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## Development and application of a cost tool for a primary care based intensive health behavior and lifestyle treatment

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### Abstract

**Objective:** This paper aims to describe the development and application of a cost tool to help predict return on investment and sustainability of the Healthy Weight Clinic Family Healthy Weight Program (FHWP) through insurance reimbursement.

**Methods:** Case studies to apply the cost tool were conducted with 3 sites to assess the break-even point for clinic patient volume (i.e., financial neutral point: operational costs=revenue) during implementation. Financial neutral points were based on average reimbursement rates per health center.

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Disclosure

The authors declared no conflict of interest.

**Results:** The annual fixed cost of the intervention ranged from \$65,252 to \$79,024. The average revenue ranged from \$806-\$1,663 per patient through medical reimbursement, and the clinics needed to care for an average of 37-81 patients annually to break even.

**Conclusions:** Use of an adaptable cost tool that captures reimbursement of clinical provider time and a minimum stream of clinical volume can equip decision makers in planning financially to implement and sustain a clinically-based FHWP.

### Keywords

Budget impact analysis; pediatrics; intensive health behavior and lifestyle treatment; family healthy weight program; implementation science

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## Introduction

Over 14 million children and adolescents in the United States have obesity (1), defined as a BMI at or above the age- and sex-specific 95th percentile (2). The economic burden of obesity in the United States is substantial, with annual direct medical costs of childhood obesity estimated at \$14.3 billion and future economic burden of an additional \$45 billion of direct medical costs and \$208 billion due to lost productivity when children transition into adulthood (3–5).

The United States Preventive Services Task Force (USPSTF) (6) and American Academy of Pediatrics (AAP) Clinical Practice Guidelines (7) recommends clinician screening of children  $\geq 2$  years of age for obesity and referral to comprehensive, intensive health behavior and lifestyle treatment (IHBLT). IHBLT provides behavior modification and counseling, as well as health education and skill-building on various topics, including nutrition and physical activity to families, ideally delivering 26 or more hours over 3 to 12 months. Despite the evidence base for IHBLT, access to these programs remains a challenge, with a primary reason being financial sustainability. Specifically, Medicaid and private insurance differ in coverage, eligibility, and reimbursement. Medicaid is government-funded and provides healthcare to low-income individuals, families, pregnant women, the elderly, and individuals with disabilities. It is funded by federal and state governments, therefore, benefits and eligibility vary by state (8). Private insurance is employer-sponsored or purchased by individuals and offers a larger provider network, but includes higher premiums, copays, and deductibles (9). Healthcare clinics in the United States operate under different models, such as federally qualified health centers (FQHCs) and academic medical centers (10). Many clinics accept Medicaid and private insurance, but reimbursement from Medicaid can be lower than private insurance, which impacts provider participation and availability of services (11). Thus, there is a growing need to support implementation and dissemination of financially sustainable, cost-effective IHBLT in clinic and community settings.

The objective of this study was to evaluate a cost tool developed for those health centers implementing the Healthy Weight Clinic (HWC), a Centers for Disease Control and Prevention (CDC) recognized family healthy weight program (FHWP) that aligns to IHBLT. This cost tool can provide an estimate of site-specific budget impact analysis (BIA) to

inform the 1) expected operational costs after start-up and 2) minimum number of patients needed to be seen to sustain the program financially using 2024 medical reimbursement models.

## Methods

### CORD 3.0 Healthy Weight Clinic

The HWC built upon effective, evidence-based pediatric weight management interventions, including Connect for Health (12) Mass in Motion (13) and Clinic and Community Approaches to Healthy Weight (14) and was designed for delivery in clinical settings. An implementation package to facilitate dissemination and adoption of the HWC was developed by Massachusetts General Hospital (MGH) and the AAP Institute for Healthy Childhood Weight (Institute) and tested through the CDC-funded Childhood Obesity Research Demonstration Project 3.0 (U18DP006424, PI: Fiechtner). The HWC is a comprehensive 12-month multidisciplinary clinic-based healthy weight intervention that was delivered through a Type III hybrid effectiveness-implementation study (15). Components of the intervention package are outlined in Table 1. The full study design is described in greater detail elsewhere (16)

