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Title

SHINE: A Stepped Care Approach to the Management of Severe Obesity in Young People

Abstract

Weight management is a game of chance for most children and young people (CYP) based on service availability and the level of expertise held by the service provider. Many localities are without established weight management services, and the effectiveness of the services provided is often not well known. SHINE (Self Help Independence Nutrition and Exercise) is the only documented Tier 3 community-based service provider in the UK, offering a plethora of interventions tailored to each CYP. SHINE implements a Stepped Care Approach (SCA) model to treating severe obesity in CYP; as the severity of obesity increases, so does the intensity of intervention. This paper critically describes a SCA and uses this model to exemplify a range of appropriate, available interventions. A SCA can provide a holistic and integrative care pathway for CYP with severe obesity when implemented at Tier 3.

Introduction

Revised clinical guidance for weight management acknowledges the complex nature of obesity and proposes an equally complicated treatment strategy (NICE, 2013). This strategy encourages a holistic and collaborative approach to weight management; focusing on the person rather than the disease and having multiple providers working together, respectively. Access to higher tiers (Tiers 3 & 4) of intervention on the Obesity Care Pathway (DoH, 2013) is currently limited for children and young people (CYP). In a recent mapping document of weight management provision in the UK, only 56% of local authorities reportedly have a Tier 2 service, with 9% having Tier 3 service (PHE, 2015). Given the prevalence of obesity amongst CYP in the UK, this mapping document clearly demonstrates the

deficiency in service provision. Such deficiencies may result in inconsistent treatment, extensive waiting times and fundamentally, fragmented care. Furthermore, we know that a successful weight management approach for one CYP may not be successful for another (NICE, 2013). An effective care and treatment pathway should involve a variety of interventions based on the individual needs of the CYP (NICE, 2014). A Stepped Care Approach (SCA) is one method of integrating and providing multiple tailored interventions to CYP and their families. This paper describes a SCA, and uses SHINE as an example to illustrate how a SCA model may be implemented within community-based weight management services.

A Stepped Care Approach to Weight Management

Treatment options for weight management should be dependent on the needs and circumstances of each person to ensure the most successful outcomes are achieved (Carels *et al.*, 2005; Carels *et al.*, 2012; NICE, 2013). To accept individuality, weight management services could adopt a SCA, meaning that CYP receive the most appropriate level and type of intervention dependent on the degree of obesity and of mutual agreement between CYP and provider. CYP can be offered a basic treatment intervention, for example bibliotherapy, which may be 'stepped up' to more complex interventions, such as psychological therapy, when required. CYP may also be 'stepped down' to less intensive treatments if needed. SHINE provides a wide variety of interventions for CYP (aged 10-17 years, BMI $\geq$99.6th centile) based on the SCA. Referrals are accepted from GPs and Practice Nurses, Teachers, Learning Mentors, Safeguarding Teams, parents and also via self-referral. After referral, the initial step is to conduct a comprehensive assessment to determine individual treatment preferences. This assessment empowers the CYP to choose their own preferred treatment pathway. Although the assessment is initially resource heavy in relation to time and finance, it ensures that CYP are signposted to the most appropriate intervention using the SCA.

An initial assessment at SHINE (1.5 hours) includes:

- *Physiological assessment:* Anthropometric measures (height, weight, body fat percentage, and waist circumference), blood pressure, peak flow, and family medical history are ascertained to help determine health risks.
- *Psychological assessments*: Anxiety and depression scores (White *et al.*, 1999), self-esteem (Rosenberg, 1965), presence of eating disorders, and readiness to change (Prochaska and DiClemente, 1982) are assessed. The assessment also explores history of weight-related bullying, self-harming and suicidal ideation; all three frequently observed in children with obesity (Girardi *et al.*, 2013).

- *Sociological assessment*: May include quality of life measure, diet and eating inventories, and discussion about the association of social networks/relationships and eating behaviours. The extent of physical activity and screen time is also assessed.

Treatment Options and Care Pathway

The initial assessment is conducted by a senior obesity specialist at SHINE. Within the initial assessment, individuals are provided with information on what treatment options are available at SHINE (Figure 1). The following sections of this paper are dedicated to explaining a SCA; with each step of the SCA appraised in Figure 2. An overview and implementation details of the SHINE programme have been reported elsewhere (Sharman and Nobles, 2015).

