Community Healthcare and Technology to Enhance Communication in Pediatric Obesity Care

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Abstract

Childhood obesity continues to be a critical healthcare issue and a paradigm of a pervasive chronic disease affecting even our youngest children. When considered within the context of the socioecological model, the factors that influence weight status, including the social determinants of health, limit the impact of multidisciplinary care that occurs solely within the medical setting. Coordinated care that incorporates communication between the healthcare and community sectors is necessary to more effectively prevent and treat obesity. In this article, the Expert Exchange authors, with input from providers convened at an international pediatric meeting, provide recommendations to address this critical issue. These recommendations draw upon examples from the management of other chronic conditions that might be applied to the treatment of obesity, such as the use of care plans and health assessment forms to allow weight management specialists and community personnel (*e.g.*, school counselors) to communicate about treatment recommendations and responses. To facilitate communication across the healthcare and community sectors, practical considerations regarding the development and/or evaluation of communication tools are presented. In addition, the use of technology to enhance healthcare–community communication is explored as a means to decrease the barriers to collaboration and to create a web of connection between the community and healthcare providers that promote wellness and a healthy weight status.

Keywords: childhood obesity; community; technology

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Introduction

Childhood obesity rates have increased more than threefold since the 1960s, and recognition and understanding of community-related factors contributing to the obesity epidemic are well established.^{1–3} Given the multifactorial nature of childhood obesity causes, engaging both community assets along with medical services is necessary in both the prevention and treatment of childhood obesity.^{4–7}

To date, treatment of the medical aspects of obesity has been housed within medical centers with limited emphasis on community connections. This current approach, involving primary care and specialized providers, faces several barriers in the treatment of children with obesity.⁸ Previous articles have described provider perspectives regarding the limitations in capacity, time, communication, and resources, as well as families' inadequate access to quality food, transportation, and safe play areas.^{9,10} All are challenges to treatment and coordination of care.⁸

Despite these barriers, efforts to enhance obesity treatment have been developed.^{11,12} In 2007, The American Academy of Pediatrics (AAP) recommended a 4-stage approach for the prevention and treatment of obesity in children.⁵ This approach calls for the initial medical evaluation and management in the primary care setting, followed by secondary referral to tertiary care pediatric weight management centers (PWMC) for children not responding to first-line care.¹³ Inherent in this shared treatment approach is communication between primary care providers (PCPs), obesity specialists, and community services.¹⁴

Objective and Methods

In 2014, the Institute for Healthy Childhood Weight of the AAP and the Children's Hospital Association (CHA) convened the Expert Exchange (EE). This interprofessional group of 40 childhood obesity specialists explored possible improvements in the quality of care and coordination between the primary and tertiary care settings treating children with obesity. A subset of the EE, the "Framework Committee," sought to investigate how communication across the healthcare and community sectors can be operationalized and standardized across socioecological levels to enhance the care of the child with obesity. What follows is a review of this topic drawn from the extant literature and qualitative input from healthcare providers in the field. The literature analysis and review for this document had three sources: the literature review committee of the EE, the Framework Committee of the EE, and a workshop held at the 2015 Pediatric Academic Societies (PAS) meeting. Members of the EE Framework Committee graded level of evidence based on criteria developed by the Oxford Center for Evidence-Based Medicine.¹⁵ The PAS workshop attracted 49 attendees, including medical student/resident learners, PCPs, dietitians, exercise physiologists/kinesiologists, and PWMC providers. The recommendations in this article were a synthesis of the information and a review and analysis of these three sources. They serve as a

starting point to develop and evaluate effective communication strategies across healthcare and community sectors.

Healthcare–Community Sector Communication within the Context of the Socioecological Model and Social Determinants of Health

The relevance of community connections takes on greater significance when the multifaceted management of severe childhood obesity is viewed through the lens of the socioecological model, a scheme to understand the dynamic interaction of individuals and a complex environment.¹⁶ The socioecological model recognizes there are several levels or components that interact: the individual, interpersonal, organizational, community, and policy levels. If we consider treatment of early onset severe obesity in the context of the socioecological model we see that an impact must be made in all these areas.

