Evaluation Manual: Spring 2021

TEAM UP FOR CHILDREN

Version 2: April 2021

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Overview

This evaluation manual outlines advice, information and procedures related to providing the supporting documentation to the BMC evaluation team for BUSM/BMC IRB approvals; preparing your electronic medical record (EMR) system for data collection; completing staff and provider surveys; and information on evaluation activities planned or in progress during the implementation phase of TEAM UP. Our goal is to provide updated, useful information as CHCs venture into the Evaluation part of the initiative.

Evaluation Introduction

Welcome to the TEAM UP evaluation!

Our goals: The TEAM UP evaluation strives to both improve and prove the TEAM UP model. To "improve" the model, we request data and analyze it, and we ask questions and provide regular feedback—all with the overarching aim to support continuous quality improvement and practice transformation at each CHC site. With regard to "proving" the model, the evaluation team is interested in determining the degree to which TEAM UP improves child outcomes.

One foundational principle of TEAM UP is un-blinded (by site) sharing of data. Specifically, the evaluation team sends data about all sites to all participating CHCs, to the implementation team and to our funders as part of its regular reporting, and these data are shared and discussed at meetings over time. We believe that this data sharing facilitates group learning and supports growth of the model.

Who is part of the evaluation team?

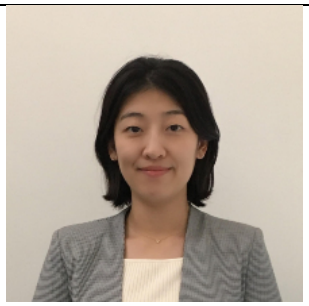
Most importantly, YOU are a vital member of the evaluation team. The evaluation team needs you to:

- provide data in an accurate and timely way
- answer questions—e.g., we need your help to understand your clinical context so that we can interpret the data appropriate
- ask questions—e.g., how can our findings help you transform your practice?

In this regard, the evaluation team works hand-in-hand with the implementation team and with you to use the data to affect change in areas identified as priorities both by TEAM UP and by the individual CHC. These interactions foster a learning health system in which "science, informatics, incentives, and culture are aligned for continuous improvement and innovation, with best practices seamlessly embedded in the delivery process, and new knowledge captured as an integral by-product of the delivery experience."

BMC evaluation team staff with whom you will likely have the most consistent interaction include the following people:

	**Megan Bair-Merritt, MD, MSCE; Evaluation Co-Director** Megan is a pediatrician and child health services researcher. Her research focuses on the impact of family violence on children, and innovative strategies to build resilience in families who have faced adversity. She lives in Wellesley with her husband and two children, Jake (17) and Hannah (14) (and a Labradoodle named Winnie (4) who thinks that she is human). Email: Megan.Bair-Merritt@bmc.org
	**Cameron Hill, MPH Candidate** Cameron Hill is a Research Assistant on TEAM UP's Evaluation Team as well as the Administrative Assistant. Currently, Cameron is in his final semester of the MPH program at Boston University School of Public Health studying healthcare management. After graduation, Cameron will transition to his new role as TEAM UP's Data and Implementation Analyst. His primary responsibilities for TEAM UP include analyzing the electronic health records data and managing the data dashboard. Cameron has strong interests in community health, public health, and education, and will be applying to medical school in 2021. He recently graduated from Boston University's Sargent College and Kilachand Honors College with a B.S in Human Physiology. Email: Cameron.Hill@bmc.org
	Stacy Justo, MA; Data Analyst Stacy is a Data Analyst on the Evaluation Team. Email: Stacy.Justo@bmc.org

	**Jihye Kim, PhD; Data Manager** Jihye is a research data manager at Boston Medical Center. Her research field is health economics with focuses on health disparities and health policy evaluation based on applied econometrics. She lives in Brighton with her husband and two kittens (Nora and Tessa, 8 months). Email: Jihye.Kim@bmc.org
	**Hannah Park** Hannah is a Research Assistant for Team Up's Evaluation Team at Boston Medical Center and an MPH student studying Epidemiology/Biostatistics at Boston University. She graduated from Emory University with a B.A. in political science and is interested in utilizing data to inform public health policy. Hannah currently works on producing reports for Team Up using electronic health records data. Email: Hannah.Park@bmc.org
	**Chris Sheldrick, PhD; Evaluation Co-Director** Chris is a research psychologist from the Boston University School of Public Health. His research focuses on screening, clinical decision-making, and methods to make research findings more useful to policy-makers and practitioners. Chris lives in Brookline with his wife and two sons, Caleb (16) and Peter (9). [no pets to date—but Peter is lobbying for a Ball Python] Email: rshldrck@bu.edu
	**Jess Rosenberg, MPH; Data Analyst** Jess is a data analyst at Boston Medical Center. She leads the analysis of TEAM UP's EMR data. Jess lives in Cambridge; and in her spare time, enjoys cooking, writing short stories, and planning day trips to different Massachusetts towns. Email: Jessica.Rosenberg2@bmc.org

Our team also includes Bill Adams, MD (informatics and IT); Michael Silverstein, MD, MPH (Associate Chief Medical Officer, Research and Population Health for the Boston Accountable Care Organization); and Megan Cole Brahim, PhD (health economist).