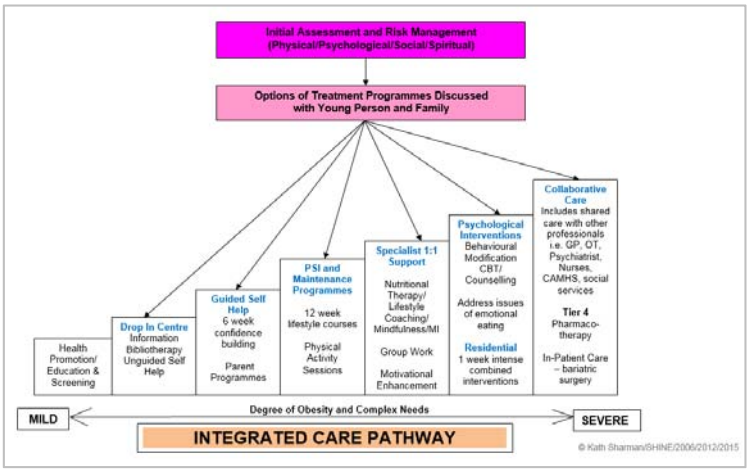

Figure 1: **Interventions provided by SHINE**
Intensity of the SCA increases dependent on severity of obesity and individual needs of CYP. Text in ***blue*** *indicates the service provided by SHINE, with a description below*.

Bibliotherapy

Open access to the 'drop in' centre is available to the CYP and their family, offered on two occasions per week. These drop in sessions use bibliotherapy to provide information to CYP in the form of reading materials. Bibliotherapy is evidenced to improve decision making, personal responsibility and self-empowerment (Latner, 2001). Bibliotherapy is administered in several ways at SHINE: *self-administered bibliotherapy* in which CYP self-select what to read based on material available at the centre; *unguided bibliotherapy* whereby CYP are recommended a self-help book/leaflet to take away and read; and lastly, *guided bibliotherapy* enables SHINE to work through material with CYP or assess depth of understanding using informative resources. The individuals using guided bibliotherapy

attend the centre weekly, fortnightly or monthly for a review, support or assistance. Research suggests that bibliotherapy is most successful when used in conjunction with other therapy/interventions (Hartmann-Boyce *et al.*, 2015; Latner, 2001; Lenkowsky *et al.*, 1987). It is inconclusive about the effectiveness of bibliotherapy as a standalone treatment (Hartmann-Boyce *et al.*, 2015; Latner, 2001).

Short Courses and Psychosocial Interventions

A number of CYP attending SHINE may feel uncomfortable or unconfident in joining the larger group activities/interventions. To counter this initial barrier to engagement, a preparatory programme, BEACH (Behaviour Modification, Exercise, Anxiety Management, Confidence Building and Healthy Eating), may be offered. The BEACH intervention aims to increase confidence, social skills, self-esteem, and promote self-care. BEACH groups are small (3-6 CYP) with content being fun and interactive. Almost all individuals who complete the BEACH programme go onto the Psychosocial Intervention (PSI).

PSIs encapsulate a wide variety of therapies and techniques that address the psychological and social needs of the individual in a given context (Forsman *et al.*, 2011). PSIs are most commonly used for the treatment of mental health conditions, including schizophrenia, anxiety and depression. The use of PSIs in weight management is limited. The PSI is one of SHINE's core interventions that most CYP attend after the initial assessment. The PSI targets social relationships, stress management, and self-esteem alongside dietary improvement, physical activity and behaviour change - the latter three advocated by NICE (2013). The PSI also includes a prolonged maintenance programme of up to one year. SHINE has used this approach since 2003.

The results of the PSI programme are due to be published shortly (Nobles *et al.*, Unpublished). In short, SHINE has high retention (95% of CYP completed the week 12 programme), encouraging mean reductions in BMI SDS (-0.21 units after 12 weeks) and demonstrates strong improvements in depression, anxiety and self-esteem. Interventions beyond the PSI are of a higher intensity and are only considered appropriate when lower intensity interventions have been tried. Each of the more intensive interventions have their own merits and limitations (Figure 2). CYP who access the SHINE programme have often had severe obesity, with a BMI $\geq 99.6^{th}$ centile (Cole *et al.*, 1995; Ells *et al.*, 2015a) for many years. As a result, CYP regularly initiate SHINE with engrained unhealthy habits, episodic self-harming, binge eating tendencies and low self-esteem (Girardi *et al.*, 2013). Many have had unsuccessful weight management attempts in the past, and so present with a resistance to

change, low motivation and little expectation. Therapeutic interventions, which are more intensive than PSI, can be helpful in such scenarios.