### Development of the Cost tool

The cost tool was developed from previous work (17) in providing costing for an HIV intervention. This study adapted the tool for the HWC and focused on the inputs of interest (e.g., salaries for Primary Care Providers (PCPs), Registered Dietitians (RDs), Community Health Workers (CHWs) and medical assistants) (supporting information S1). These salaries included time spent on delivery of the program and included both in person and telehealth contact. The spreadsheet-based cost tool includes parametric models of cost inputs and allows for scenario analyses (i.e., varying assumptions about cost inputs such as staff salaries or contextual and operational differences). The cost calculator enables health centers to determine site-specific operational costs while accounting for geographical characteristics, such as urban versus rural sites. Sensitivity analysis was conducted on both cost estimates; ranges of values analyzed were based on average no show rates (50%) and reimbursement. The cost tool was applied at 3 sites as case studies to assess the break-even point for clinic volume (i.e., financial neutral point: operational costs=revenue). Cost and inputs for the HWC intervention included staff wages based on state and regional estimates from the Bureau of Labor Statistics (18) (PCP, RD, CHW, and medical assistant). Medical reimbursement was based on the roles of CHW, RD, and PCPs. The costs were calculated assuming no overhead costs (i.e., health center had clinic space and other infrastructure). However, the tool does provide an option to include overhead or indirect costs. Additionally, training modules, technical assistance, office hours, and a structured quality improvement learning collaborative (healthcare providers can earn MOC and CME or CEU credits) were included in the grant funding for the AAP and MGH team; thus, this cost was not shared by health centers.

Cost tool inputs and assumptions are summarized in Table 2 and are based on conversations with sites and past studies (19). The percent of visits that were billed through Medicaid

versus private insurance varied by site. Site 1 (Mississippi (MS) FQHC) reported 100% of visits were billed through Medicaid, site 2 (Massachusetts (MA) FQHC) reported 98% of visits were billed through Medicaid versus 2% private insurance, and site 3 (MA academic medical center) reported 50% Medicaid and 50% private insurance.

### Budget Impact Analysis

Data collected for the BIA provides practical estimates in a Microsoft Excel cost calculator that is adaptable to other sites for future implementation to determine cost and financial planning for health centers wishing to implement the HWC. The BIA follows guidance outlined by the Consolidated Health Economic Evaluation Reporting Standards and the International Society for Pharmacoeconomics and Outcomes Research (20,21). The original cost tracking tool and user guide were funded and adopted by Health Resources and Services Administration (HRSA) and the National Alliance of State and Territorial AIDS Directors (NASTAD) for BIA, with micro costing applicable to the HWC (17,22)

### Results

Cost of the program, revenue generated from Evaluation and Management (E/M) and Medical Nutrition Therapy (MNT) Current Procedural Terminology (CPT) codes, and break-even points are shown in Table 2. The total cost of each program is a fixed operating cost that varies based on maximum capacity which varies across the three sites. The annual fixed cost of the intervention ranged from \$61,957 for MA FQHC to \$79,024 for the MA academic medical center. With each location the maximum number of patients seen annually was fixed at 75 at the MS FQHC (Table 2). Revenue estimates include reimbursement rates for direct delivery services from E/M codes (99213, 99214 and 99215) used by PCPs for individual and groups visits as well as MNT codes 97803 and 97804 used by RDs at individual and group visits. The average revenue per patient is highest at the MA academic medical center (\$1437) and lowest at the MS FQHC (\$806). Differences in revenue reflect known variations in reimbursement differences largely driven by geographic location and setting (hospital clinic versus community clinic i.e., FQHC). Based on the annual fixed cost of the intervention and the average reimbursement per patient, the economic break-even point for each site was calculated which varied from 37 patients for the MA FQHC to 81 patients for the MS FQHC. The break-even point reflects economic sustainability of the intervention however, when comparing number of patients needed to break-even relative to maximum clinical capacity, the MS FQHC at a maximum capacity of 75 and a break-even of 81 patients, falls short by six patients for financial sustainability also reflecting much tighter revenue margins. On the other hand, MA FQHC and MA academic medical center data suggest less restrictive revenue margins of their respective break-even number of patients relative to maximum capacity.