Three members of the implementation team, Grace Riordan, Charlotte Vieira, and Anita Morris, work very closely with the evaluation team. They will be your project manager's main points of contact for this project.

Getting started

The following section refers to specific activities for CHCs starting TEAM UP, during the planning phase. To get started, we need you to:

I. Obtain your site specific research or IRB approvals for TEAM UP IRBs (see section I)
II. Prepare your EMR to collect, in an extractable way, and output required data (see section II)
III. Work with the evaluation team on baseline staff surveys (see section III)

Each of these three activities is described in detail in its own section below. In addition, please consult the "TEAM UP Evaluation Timeline", which is an excel document designed to help you plan, track your progress, and communicate with the BMC evaluation team as you proceed.

Communication: We ask that you communicate with the BMC Evaluation team in different ways:

Have a question?

- Direct all general questions to Grace Riordan at Grace.Riordan@bmc.org.
- For specific questions, feel free to email any of the evaluation team staff directly. However, please ALWAYS cc Grace Riordan on ALL correspondence with the BMC Evaluation Team. This helps our team track all questions and requests to ensure consistent and timely responses.

Need to upload data or submit documentation?

- Email any IRB or research approval documentation to Megan Bair-Merritt at Megan.Bair-Merritt@bmc.org.
- To keep your data as safe as possible, please do not send datasets via email. Instead, please upload your data to a folder on Box.com, a secure file-storage and sharing system. https://box.com.
    - Please go to Box and create an account for your CHC.
    - Each site will have a separate folder on Box, and only designated team members from that site and evaluation team members can access it. Once you create a Box account, please email Grace Riordan and let her know the email address associated with your account, and she will grant you access to your folder.

Meetings

- In-person: After giving you time to review this manual, we will meet with you at an initial in-person meeting at your Community Health Center. Our goal will be to answer any questions and get to know one another.
- Phone meetings: During the planning phase, we will have team meetings with your team and our evaluation and implementation teams each week; once we reach the implementation phase, we will decide if it makes sense to continue these telephone meetings weekly, or if it makes sense to spread them out to every two weeks.

"TEAM UP Evaluation Timeline"—see excel sheet

- TEAM UP Evaluation Timeline.xls includes a list of all deliverables for the planning phase and asks you to suggest internal deadlines to ensure that you can meet the TEAM UP due dates.
- To help us help you, we ask that you use this form to track your progress and submit an update by the 1st of each month to Grace.

I. Obtain your site specific research or IRB approvals

During the planning phase, the TEAM UP evaluation team will work closely with your project manager to obtain your site's approval related to several core evaluation components associated with TEAM UP. To be clear, all TEAM UP research goes through the BMC IRB (which is submitted by the Evaluation team). However, the BMC IRB requires, as part of each submission, a letter from each participating CHC's research committee or IRB documenting their approval of the proposal. We recognize that specific IRB requirements and/or research approval processes vary by CHC, and we will work with you to fulfill your CHC's requirements.

The TEAM UP evaluation does have multiple components, each of which requires a separate BMC IRB (and hence separate approval letters from your CHC). We anticipate that there will be additional BMC IRBs as well as updates to existing IRBs to be submitted over the course of your TEAM UP participation (i.e., after the planning period).

Timeline for deliverables during the planning period: As reflected in the TEAM UP Evaluation Timeline, there are IRB-related deadlines (3 internal and 3 external) required to meet three goals:

Goal I.A*. Get IRB approval for core evaluation component #1: Staff surveys.*
This component of the evaluation (and IRB) involves TEAM UP staff and providers completing a baseline and two follow-up surveys about their role and training, job-related satisfaction, perceptions of behavioral health integration as well as their confidence in engagement, assessment, and management of mental health problems; follow up surveys also evaluate perceptions of the TEAM UP Learning Community. Of note, the baseline survey is used in part to inform development of the clinical training component of the Learning Community.

> ****IRB Deadline #1: Internal deadline*: check with your site to determine whose approval is required, and what their schedule is for reviewing requests. Set an internal deadline to submit all needed materials as soon as possible to your site's research committee and/or IRB to ensure that you will be able to meet the external deadline.
> ****IRB Deadline #2: External deadline for TEAM UP*: submit documentation of final approval to the BMC evaluation team.

Goal I.B*. Get IRB approval for core evaluation component #2: EMR-related evaluation.*
This component of the evaluation (and IRB) involves collecting monthly data from your electronic medical records to assess outcomes such as screening rates for BH issues; rates of positive screens; psychotropic medication prescriptions; primary care provider decision making when a BH issue arises; and trajectories of care for children with BH issues.

> ****IRB Deadline #3: Internal deadline*: check with your site to determine whose approval is required, and what their schedule is for reviewing requests. Set an internal deadline to submit all needed materials as soon as possible to your site's research committee and/or IRB to ensure that you will be able to meet the external deadline.
> ****IRB Deadline #4: External deadline for TEAM UP*: submit documentation of final approval to the BMC evaluation team.