Using this model, the Institute of Medicine (IOM), in its 2005 report, suggested a comprehensive approach to childhood obesity prevention and treatment. This called for efforts at the federal government, industry and media, state and local government, healthcare provider, community and nonprofit organization, state and local education authority and school, and parent and family levels.¹⁷ In 2012, the IOM's report on Accelerating Progress in Obesity Prevention identified solutions that could involve schools, workplaces, and healthcare, ranging from marketing, physical activity, and healthy nutrition.¹⁸ In 2015, the IOM was reconstituted into the National Academy of Medicine and further refined the framework, calling for the integration of individuals, families, community systems, and care delivery through advocacy, data exchange, financing, governance and regulation, engagement technology, and communication.¹⁹

This integrated model offers a holistic approach to addressing obesity that impacts previously described social determinants of health as these factors influence higher weight trajectories of younger children.^{20–23} Connections between community-based services and programs, where families and children live, impact the outcomes of obesity management.²⁴ Many children who attend child care, school, and after-school care have chronic conditions, such as obesity, asthma, diabetes, autism, and sickle cell disease, but in contrast to other chronic conditions there are no established guidelines for care while outside the home for children with obesity. Consequently, school personnel and providers do not often discuss how the child's severe obesity might affect day-to-day functioning.²⁵ Hoffman et al. recently conducted a randomized trial of the addition of community-based programming to standard clinical care in 97 school-aged children.²⁶ While those receiving the community-based programming with several components, including cooking classes and family fitness, did not show a change in BMI at 6 months, but there was improved fitness. Still, there is a paucity of published literature about tertiary care weight management provider communication with community organizations, including schools. However, aspects

of published communication models between healthcare systems and community organizations regarding the care of children with other chronic conditions could be applied to pediatric obesity management.

Incorporation of Tools Used in Other Chronic Conditions to Facilitate Healthcare–Community Sector Communication

Written care plans are available for a limited number of chronic diseases affecting school children. One example can be found in the care of children with emotional/behavioral, developmental, and learning disabilities. Management during the school days for children with these conditions is agreed upon within an Individual Education Plan (IEP) or 504 plan.²⁷ Care coordination for patients with asthma is centered around a written asthma action plan, developed by the primary care providers and carried out by the school nurse or staff during child care and school hours. Action plans promote self-management, facilitate improved care when the patient is away from their home, and can improve school attendance.²⁸ Care plans for the treatment of obesity may be a new approach that could incorporate additional sources of support (e.g., teachers, school nurses, and school counselors) into the multidisciplinary team.

Communication of the care plan might be achieved using health assessment forms. These forms, which confirm the health status of children, are often the first communications between healthcare providers and community organization staff. Since these forms are often a requirement to enroll in several programs, school, early childhood education, sports participation, and camps, a standard practice for children with chronic diseases could require that a detailed care plan accompanies the basic physical examination and vaccine record. Eventually a care plan for children with chronic diseases, with input from the patient/family, PCP, and specialist could become a required part of a child's entrance into child care, school, or community programs. This will require that both community organizations and medical providers develop a system to initiate and support these care recommendations.

Development of Communication Tools for Use in the Treatment of Childhood Obesity

While the health assessment form provides an opportunity for initial communication between the healthcare and community sectors, methods for ongoing communication and collaboration are needed. Tools for communication and education between patients and families, their healthcare providers, and community resource organizations are important to ensure consistent messaging. They often augment care coordination, facilitate data exchange, and enhance patient/family understanding. The AAP Obesity Section recently published a policy statement on stigma experienced by children and adolescents with obesity.²⁹ The authors point out that insensitive words can stigmatize and add to further isolation and discrimination of children

and adolescent with obesity, highlighting the need for consistent messaging between both medical providers and community personnel.³⁰ They recommend that neutral language should be used, such as weight and BMI rather than obesity. Using six focus groups of Latino parents, Knierim et al. documented the parents prefer “demasiado peso por su salud,” (too much weight for his/her health) to other terms for excess weight.³¹ Kreuter, in a review, suggests interventions and programs will be more effective if they are culturally tailored to the populations that are being addressed.³² Health literacy of a population, the degree to which individuals have the capacity to obtain, process, and understand basic information and services to make appropriate decisions regarding their health can affect participants' ability to engage in their own healthcare. In a meta-analysis of 220 studies, Miller demonstrated that health literacy is tied to adherence and that adherence is improved if health literacy is improved.³³