Therapeutic Interventions

Nutritional Therapy

SHINE has a specialist nutrition team who offer individuals one-to-one sessions of 30-60 minutes. Traditionally, dieticians focus predominantly on dietary education about the benefits of a healthy diet but seldom target behavioural and emotional aspects of eating (Ho *et al.*, 2013; Oude Luttikhuis *et al.*, 2009). Long-term success of these traditional approaches is unclear, largely due to the heterogeneity of studies and patchy adherence to intervention guidance (Muhlig *et al.*, 2014; Oude Luttikhuis *et al.*, 2009). SHINE nutritionists concentrate more upon the associations between food, emotions, and behaviour, whilst promoting salubrious eating habits and intuitive eating in response to hunger and satiety. SHINE nutritionists use tools such as portion control worksheets, hunger charts and food diaries – both in written and photogenic formats – to assist the CYP with dietary education. The approach is based on concordance rather than compliance; concordance accepts the CYP as an equal in decision making, collaboratively generating information to help them make informed choices (Chatterjee, 2006; Stevenson *et al.*, 2004).

Psychological Therapies

SHINE has a number of qualified adolescent therapists who are trained in weight management. The therapists provide various counselling interventions to CYP who require them, including: Person-Centred Counselling, Psychodynamic Therapy, Cognitive Behavioural Therapy and Play and Creative Therapy. SHINE therapists help CYP explore underlying psychological issues which may be contributing to their weight. On completion of therapy, individuals may return to lower intensity interventions such as the PSI or be referred to external agencies such as Child and Adolescent Mental Health Services (CAMHS). Four domains are assessed prior to and during counselling using the Clinical Outcome Routine Evaluation tool (CORE, 1998; Evans *et al.*, 2002): well-being, symptomology, functioning and risk. The intensity and type of therapeutic intervention is determined by assessment outcomes and through negotiation with the CYP. More recently, SHINE has introduced additional psychological techniques to weight management such as Mindful Eating (Dalen *et al.*, 2015).

In traditional weight management, obesity is often treated as a medicalised condition where treatment predominantly targets the energy balance directly (Jensen *et al.*, 2014). Obesity is now known to be a multifaceted, complex condition and treatment must consider the wider determinants associated with having obesity (Bacon and Aphramor, 2011; Bombak, 2013). These wider determinants may include psychosocial health, for example low self-esteem, social anxiety, and/or depression.

Pharmacotherapy

Orlistat is the only licensed anti-obesity medication that can be prescribed by a Paediatrician for CYP in the UK (NHS Choices, 2014). Orlistat, a gastrointestinal lipase inhibitor, can reduce dietary fat absorption by up to one third (Matson and Fallon, 2012), resulting in lower calorific intake. Initial weight reductions are excessive and widely reported (Matson and Fallon, 2012). Adverse effects of Orlistat are also commonly noted: abdominal discomfort, fatty stools, and flatulence (Oude Luttikhuis *et al.*, 2009). These adverse effects can be distressing for CYP, but guidance on how to reduce fat intake can significantly ameliorate these effects.

Pharmacotherapy for CYP is considered as a second line of treatment when nutritional, behavioural and psychological therapy have proved inadequate. As such, pharmacotherapy is referred to as a Tier 4 intervention on the Obesity Care Pathway (DoH, 2013; NICE, 2015). Whilst Orlistat may be effective in creating an energy deficit, medication does not always alter the individual's attitude towards food (Svendsen *et al.*, 2008) and anti-obesity medication is preferably administered alongside lifestyle/additional intervention (Oude Luttikhuis *et al.*, 2009; Rucker *et al.*, 2007; Whitlock *et al.*, 2010). At SHINE, only a small percentage of individuals are taking anti-obesity medication. SHINE does not prescribe medication.