Goal I.C*. Get IRB approval for core evaluation component #3: the Data Repository*.
This component of the evaluation (and IRB) involves having your CHC participate in a data repository along with all other TEAM UP sites. The purpose of this repository is to facilitate use of data to answer

questions, including those of TEAM UP providers and staff, which are outside of the core evaluation focus. For example, if a behavioral health provider at your site is interested in answering a question about autism screening and its relationship to early intervention referrals, this repository will facilitate ready access to these data and analysis support, if needed, while assuring proper governance structure and approvals, and data security.

***IRB Deadline #5: Internal deadline*: check with your site to determine whose approval is required, and what their schedule is for reviewing requests. Set an internal deadline to submit all needed materials to your site's research committee and/or IRB as soon as possible to ensure that you will be able to meet the external deadline.

***IRB Deadline #6: External deadline for TEAM UP*: submit documentation of final approval to the BMC evaluation team.

II. Preparing your EMR to collect and output required data

Overview: We recognize that each EMR system has its own idiosyncrasies, and even within a single EMR system, the ways in which a specific CHC uses that system differ. During the planning phase, we will work closely with your IT analyst and project manager to plan for reporting.

We provide further detail on *adding required data elements* and *submitting data* below.

Timeline for deliverables: As reflected in the TEAM UP Evaluation Timeline, there are multiple deadlines required to meet two goals:

Goal II.A. *Adding required data elements to EMR.* Core to both continuous quality improvement and to understanding the impact of TEAM UP is providing child-level data focused from the time of BH and material needs screening through, if indicated, BH care for children receiving integrated services. Accomplishing this goal requires programming the EMR with extractable templates and implementing new screening instruments and EMR templates completed by providers (hence often adjusting workflows):

> ****Data Deadline #1: Ensure that SWYC, PSC, PHQ, and material needs screeners are built into EMR in an extractable way.* This means that answers to all individual questions should be saved for later export as part of datasets (i.e., not just the total scores).
>
> *See Appendix A for additional detail on required screeners*.
>
> ****Data Deadline #2: Build the PCP behavioral health (BH) plan into **every PCP visit** template (well-child, follow-up, sick visit, etc.) in an extractable way, in coordination with clinical team/project manager*. Please work with the implementation team to ensure that providers are using this template at **all** PCP visits (this will require training and quality checks). Individual answers to the PCP BH plan template should be able to be exported as part of datasets. Below, we explain more about the PCP BH plan, and its utility to the TEAM UP evaluation. *See Appendix B for the PCP BH Plan template*.

What is the purpose of the PCP BH plan?

- TEAM UP is striving to understand how children access behavioral health services, and most often a visit with a primary care provider provides the entry or starting point. The PCP BH plan documents in a standardized and extractable way primary care providers' behavioral health (BH) plan for each patient's behavioral health care (including if there are no issues or if the parent declines services).
- Therefore, during the planning phase for TEAM UP, the Evaluation team will work with sites' project manager and IT lead to create an extractable "PCP BH Plan" template that should be incorporated into every PCP visit whether or not there are BH issues and regardless of the reason for the visit.
- In monthly reports, we will provide information about the primary care providers' decision making around BH care and will explore trajectories of children referred for BH care.

What do CHC's need to do?

- The PCP BH Plan should be completed at EVERY PCP visit—including well child visits, sick visits, follow up visits, etc. This will require working with the implementation team to train providers to complete at each visit as well as building in quality checks to ensure that this is being done routinely, and providing support to providers who are not completing it at every visit.
- A final draft of the PCP BH plan is detailed in Appendix B.
- Also, please ensure that the skip patterns are programmed as describe in the figure.
- We recognize that this template looks complicated in the figure, but it is actually designed this way to make it easier for PCPs to complete. For the vast majority of encounters, PCPs will see only a small number of the questions depicted in the figure.
- All data should be extractable for export and analysis.

****Data Deadline #3: Work with implementation team to implement screeners and templates including SWYC, PSC, PHQ, material needs, and the PCP BH plan as well as PSC for symptom tracking at follow up BH visits*. The implementation team will give you further detail regarding precisely which versions of which screeners should be administered to whom and at what ages. They also will work closely with you to create workflows to facilitate embedding these screeners and templates into clinical care.

Of note, the Evaluation team recognizes that the implementation team will focus first with you on developing and implementing workflows for adding developmental and material needs screeners as well as adding the PCP BH plan into primary care visits. Later, the implementation team will work with you to ensure that BH visits include symptom tracking using the PSC; we recognize that the symptomatology data from the PSC therefore may have some delay in becoming part of our reports.

Goal II.B. *Submitting data to BMC evaluation team.* Create systems to output required data elements and submit them to the BMC Evaluation team.

Reporting in a standard format is very important for quality control. Therefore, we provide:

- a data dictionary that specifies each variable in the datasets you will create
    - the data dictionary includes example datasets with made-up, fictitious data so you can see what the datasets should look like

If (when?) you face challenges in producing these reports, we will help. This isn't always easy, but others have been down this road before and we're happy to share their wisdom!