### Discussion

Results showed the range of costs and break-even points across different clinical sites implementing the HWC. However, there is variability across the sites in terms of costs, reimbursement, and break-even points, despite implementation of the same basic HWC model.

This variability is highlighted in Table 2. Total cost of the program per year was highest in the academic medical center. However, the break-even point was highest in the MS FQHC, compared to the MA FQHC, due to the lack of an RD that could bill for individual and group visits and higher PCP wages. Given the variability that exists, this cost tool can equip decision makers in planning for implementation and sustainability of the HWC for their region by determining predicted costs, revenue, and break-even points to make informed decisions related to feasibility, finances, and operations (23). For example, if reimbursement of RDs is unavailable for a given HWC component or function, appropriately trained staff with reimbursable time within that particular setting (e.g., behavioral health providers) could potentially be assigned responsibility for or included within that visit or session and use appropriate CPT codes. Similarly, social workers who can bill, rather than CHWs, might be chosen to provide community referrals to HWC patients and families to address social drivers of health and help navigate care.

Healthcare provider salaries contribute a large portion of the inputs for the HWC. This experience using the cost tool illuminated a variety of challenges associated with reimbursement models that could impede the spread and scale of these evidence-based FHWP. Specifically, the case studies conducted in a range of settings highlighted critical gaps in reimbursement and roles in the HWC. First, CHWs who fulfill critical functions in the model are not reimbursable in either state where the HWC was implemented. Second, RDs, who are particularly well suited for assessing and delivering nutritional education and counseling within the HWC model, are inconsistently reimbursed, and insurance plans often have caps on the number of visits offered, thus meeting <26 hours of recommended intervention time. Addressing the additional challenge of successful, ongoing recruitment and retention into the program—a well-known challenge for pediatric obesity interventions—could also improve per patient reimbursement (24). Additionally, under current conditions, maximizing insurance reimbursement of physician time appears key to the sustainability and future scalability of FHWP to alleviate some of the inconsistencies noted above. A potential, less costly model could include general supervision by a licensed provider (e.g., advanced practice registered nurse (RN), psychologist) and not direct delivery of care, which other FHWP models use.

Ideal reimbursement models would increase the likelihood that HWCs can be financially sustained. Improvements could include reimbursement payments for Medicaid patients, the ability to code for complex interventions at the highest level for E/M procedure codes, and billing for services provided by various multidisciplinary team members, including CHWs and RDs. Without national standards for both coding and reimbursement for resource-intensive FHWP interventions, such as the HWC, clinics may be unable to obtain adequate reimbursement for a necessary set of services (i.e., individual visits), limiting their ability to reliably provide multidisciplinary, evidence-based care at the necessary dosage and intensity (25). Challenges in reimbursement models also vary by region. In particular, childhood obesity prevalence is high in the southern regions of the United States, yet critical HWC roles of CHWs and RDs are not reimbursed, which hinders the development of multidisciplinary teams and adoption of the HWC or similar FHWP.

This study is not without limitations. The exact Medicaid reimbursement rate for RDs was not received from the MA academic medical center, so statewide rates were used. It is important to note that this tool is for cost modeling in a clinical setting, using clinical staff who can bill using current CPT codes, and does not represent the FHWP that are delivered in community-based settings, who often have no billing or reimbursement model for sustainment. Finally, it is worth noting that this case study is limited to the United States and additional work is needed to adapt it for international settings, that may include block funding, activity-based payments, and capitation payments.

