotic Medication in Young People With Autism Spectrum Disorder: A Randomized Clinical Trial. JAMA Psychiatry. 2016 Sep 1;73(9):928-37. doi: 10.1001/jamapsychiatry.2016.1232. Erratum in: JAMA Psychiatry. 2016 Dec 1;73(12):1295. PMID: 27556593.).* 





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## At what % increase in weight or BMI would you start metformin??

In the trial by Anagnostou *et al.* there were, of course, very specific eligibility criteria: documented 7% or more increase in BMI since starting an atypical antipsychotic (within the past 12 months), or, if the BMI was in the 85th percentile or higher, a greater than 5% body weight increase per year since starting the medication ((*Anagnostou E, Aman MG, et al. Metformin for Treatment of Overweight Induced by Atypical Antipsychotic Medication in Young People With Autism Spectrum Disorder: A Randomized Clinical Trial. JAMA Psychiatry. 2016 Sep 1;73(9):928-37. doi: 10.1001/jamapsychiatry.2016.1232. Erratum in: JAMA Psychiatry. 2016 Dec 1;73(12):1295. PMID: 27556593.*). Clinically, I don't use such specific criteria – I would discuss a trial of metformin for a child or youth with ASD who has gained a not insignificant amount of weight while treated with an atypical antipsychotic, if family feels lifestyle modifications have not been successful or are not feasible. I think there is room for clinical judgment in terms of what constitutes "not insignificant" weight gain. Also lots of room for discussion with families around trialling metformin!

# Are you aware of any research/experience re: fibre supplementation to support appetite management for children/youth with ASD?

I am not aware of any literature related to fibre supplementation for weight management specifically in children and youth with ASD. In general, there is recognition that dietary fibre may be important in paediatric obesity via reduced caloric density of foods, slower rate of food ingestion, and possible satiety effects (*Kimm SY. The role of dietary fiber in the development and treatment of childhood obesity. Pediatrics. 1995 Nov;96(5 Pt 2):1010-4. PMID: 7494672.*) STOMP dietitians often counsel around increasing dietary fibre (in our patient population, in general, and not specific to ASD). Of course, as discussed in Thursday's session, dietary changes *might* be more challenging in patients with ASD because of insistence on sameness, restricted or repetitive behaviours, and sensory differences.





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## At what point would you use metformin in a child with ASD and obesity with no psychotropic med use?

There has been interest in whether metformin may be effective for children and youth with obesity more generally (i.e., not specifically in those with ASD and psychotropic medication use). In a systemic review published more than 5 years ago, it was concluded that metformin provides a statistically significant, but very modest reduction in BMI in the short term (*McDonagh MS, Selph S, Ozpinar A, Foley C. Systematic review of the benefits and risks of metformin in treating obesity in children aged 18 years and younger. JAMA Pediatr. 2014 Feb;168(2):178-84. doi: 10.1001/jamapediatrics.2013.4200. PMID: 24343296). A more recent commentary might also be of interest (<i>Kaplowitz P. Is There a Role for Metformin in the Treatment of Childhood Obesity? Pediatrics. 2017 Jul;140(1):e20171205. doi: 10.1542/peds.2017-1205. Epub 2017 Jun 12. PMID: 28759418.*) As the commentary suggests, I would consider a trial of metformin "in carefully selected patients with prediabetes and a strong family history of type 2 diabetes, or those who have made a major effort at improving their lifestyle and are frustrated by their inability to lose weight." As Catherine suggests below, this would be in conjunction with care by a multidisciplinary team.