Some key points to keep in mind:

1) For reporting back to you, we will divide children into three age groups: 30 days- 4.99 years; 5-12.99 years; and 13-18.99 years (we do not collect data for children <30 days or >19 years).
2) During the planning phase, we will set up a Box account and folder for your CHC. Data from your center should always be saved onto this Box account (and not sent to our team in other ways such as by email).

****Data Deadline #4: Create and test an algorithm to generate scrambled IDs.*
Although we should not be able to link data to a specific child, it is important for us to be able to tell which visits, screens and plans go together (monthly and over time) because they were provided to the same patient. Therefore, we will ask you to develop an algorithm to generate *scrambled IDs*. We have an algorithm that was created by one of the Cohort 2 sites for which we will provide you the code to use and adapt. We believe that this is the easiest path forward. However, should you want to create your own scrambled ID, we have some pointers below:
A good algorithm:

- Should assign the same scrambled ID to the same child every time you run the algorithm (i.e., it should be consistent)
- Should never assign the same scrambled ID to more than one child (i.e., each ID should be unique)

For example, if Tony Cruz has a well child visit in one time period, he may be assigned an ID number using an algorithm like this:

- Take the ascii code for the first letter of Tony's first name and add 36
- Take the ascii code for the last letter of Tony's first name and multiply by 48
- Take the 5th number of the MR# and add 3
- Concatenate these to get Tony's scrambled ID: 12013712

Note that:

- Because Tony's name and MR# are the same at each visit, this algorithm will yield the same scrambled ID every time. Therefore, the evaluation team will be able to link Tony's data across datasets without knowing it is Tony.
- Because it only uses 3 data elements, this algorithm is likely to generate the same ID for multiple patients. We recommend that you use at least 7 data elements.
- We will ask you how many data elements you use and what types of data you draw from (e.g., 7 data elements from name and MR#). **But don't tell us your algorithm!** We don't want anyone to ever know who Tony is.

****Data Deadline #5: Provide the Evaluation team with the written process by which you will ensure that data uploaded to Box are de-identified, except for dates of service.* "De-identified" means that someone analyzing the data should not be able to identify the patients. Thus, it is critical that elements like names and medical record numbers be removed. However, clever folks can sometimes identify people without names or ID numbers using things like zip codes and date of birth (which we will never ask for). For this reason, it is critical that you provide ONLY the data that we request (as detailed in the data dictionary) and no more. Ideally, the de-identification process should be programmed, so that data are already de-identified when they are output to datasets. We have found, however, that it is important to have a second step in the process in which a person visually checks the data to verify that all identifiers except dates of service have been stripped. We are happy to help you think this through if internal systems or checklists do not already exist.

The data plan and how it got that way.

In the next section, we describe what types of data you will be submitting to the Evaluation team and how to do so. As you read the details, we anticipate you may find yourself thinking like this, *"All those researchers ever want is more data? Do they realize how difficult this is? Are they nuts?"* Let's consider each statement in turn:
"All those researchers ever want is more data." True enough; guilty as charged. That said, we've thought carefully about how we're going to analyze these data and how it will help us address clinicians' questions.
"Do they realize how difficult this is?" Yes, very much so. In fact, it used to be MORE difficult. As we developed this project with the cohort 1 TEAM UP CHCs, we recognized the need for different data reports. For each data report, we requested a separate dataset. Rather than several different datasets, we now request only two, and the request will be identical each month. Moreover, we used to ask sites only for certain types of data—for example, well-child visits. This required significant coding at each CHC to determine which visits were well-child visits and which were sick visits. Not only was it nearly impossible to verify that all CHCs were classifying visits the same way, it was ALSO a LOT of work for CHC programmers. Our new process avoids this.
"Are they nuts?" Probably, but we try to behave.
So…as you read the plan, please keep in mind that we've thought this through quite carefully, we realize that certain parts of it may be difficult, and we welcome all questions and comments along the way.

What will the BMC Evaluation team do with the data?

In short, we will clean the data, analyze it, and use the results to learn more about the behavioral health related care received by children in primary care at participating CHCs. One thing we have learned from our first several years of work is that evaluating success in this area is complicated. For example, what may appear to be a new diagnosis in the EMR may have been a topic of intense discussion between parents and clinicians for months or even years. Lack of documented services after a new diagnosis can be intentional (e.g., if parents decline or clinicians do not believe the benefit outweighs the cost). Success can take many forms—sometimes through increased services right away, but other times through increased trust and engagement that only becomes apparent over time. Therefore, we will be analyzing these data with great caution, and we will be eager for your feedback to help us understand what our results mean and how we should describe them to others.

****Data Deadline #6: Create code to output data for monthly datasets.* Each month, TEAM UP CHCs provide EMR-based data to the Evaluation team from *all* visits (with any provider for any reason). We ask for general data about the visit (such as ICD10 code) and for item-level responses to screening questionnaires and to the PCP BH plan.