Readability in medical handouts and documents is an important issue as well. Wang et al. in a review of the literature on readability noted that 36% of the U.S. population has basic or below health literacy.³⁴ Their findings show that the Flesch-Kincaid formula was the most commonly used formula for determining readability, but the “Simple Measure of Gobbledygook” (SMOG) formula performed more consistently and appears to be a better choice for healthcare communication tools. Rudd et al. in a review of medical and public health literature noted that reading ability of most adults falls below the reading level of typical educational materials and other medical documents.³⁵ Thus, pictorial presentations are often better received and understood. In their review of pictograms' use in healthcare materials, Dowse and Ehlers found that pictograms may not be effective in knowledge acquisition, but are very helpful in helping patients recall instructions.³⁶ A resource for nonstigmatizing images of individuals with obesity and a variety of multirace/ethnic children with obesity can be found in the Rudd Center Image Gallery.³⁷

How providers communicate likely outcomes is important as patients and their family often have unrealistic expectations in the degree and time for weight loss. In a multicenter survey of parents from pediatric weight management programs, Hampl et al. showed that mismatched expectations in parent and medical provider outcomes occur in over one third and can lead to poorer adherence to a weight management program.³⁸

Use of Technology to Enhance Healthcare–Community Communication

Electronic health records. The need for communication and collaboration between healthcare providers and community organizations in the care of children with obesity is clear. As hospital systems and medical practices transition to electronic health records (EHRs), the ability for providers to communicate may become easier.^{39,40} The use of EHRs has also opened the door to another member of the

care team, the patient. Patients and families are often overlooked as members of their own care team, both by providers and by the patients themselves. However, self-management is critical to achieving positive health outcomes. Many hospitals and practices using EHRs have established patient portals to enhance patient engagement. The portal provides secure access to select portions of a patient's health records and allows for bidirectional patient-provider communication. The potential for EHRs to improve connections with patients has been explored by the National Initiative for Child Health Quality (NICHQ) that helped community teams "Collaborate for a Healthy Weight" and to enhance EHRs to include healthy weight "e-plans" that are accessible beyond the confines of the medical setting.⁴¹

Text messaging and mobile/web applications. Communications technology has the potential to facilitate sharing between patients, their providers, their sources of support, and community personal/resources, creating a web of connection to aid in weight management efforts. An example of an app that helps connect patients with community resources is the free Apple and Android app and website Choose Healthier.⁴² Developed and piloted in Central Texas, this app seeks to empower families with hyperlocalized information on health promotion programs and resources near where they live. Another app developed for adolescents in Detroit, uses geolocation technology to provide healthy food suggestions available in eating venues in their neighborhood, and to send text messages prompting healthy choices when they are there. Studies show that adolescents with obesity find text messages an acceptable means of supporting weight management if the messages are carefully constructed.⁴³ Armstrong et al. conducted a randomized controlled trial (RCT) of motivational interviewing text messages to parents of children in a weight management program and found little impact on BMI change but decreased attrition from the program.⁴⁴ The past two decades have seen a growing number of websites and smartphone applications that address healthy eating, activity, and weight management, with some specific sites and programs created for children. Technology also has the potential to generate more accurate communication of behavioral information back to providers, and with social media components it can link patients, their support network, and their providers.^{45,46} While applications are abundant and many are free, their efficacy is almost universally unknown and many are not HIPAA compliant.^{47,48} Thus, while applications may allow enhanced connection and communication, review of an application's functions, including possible risk as well as, when relevant, its management of protected patient information, is recommended before provider endorsement.