## Conclusion

Childhood is a critical window of opportunity for obesity treatment; appropriate intervention can promote early and lasting adoption of healthful behaviors that may reduce long-term health care costs. Given these revenue generation estimates from our study, sustaining HWC sites throughout the United States may be viable.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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**Table 1.****Healthy weight clinic (HWC) program components**

|                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Contact Hours                                     | ≥26 contact hours                                                                                                                                                                                                                                                                                                                                                                                                    |
| Format                                            | 12 individual clinic visits, 6 group sessions, 24 telephone check ins and optional messaging                                                                                                                                                                                                                                                                                                                         |
| Population Served                                 | Families with children ages 2-18 with a BMI ≥85 <sup>th</sup> percentile                                                                                                                                                                                                                                                                                                                                             |
| Length of Program                                 | Delivered over 12 months, ≥26 curricula-based structured contact hours                                                                                                                                                                                                                                                                                                                                               |
| Delivery Modes                                    | In person and virtual, individual and group                                                                                                                                                                                                                                                                                                                                                                          |
| Suggested Personnel <sup>1</sup>                  | <ul style="list-style-type: none"> <li>• Primary Care Provider</li> <li>• Registered Dietitian</li> <li>• Community Health Worker</li> </ul>                                                                                                                                                                                                                                                                         |
| Key Functions of Personnel                        | <ul style="list-style-type: none"> <li>• Medical oversight</li> <li>• Behavioral counseling</li> <li>• Nutrition assessment, counseling and education</li> <li>• Connect families to and educate on relevant community resources</li> </ul>                                                                                                                                                                          |
| Key Topics Addressed via the HWC Group Curriculum | <ul style="list-style-type: none"> <li>• Healthy foods</li> <li>• Creating a healthy home</li> <li>• Healthy drinks</li> <li>• Portion sizes and healthy options</li> <li>• Behaviors and emotions around eating</li> <li>• Physical activity</li> <li>• Bullying and teasing</li> <li>• Feeling good about yourself</li> <li>• Sleep and screen time</li> <li>• Label reading, meal patterns, and snacks</li> </ul> |
| Key Strategies to Support Implementation          | <ul style="list-style-type: none"> <li>• Training modules</li> <li>• Technical assistance and office hours</li> <li>• Structured and dynamic quality improvement learning collaborative (healthcare providers can earn MOC and CME or CEU credits)<sup>2</sup></li> </ul>                                                                                                                                            |

<sup>1</sup> Some functions may be administered by available clinic staff, such as a social worker in place of a community health worker

<sup>2</sup> MOC= Maintenance of Certification; CME=Continuing Medical Education; CEU= Continuing Education Unit

**Table 2.**  
Inputs, costs, and medical reimbursement revenue per year by site

|                                                          | <b>MS Federally Qualified Health Center (Site 1)</b> | <b>MA Federally Qualified Health Center (Site 2)</b> | <b>MA Academic Medical Center (Site 3)</b> |
|----------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|--------------------------------------------|
| Primary Care Provider (10% FTE)                          | Billing for individual visits                        | Billing for individual visits                        | Billing for individual and group visits    |
| Registered Dietitian or Nutritionist (15% FTE)           | Non-billable nutritionist                            | Billing for individual and group visits              | Billing for individual visits              |
| Community Health Worker (50% FTE) (Not billable)         | ✓                                                    | ✓                                                    | ✓                                          |
| Medical Assistant (10% FTE) (Not billable)               | N/A                                                  | ✓                                                    | ✓                                          |
| Total Cost of Intervention Per Year (Fixed) <sup>2</sup> | \$65,252                                             | \$61,957                                             | \$79,024                                   |
| Maximum number of Patients at Fixed Cost                 | 75                                                   | 75                                                   | 75                                         |
| Revenue per patient                                      | \$806                                                | \$1,663                                              | \$1,437                                    |
| Break-even point (# patients)                            | 81                                                   | 37                                                   | 55                                         |

<sup>1</sup> FTE=Full Time Equivalent; MS= Mississippi; MA= Massachusetts

<sup>2</sup> Note: Operating cost of the intervention are fixed up to maximum number of patients reported