In the data dictionary, we provide detailed information about the variables that we collect. We ask that you submit to us de-identified visit-level (rather than aggregate), and item-level (rather than subscale or total scores) data. Reporting "raw" data in this format allows for the evaluation team to better standardize information across sites and hopefully remove work from both the IT analyst (such that this person does not have to run any analyses) and the clinical team. We are happy to discuss this further in our early meetings with you, and we will work with your IT analyst and PM to troubleshoot any potential barriers.

In short, we'll be asking you to submit:

- Data from ALL pediatric visits (well, sick, follow up, CHW, BH) for children from 30 days through 18.99 years each month. We'll add the new data you submit each month to the data you have submitted in past months.
- Responses to ALL TEAM UP screening questionnaires, whether they are completed at well-child or BH visits.
- Responses to ALL PCP BH plans completed at PCP visits.
- Scrambled IDs so we can link visits to individual patients (without knowing who that patient is) and link patients to themselves over time.
- Things like CPT codes, diagnosis codes, and provider type so we can learn more about the types of services the child received.

Please see the data dictionary for additional detail. Remember that we only collect de-identified data (with the exception of dates as per below). For each of these children (defined above), please create a scrambled unique identifier specifically for that child.
For detailed guidance *on data for monthly datasets see data dictionary: TEAM UP Data Dictionary.xls*

****Data Deadline #7: Create code to output Medication data for monthly datasets.* Each month, sites give us data about all psychotropic medication prescriptions. These data allow us to follow trends in prescribing that may be related to integrated care efforts.

- We will need to document how your system and programmers are able to identify which children receive prescriptions for a psychotropic medication each month.
- These data are given by prescription (without any identifiable information, besides date of prescription), such that each row of data represents an individual prescription and are linked to a child by scrambled ID number.
- For each psychotropic medication prescription, we collect the child's sex, their age in months, and behavioral/mental health diagnoses associated with the med prescription, and the date the medication was prescribed.

- We also collect the prescribed medication(s). For detailed guidance *on data for monthly datasets regarding medication data*, *see data dictionary: "TEAM UP Data Dictionary", tab "Medication prescription data"*

  See annotated screen shot: Appendix C

****Data Deadline #8: Practice Visit dataset due to Evaluation team.* The BMC team will review this dataset to ensure accuracy.

****Data Deadline #9: First official Visit dataset due to Evaluation team.*

****Data Deadline #10: Practice Medication dataset due to Evaluation team.* The BMC team will review this dataset to ensure accuracy.

****Data Deadline #11: First official Medication dataset due to Evaluation team.*

FEEDBACK: What will the BMC Evaluation team do with the data?

After we receive data from all CHCs, we clean and analyze it to create four types of reports that we will share with you:

- *Report #1:* We create statistical process control (SPC) charts, and provide these to you via email monthly as well as upload them to the TEAM UP website. Information about how to read and understand these charts, and an example of how they look, is provided in detail in Appendix D. In short, SPC charts are designed to help you detect when real change has happened—either in

response to your own practice innovations, or because something is happening in your clinic or with your patients that you should be aware of. Variation over time is normal, and it can be hard to tell when a change in scores represents a “true” change or just normal variation. SPC charts highlight changes that are most likely to be real. For example, during some months recently, rates of positive response to the SWYC hunger question went up across several sites in a way that did not appear to be normal variation. The question for the whole team is “Why?”

We highlight for you in a cover page which metrics appear to be “out of range,” and then the CHC, Evaluation and Implementation teams track (using a brief form) and discuss why this metric might be out of range.

- *Report #2:* We create run charts related to medication prescriptions. These are quite lengthy and will be uploaded to a protected part of the TEAM UP website.

- *Report #3:* We create summary tables highlighting key variables by age from the monthly EMR reports and from the medication report. These tables are a fast way to understand information about behavioral health screening, positivity and medication prescriptions that we hope will be useful for practice transformation. These tables will be sent to you by email, and uploaded to the TEAM UP website.

- *Report #4:* We create an interactive COVID-19 dashboard through Microsoft PowerBI that is published to the TEAM UP website. The goal of the dashboard is to provide aggregate data externally for the purposes of advocacy such as demonstrating BH needs during pre-COVID versus COVID time periods.

Of note, part of the BH Plan Follow Up is understanding symptom trajectories for children with BH issues. TEAM UP includes administering PSC at each follow up BH visit. Your clinical champion and PM should work with the implementation team to develop workflows to ensure that the PSC is being administered at all follow-up BH visits with an integrated clinician (note: this will happen later into the planning period). After you receive these reports, the implementation team will be in touch to ask about your impressions and any plans to address what you learn from the data.

III. Staff Survey

Overview: Staff surveys will be administered either online through REDCap or via pen-and-paper, based on your site's preference. These surveys give us important information about staff and providers' confidence in engagement, assessment, and management of mental health problems; job satisfaction; and perceptions of your site's behavioral health integration. The follow up surveys also include important information on staff and providers' perspectives of the Learning Community. We are seeking a survey response rate of >80%. These surveys will be administered at three time points: baseline and two follow up surveys, at 18- and 36-months.