Telehealth. Telehealth offers the potential to include a wider range of participants in weight management visits. For example, should parents and patients desire involvement of additional family members, or relevant contacts,

such as their school nurse or school counselor, telehealth connections may facilitate their incorporation without the burden of needing to be physically present at the encounter. This could enhance seamless communication and buy-in from those who might have an impact on the patient's environment and care.⁴⁹ In a RCT in a rural setting, Fleischman et al. compared PCP in-person clinic visits with PCP visits plus telehealth obesity subspecialist visits and found lower BMI z-score in the PCP plus telehealth group.⁵⁰

Addressing Barriers to Healthcare-Community Connections

To solicit further input regarding communication practices between healthcare and community sectors and ways to address the barriers that exist, the EE Framework Committee hosted a workshop at the 2015 PAS meeting. The workshop attracted 49 attendees, including medical student/resident learners, PCPs, dietitians, exercise physiologists/kinesiologists, and PPMC providers. In small groups, participants addressed questions about the barriers faced in communication between the healthcare sector and community organizations for managing obesity, and they provided feedback on potential solutions (Table 1). The groups identified multiple barriers to coordinated care. Community-related issues included lack of communication systems and difficulty accessing mental health services. Barriers and potential solutions offered by workshop participants for establishing a successful obesity care web of connections are summarized in Table 2. Workshop participants also noted that community resources, such as the schools, social service agencies, community mental health services, and recreation centers, play a critical role in caring for children and their families.

Finally, participants discussed the obligation to incorporate training on obesity prevention and management into medical and other healthcare education. Learners can have a role in operationalizing community connections in multiple ways: working with patients/families to determine goals (e.g., through the use of motivational interviewing), helping families navigate the system and schedule appointments for visits and laboratories, completing telephone follow-up with families, updating members of the care team, and introducing lifestyle apps/websites to patients/families. These activities are mutually beneficial, providing the families with additional support from the healthcare team and offering learners avenues to become better trained in obesity care, a health concern they undoubtedly will encounter regardless of future specialty choice.

Limitations

There are of course several limitations to the work of this EE Committee. Given that our review was not a systematic review nor used true qualitative coding methods, we make suggestions to care rather than true recommendations. Also, our PAS workshop group included all those who

Table 1. Questions for Workshop Breakout Session

1. RE: PCP processes:	
a. What are approaches to ensure patient agreement with importance of referral to weight management?	
b. How do you know that the program you are referring to is a good fit for your patient/family?	
c. How do you want to establish the division of care (transfer, comanagement, one time consult) with the PWMC?	
d. What resources do you want from PWMC to support PCP management of your patients with obesity, if any?	
e. How do you want to communicate with PWMC?	
2. RE: PWMC processes:	
a. What information is important to know about the referred patient, and how should that be conveyed?	
b. What clinical information do you need from PCPs?	
c. What type of patient referral is appropriate, and what process should be in place to ensure fit?	
d. How do you decide division of care once the consultation is completed?	
e. How should information be exchanged between PWMC and PCP?	
f. How do care plans apply to weight management? How are care plans shared with the PCP?	
g. How do you want to communicate with PCPs?	
3. Healthcare team and patient/family interface:	
a. How to communicate: prereferral, consultative, management phase, transition?	
b. What clinical information is needed?	
c. What information do you want to get to patient/families, and how do you do that (prereferral, consultative, management phase, transition)?	
4. Health Care teams' and patients' linkages with community-based resources:	
a. How do we know what community resources are available?	
b. What are the best ways to communicate with community services?	
c. What information should be exchanged?	
5. How do students/residents fit into this scheme?	
6. What are the barriers between PCP and PWMC?	
7. What are the barriers between PCP and patient/family?	
8. What are the barriers between patient/family and PWMC?	
9. What are the barriers between community services and patient/family?	
10. What are the barriers between community services and medical services?	
PCP, primary care provider; PWMC, pediatric weight management program.	

attended the workshop. Thus, while those attending have considerable experience in their respective fields, the workshop group was a convenience sample of practitioners and experts.

