Determining treatment goal weights for children and adolescents with anorexia nervosa

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Abstract
One of the challenges faced by paediatric health professionals treating children and adolescents with anorexia nervosa (AN) is determining the specific weight needed to achieve physical, emotional and cognitive recovery. Clinicians and researchers have struggled to standardize process, methods and terminology around what is now referred to as the “treatment goal weight” (TGW). This practice point summarizes recommendations drawn from common methods used to determine TGWs in children and adolescents with AN, which are based on both the evidence-based literature and expert consensus. An individualized approach to the determination of the TGW is offered, with some specifics for special clinical situations. Multiple factors inform the process of establishing a TGW for a child or adolescent with AN but individualized attention, especially to premorbid weights, heights, BMI percentiles and paediatric growth charts, is essential. The need for ongoing follow-up and regular reassessment in this population is also highlighted.

Keywords: AN; EDs; Paediatrics; TGW

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Methods and considerations when determining treatment goal weight (TGW)

To date, both expert consensus and available evidence have helped to inform the determination of TGWs in children and adolescents with anorexia nervosa (AN). TGW is the weight necessary to support puberty, growth and development, physical activity and psychological and social functioning. It is important to contextualize each child’s or adolescent’s TGW according to growth history (weight, height and pubertal stage), changes in body weight and height, energy intake and expenditure, and the extent to which the individual is thought to be malnourished.

Undoubtedly, the method used to determine TGW (e.g., using prior growth percentiles, examining weight and height percentiles, calculating median body mass index [mBMI] or relying on menstrual threshold) can result in vastly different outcomes. Table 1 compares the methods commonly used to determine TGW.

Determining the TGW

To date, clinicians must accept that there is no absolutely correct method for determining a child’s or adolescent’s TGW. At present, to identify one method as optimal would oversimplify a complex issue [1]-[3]. As with many clinical decisions, determining TGW may rely on more than one evidence-based method. Importantly, the summary of methods offered here and in Table 1 recognizes the need for individualized, patient-centred care.

Whenever possible, setting a TGW should rely on careful analysis of a series of accurate anthropometric measurements (height, weight and calculation of BMI) plotted on a paediatric growth chart. Evidence-based recommendations concerning the merits of WHO versus CDC growth charts are beyond the scope of this practice point, but can be found at https://www.cdc.gov/growthcharts/index.htm. Accurate, plotted measurements help the clinician to understand individual premorbid physical growth trajectory and genetic predisposition for body weight, shape and size. Other clinical characteristics, such as age, sex, race, age at pubertal onset, current pubertal stage, pre-morbid dietary history and activity level, and (if applicable) age at menarche and the weight at which periods ceased (menstrual threshold weight) should also be considered on an individual basis.
In cases where growth curve information is not available or incomplete, determining the TGW using the mBMI calculation (50th percentile BMI for age and sex) can be considered. This method is commonly used in clinical practice and in research studies of patients with eating disorders (EDs). However, clinicians should be aware of the limitations of this method, both in children and adolescents with premorbid histories of being at extreme ends of the BMI spectrum, or in cases of atypical AN (e.g., patients who meet all criteria for AN, except despite significant weight loss, their weight is within or above the normal range, as in Table 1, Case 2) [4]. The Society for Adolescent Health and Medicine has noted that: “TGW for a particular patient cannot simply be taken from charts on the basis of normative population data, that is, treatment goal weight is not necessarily the same as the weight associated with median BMI [1].”

Finally, the weight at return of menstrual function (ROM) can also be considered when determining TGW in females. This method only applies to some girls, however. For many, the method is impractical (i.e., in girls who are premenarcheal or who continue to menstruate even after significant weight loss or who use a hormonal contraceptive). While some research has suggested that setting a TGW 2 kg above the menstrual threshold weight can be effective [5], other work has found that ROM occurs at higher weights, on average [6]. Clinicians should remember that weight at ROM must be seen as a minimal requirement for health. To establish regular menstrual cycles and restore lean body mass and general physical health, further weight gain may be needed [7]-[9].

After considering recommendations outlined above, clinicians must use their best clinical judgment to determine a TGW. Consulting with a paediatric ED program can also help. The process for determining TGWs is iterative and must be monitored, recalculated periodically based on growth status and adjusted, and premised on overall health.