Timeline for deliverables: As reflected in the TEAM UP Evaluation Timeline, there are three deadlines required to meet the one overall goal:

***Goal III.A**. Complete provider and staff surveys*
****Survey Deadline #1: CHC and evaluation team develop plan for administration of baseline surveys.* For example, which clinic staff and providers should complete the survey (i.e., are part of TEAM UP? What is the best way to announce the survey?)

****Survey Deadline #2: Surveys administered with follow ups as needed to encourage response rate.* The evaluation team will lead efforts here.

****Survey Deadline #3: Survey administration complete with at least 80% response rate.* Here the evaluation team will also lead the process, but this will occur in close partnership with you.

APPENDIX A: Required screening forms

Material Needs/Social Determinants of Health Screening:

At the start of TEAM UP, each site chooses a screening instrument to assess social determinants of health for families during well child visits. Sites select the screening instrument that they feel best fits their population. This measure should be administered at every well child visit to the child's parent/guardian. Please email a copy to the Evaluation team to help us interpret the EMR data/understand what questions are being asked. Throughout the implementation years, we anticipate there may be version updates to the TEAM UP screeners and we will communicate these updates. Also, TEAM UP must be notified if the CHCs make any changes to the material needs screener.

Developmental and Behavioral Health Screening:

TEAM UP has decided that parents/guardians will complete the Survey of Well-Being of Young Children (SWYC; version 1.08 displayed below) at each well-child visit for a child between the ages of 30 days and 4.99 years. The SWYC has multiple sub-scales, each of which has their own specific scoring. Below, we detail the subsections about which we gather data each month for children in this age group:

Note: while instructions for scoring are included, please refer to the official SWYC website for the most accurate and up-to-date information.

When it comes to your clinical practice, please refer to the TEAM UP Universal Screening memo. There are certain instances where slight modifications are made to age ranges in accordance with what is the most clinically correct decision.

SWYC Child Centered Questions

1. Milestones

Milestones: 2 months

1 month, 0 days to 3 months, 31 days

V1.08, 9/1/19

Child's Name:

Birth Date:

Today's Date:

DEVELOPMENTAL MILESTONES

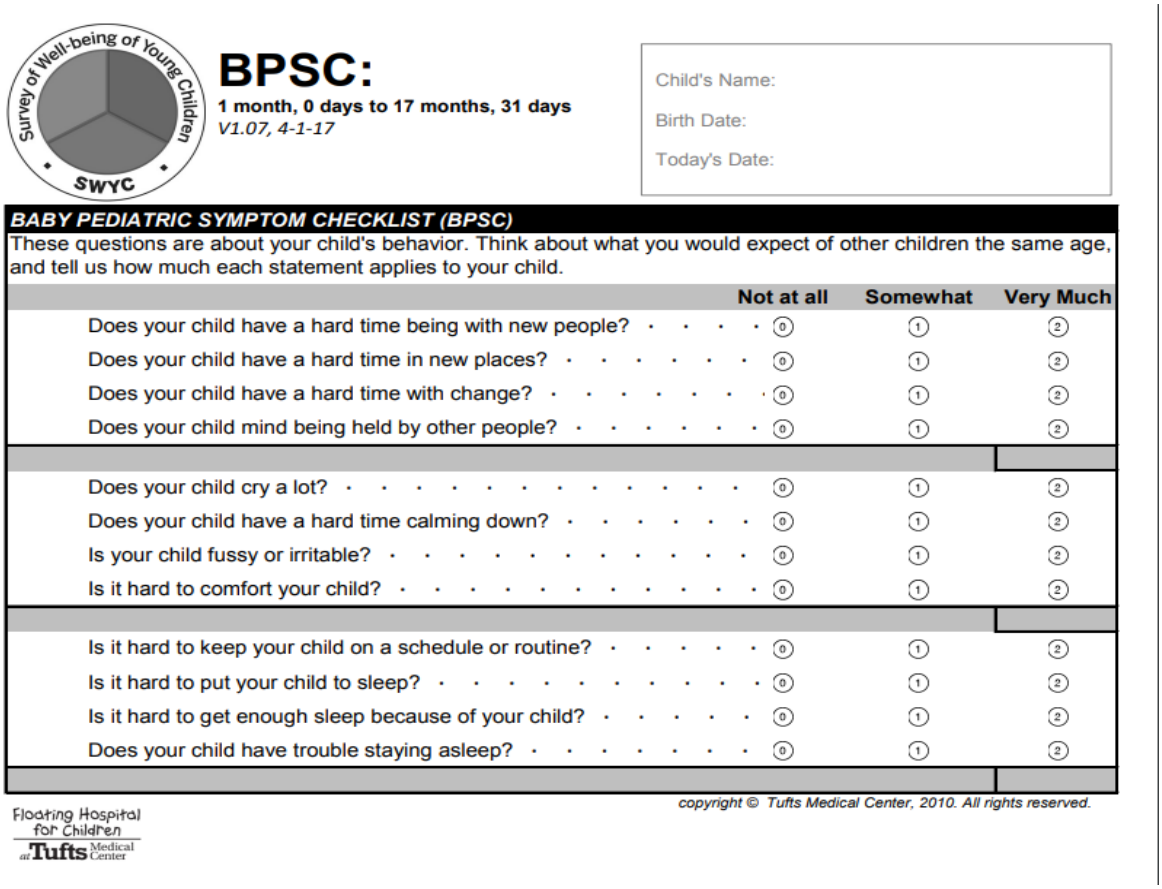
Most children at this age will be able to do some (but not all) of the developmental tasks listed below. Please tell us how much your child is doing each of these things. PLEASE BE SURE TO ANSWER ALL THE QUESTIONS.