Suggestions

Caring for children with obesity requires synthesizing elements of a tremendously complex sociomedical problem. However the committee was able to come to consensus on several issues and develop a number of suggestions for coordination of care. It should be mentioned that these suggestions are based on review of existing models, review of the recent IOM framework, expert opinion, and the suggestions of a broad array of

knowledgeable providers at our PAS workshop. The committee suggests the following in order of highest level of evidence (Reference and level of evidence by Oxford Center Criteria follow each suggestion). The Oxford Center has a five-level scheme, where evidence is summarized in Table 3.¹⁵ The lower the number and letter, the higher the level of evidence (RCT, SR=systemic review). The suggestions are listed in order in approximate strength of evidence:

- (1) Innovative technology available through smartphones and tablets may help engage patients in their treatment (Woolford et al.,⁴³ Focus Group, 3b; Armstrong et al.⁴⁴; Martin et al.,⁴⁶ RCT, 1b; Schoffman et al.,⁴⁷ Case Series, 4RTC, 1b; Brannon and Cushing,⁴⁸ SR, 1a).

Table 2. Barriers and Potential Aids to Support Connections with the Community Sector

Barrier or issue	Remedies
Community services Quality food access Exercise programs Schools Mental health services Social services	Cataloging community resources and making a list available to medical/community care takers Partnering with YMCAs, schools, community centers for physical activity programs Participating in community action meetings Schools Local government agencies Religious organizations Displaying consistent public messaging Demonstrating an alliance of care Using WIC services Promoting breastfeeding Healthcare provider advocacy Schools Public health policy
Cultural/family issues	Understanding family and cultural values/beliefs Having understandable communication tools that fit values and language Creating specific and realistic goals Assessing and addressing patient expectations Assessing patient satisfaction

WIC, Women, Infants and Children; YMCA.

- (2) Prevention and treatment of obesity should be viewed as a shared community responsibility (Haemer et al.,⁶ SR, 3a; Glickman et al.,¹⁸ SR, 2a).
- (3) Telehealth should be expanded as it widens involvement in care for patients/families and relevant community partners (Cohen, et al.,⁴⁹ SR, 2a).
- (4) Patients can be a part of treatment, by educating themselves and helping providers bridge gaps in care (Burke et al.,⁴⁵ SR, 2a).
- (5) Providers should partner with schools and community agencies to expand family physical activity, nutrition, and behavioral resources (Frieden et al.,⁸ SR, 2b; Gentile et al.,¹⁶ Individual Cohort Study, 2b; Greenberg et al.,¹⁴ SR, 3a).

- (6) Care should be family centered and tools used by the PCP/PWMC team need to be culturally appropriate and understandable (Oude et al.¹² SR 3a; Pont et al.,²⁹ SR, 3a; Puhl et al.,³⁰ Survey, 3b; Knierim et al.,³¹ Focus Group, 3b; Wang et al.,³⁴ SR, 3a).
- (7) EHR systems should be enhanced to provide improved communication to and from, patients/families, PCPs, and the PWMC team (Rattay et al.,⁴⁰ Cohort Prospective, 3a).
- (8) Providers should screen available applications and websites before recommending their use to ensure suitability (EE/PAS Workshop Group, Expert Opinion, 5).

The work and suggestions of the committee represent a first step in operationalizing a framework for care of children with obesity in a real-world setting. Much work remains to be done to strengthen these connections and to evaluate their impact on outcomes.

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Table 3. Summary of Oxford Center Level of Evidence¹⁵

Level of evidence	Study/analysis type
1a	Systematic review with homogeneity of RCTs
1b	Individual RCT
1c	All or none case series
2a	Systematic review with homogeneity of cohort studies
2b	Individual cohort study
2c	"Outcomes" Research; Ecological studies
3a	Systematic review with homogeneity of case-control studies
3b	Individual case-control study
4	Case series
5	Expert opinion

RCT, randomized controlled trial.

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