Residential Intervention

Residential interventions give CYP the opportunity to temporarily change their lifestyle: from daily routine, to changing dietary and sleeping habits, to activity patterns. Residential experiences are completely immersive, and are regarded as a high intensity intervention (NICE, 2015). Access to this level of provision in the UK is extremely limited and extremely costly. Of those that are available, interventions range from one to eight weeks in duration and focus on education, dietary restriction, physical activity increases and behaviour modification (Gately *et al.*, 2005; Gately *et al.*, 2000). These interventions have demonstrated significant short-term results when compared to inpatient

programmes (Braet *et al.*, 2004). Data on long-term, sustained results are less documented in the literature.

SHINE delivers an annual one week residential programme in Derbyshire for a select number of high-need participants who have engaged in many of the lower intensity SHINE interventions previously. As a level of trust is already established between CYP and delivery staff because of previous programme engagement, CYP are more open to discuss resistance- and barriers- to behaviour change. The residential is an intense seven day programme, with each day comprising of: two hours of group-based psychosocial work which enables an in-depth exploration of personal challenges; two hours of group-based physical activity; one hour of personal development; and, one hour of personal reflection time with one-to-one access to a SHINE counsellor. Evening activities such as team building exercises, a fashion show, and talent sharing are optional to attend. Use of mobile phones and social networking is prohibited. The group plan, prepare, cook and portion their own meals throughout the week. Finally, CYP create a Personal Development Plan on the last day of the residential to promote behaviour change maintenance. CYP can also be signposted back to additional services of the SCA, providing an integrated care pathway.

Surgical Interventions

CYP with *extremely* severe obesity may be referred for bariatric surgery if they have associated co-morbidities. This is the final step of the Obesity Care Pathway, and regarded as the last option for weight management (DoH, 2013; NICE, 2015). Bariatric surgery, which includes a plethora of procedures (e.g. laparoscopic gastric band, gastric bypass, sleeve gastrectomy, balloon surgery) has resulted in weight loss of up to 34.6kg (BMI: -12.7kg/m^2) two years after surgery (Ells *et al.*, 2015b). However bariatric surgery can lead to many post-operative complications, including: wound infection, stomach ulcers, hair loss, vitamin deficiency, and mortality (Black *et al.*, 2013). Although weight loss may be rapid and therefore personally satisfying, bariatric surgery is not simply a 'quick fix' and much psychological preparation is required and potential adverse effects need to be accounted for (Phipps, 2011; Romirowsky *et al.*, 2015; Stefater *et al.*, 2013). Long-term behaviour change, including dietary modification, is still required. Rapid weight and fat loss may also lead to excess skin which may require further surgical procedures to be removed, however cosmetic surgery is not routinely provided by the National Health Service (NHS). Excess skin can result in body dissatisfaction and low self-esteem which may necessitate long-term psychological support. SHINE is able to provide pre- and post- surgery counselling for CYP who consider bariatric procedures.

Whilst SHINE aims to prevent the need for bariatric surgery, some individuals will undergo bariatric procedures; only four young people have been referred for bariatric surgery in the past eight years from SHINE. To ensure that CYP are transitioned appropriately to Tier 4 intervention, SHINE upholds a strong relationship with Sheffield Children's Hospital.

[INSERT FIGURE TWO]

Conclusion

NICE (2014) suggests that an integrated approach be taken to preventing and treating obesity, for example where Local Authorities, Clinical Commissioning Groups and Health and Well-being Boards work collaboratively together. This would ensure that people with obesity can be referred to the most appropriate tier of intervention (DoH, 2013), and that different tiers of intervention are widely available. Whilst the NICE (2014) guidance on Tier 3 was developed for adult populations, the same principles should be applied to CYP weight management services. One way to create a seamless transition between tiers of intervention is to operate a SCA using a single weight management provider, such as SHINE. Devoid of such an integrated care pathway, transitions between services and interventions can be staggered, poorly implemented and in some cases, non-existent.

To our knowledge, SHINE is the only community-based weight management service for CYP at Tier 3, providing a wide range of interventions and a well-established maintenance programme. SHINE promotes and upholds collaborative working relationships with a wide range of healthcare professionals, ensuring that all external members of the care pathway, such as safeguarding, clinicians, and consultants, are appropriately informed about the progress of the CYP. This truly provides an integrative holistic approach to weight management. Until weight management services and strategies become less fragmented, the battle against child, adolescent and adult obesity will be arduous. A well-designed, adequately funded and resourced, integrated approach to weight management is required to gain and sustain optimum results. Only then will change really happen.

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