	Not Yet	Somewhat	Very Much
Makes sounds that let you know he or she is happy or upset	0	1	2
Seems happy to see you	0	1	2
Follows a moving toy with his or her eyes	0	1	2
Turns head to find the person who is talking	0	1	2
Holds head steady when being pulled up to a sitting position	0	1	2
Brings hands together	0	1	2
Laughs	0	1	2
Keeps head steady when held in a sitting position	0	1	2
Makes sounds like "ga," "ma," or "ba"	0	1	2
Looks when you call his or her name	0	1	2

Floating Hospital for Children at Tufts Medical Center

- 10 items to assess all areas of development (e.g., fine motor, gross motor, communication)
- Administered at all ages (30 days-4.99 years)
- Different versions based on child age
- Within a version (e.g. 4 mo Milestones), scoring differs by child age. For scoring information, refer to SWYC Scoring Guidelines on the SWYC website.

2. Baby Pediatric Symptom Checklist



BPSC:

1 month, 0 days to 17 months, 31 days

V1.07, 4-1-17

Child's Name:

Birth Date:

Today's Date:

BABY PEDIATRIC SYMPTOM CHECKLIST (BPSC)

These questions are about your child's behavior. Think about what you would expect of other children the same age, and tell us how much each statement applies to your child.

	Not at all	Somewhat	Very Much
Does your child have a hard time being with new people?	0	1	2
Does your child have a hard time in new places?	0	1	2
Does your child have a hard time with change?	0	1	2
Does your child mind being held by other people?	0	1	2
Does your child cry a lot?	0	1	2
Does your child have a hard time calming down?	0	1	2
Is your child fussy or irritable?	0	1	2
Is it hard to comfort your child?	0	1	2
Is it hard to keep your child on a schedule or routine?	0	1	2
Is it hard to put your child to sleep?	0	1	2
Is it hard to get enough sleep because of your child?	0	1	2
Does your child have trouble staying asleep?	0	1	2

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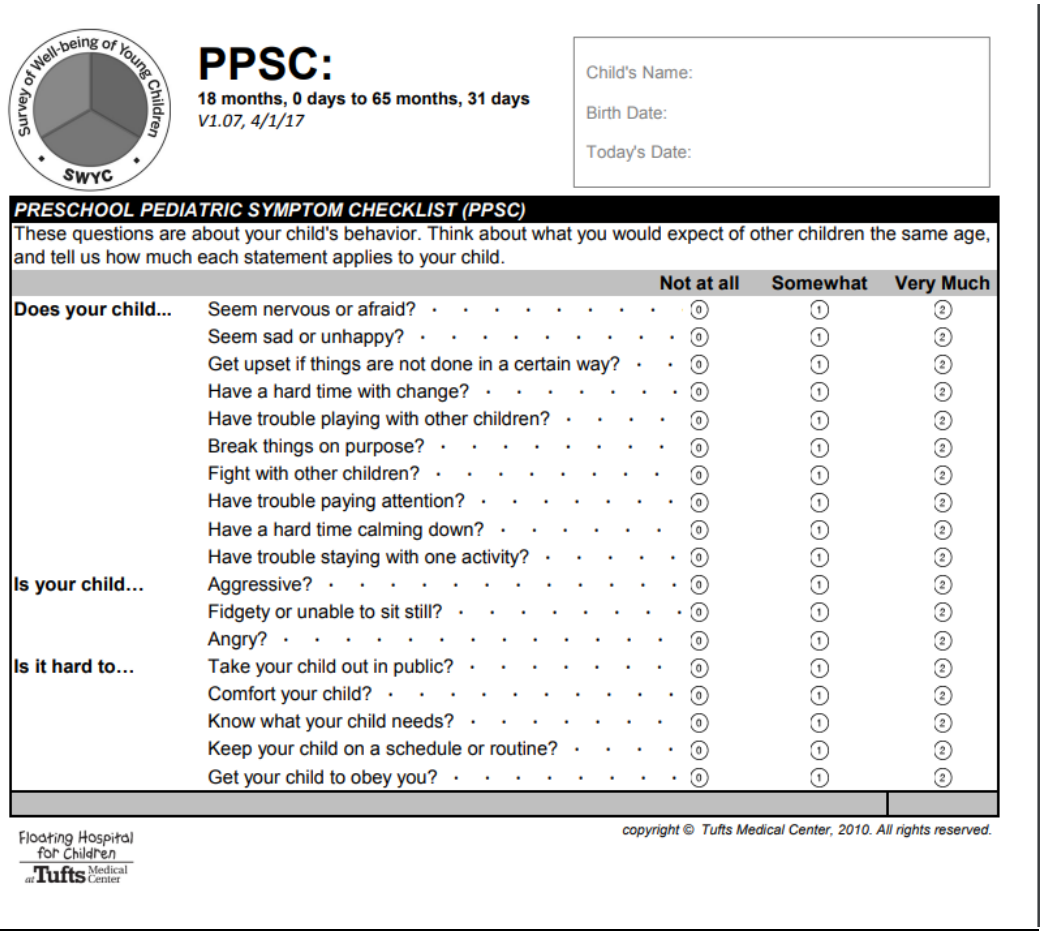
- For children 30 days - 18 months.
- Subscales include Inflexibility, Irritability and Routine.
- For scoring information, refer to SWYC Scoring Guidelines on the SWYC website