Special clinical situations

In cases where nutritional restriction has slowed growth velocity and caused an overall decline in height percentile, conducting a bone age (BA) test is recommended. If BA has been delayed but there is potential for future growth, the clinician may consider assessing the TGW at a percentile consistent with the patient’s premorbid growth pattern to maximize whatever growth potential remains [8]. Evidence suggests that rapid and sustained weight gain back to pre-pubertal weight percentiles can lead to catch-up growth in stature [8].
For some patients, determining an optimal TGW is particularly difficult. A history of dieting or excessive exercise, unstructured or chaotic eating habits, binge-eating, compensatory behaviours (e.g., fasting, self-induced vomiting, misuse of laxatives, diuretics or enemas), previous or co-occurring mental health conditions (e.g., depression or anxiety), or medication use (e.g., stimulants or atypical antipsychotics) can interfere with normal growth and development, as reflected by changes in percentiles on a growth curve. In other cases, prior growth information (i.e., previous height/weight, growth curve records) may not be available, increasing the importance of an accurate, detailed diet, activity and psychosocial history. Clinicians can defer the task of determining a TGW when significant clinical uncertainty exists. In such cases, early treatment goals might best focus on normalizing eating patterns (i.e., to be non-restrictive or to eliminate purging behaviours), in combination with establishing a more balanced lifestyle. Basic assumptions in such cases would be that vital signs, physical exam findings (in females, menstrual function specifically), and laboratory markers are all within an acceptable range, and that ED symptoms and behaviours are absent.

Reassessment of TGW

In a child or adolescent who is being treated for AN, the TGW should be reassessed every 3 to 6 months.

Working with patients, families and caregivers

The TGW should be presented to the patient, family or other caregivers as the minimum weight acceptable for overall health and as a goal that will change as growth and development occur. Education focusing on how AN can interfere with normal physical, psychological and social growth and development should be emphasized. Despite the risk for patient or caregiver anxiety around TGW, it is important not to compromise, especially when adjusting a TGW would run counter to clinical judgment. Lowering the TGW can place a child or adolescent at risk for incomplete recovery.

Conclusion

Establishing a TGW for a child or adolescent with AN is an iterative process that requires an understanding of the evidence-based literature and expert consensus coupled with clinical judgment. Multiple factors inform the process, but individualized attention, especially to premorbid weights, heights, BMI percentiles and paediatric growth charts, is essential. Given the capacity for
further growth and development in children and youth, TGWs should be reassessed regularly as treatment progresses.

Table 1. Setting the TGW: Common methods and important considerations

<table>
<thead>
<tr>
<th>Patient Case 1</th>
<th>TGW determination</th>
<th>Setting the TGW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jamie</td>
<td>TGW based on prior growth (weight, height and BMI percentiles)</td>
<td>Based on the methodology used above, the TGW ranges from 51.5 kg to 58 kg. However, setting the interim TGW at 58 kg, based primarily on her previous growth curves (WHO) is recommended. The clinician will need to communicate to the patient and family that the TGW will be monitored, recalculated frequently and adjusted based on overall health.</td>
</tr>
<tr>
<td></td>
<td>TGW = 58 kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TGW based on weight at same percentile as height percentile</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TGW = 54.5 kg</td>
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<tr>
<td></td>
<td>TGW based on median BMI (mBMI) for age; mBMI = 19.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TGW = 51.5 kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TGW based on menstrual threshold + 2 kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TGW = 54 kg</td>
<td></td>
</tr>
<tr>
<td>Patient Case 2</td>
<td>TGW based on prior growth (weight, height and BMI percentile)</td>
<td></td>
</tr>
<tr>
<td>Chris</td>
<td>TGW = 72</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TGW based on weight at same percentile as height percentile</td>
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<tr>
<td></td>
<td>TGW = 65 kg</td>
<td></td>
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<tr>
<td></td>
<td>TGW based on median BMI (mBMI) for age; mBMI = 19.8</td>
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<tr>
<td></td>
<td>TGW = 60 kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TGW based on menstrual threshold + 2 kg</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Based on the methodology used above, the TGW ranges from 60 kg to 72 kg. However, based on his previous growth curve, dietary
history and activity level, setting the interim TGW at 72 kg is recommended. This TGW is below his previous highest weight, which had been a deviation from his normal growth trajectory. The clinician will need to communicate to the patient and family that the TGW will be monitored, recalculated frequently and adjusted based on overall health.

AN Anorexia nervosa; BMI Body mass index; mBMI Median body mass index; ED Eating disorder; N/A Not applicable; SMR Sexual maturity rating; TGW Target goal weight; WHO World Health Organization

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References


Disclaimer: The recommendations in this position statement do not indicate an exclusive course of treatment or procedure to be followed. Variations, taking into account individual circumstances, may be appropriate. Internet addresses are current at time of publication.

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