3. Preschool Pediatric Symptom Checklist



PPSC:

18 months, 0 days to 65 months, 31 days

V1.07, 4/1/17

Child's Name:

Birth Date:

Today's Date:

PRESCHOOL PEDIATRIC SYMPTOM CHECKLIST (PPSC)

These questions are about your child's behavior. Think about what you would expect of other children the same age, and tell us how much each statement applies to your child.

		Not at all	Somewhat	Very Much
Does your child...	Seem nervous or afraid?	0	1	2
	Seem sad or unhappy?	0	1	2
	Get upset if things are not done in a certain way?	0	1	2
	Have a hard time with change?	0	1	2
	Have trouble playing with other children?	0	1	2
	Break things on purpose?	0	1	2
	Fight with other children?	0	1	2
	Have trouble paying attention?	0	1	2
	Have a hard time calming down?	0	1	2
	Have trouble staying with one activity?	0	1	2
Is your child...	Aggressive?	0	1	2
	Fidgety or unable to sit still?	0	1	2
	Angry?	0	1	2
Is it hard to...	Take your child out in public?	0	1	2
	Comfort your child?	0	1	2
	Know what your child needs?	0	1	2
	Keep your child on a schedule or routine?	0	1	2
	Get your child to obey you?	0	1	2

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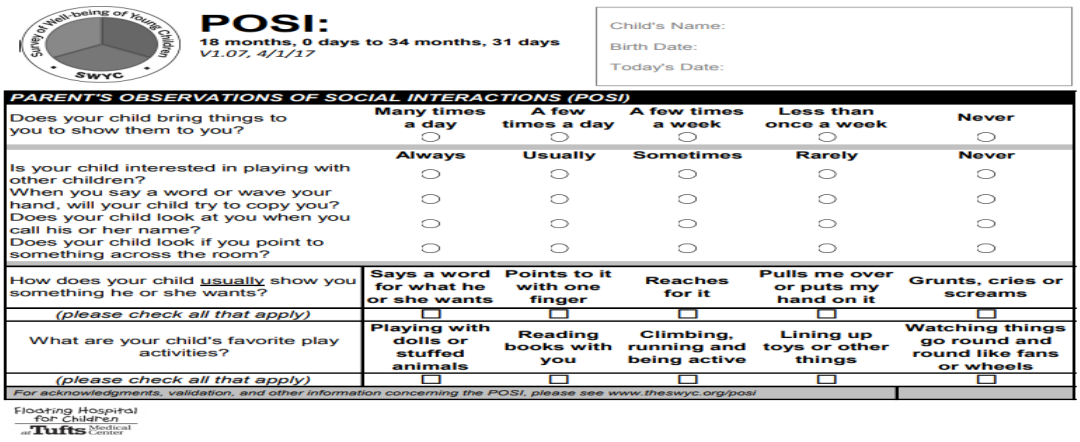
- 18 months-4.99 years.
- 18 items to assess emotional and behavioral health.
- For scoring information, refer to SWYC Scoring Guidelines on the SWYC website.

4. POSI



POSI:
18 months, 0 days to 34 months, 31 days
V1.07, 4/1/17

Child's Name:
Birth Date:
Today's Date:

PARENT'S OBSERVATIONS OF SOCIAL INTERACTIONS (POSI)

Does your child bring things to you to show them to you?	Many times a day	A few times a day	A few times a week	Less than once a week	Never
	○	○	○	○	○
	Always	**Usually**	**Sometimes**	**Rarely**	**Never**
Is your child interested in playing with other children?	○	○	○	○	○
When you say a word or wave your hand, will your child try to copy you?	○	○	○	○	○
Does your child look at you when you call his or her name?	○	○	○	○	○
Does your child look if you point to something across the room?	○	○	○	○	○
How does your child usually show you something he or she wants?	Says a word for what he or she wants	Points to it with one finger	Reaches for it	Pulls me over or puts my hand on it	Grunts, cries or screams
(please check all that apply)	☐	☐	☐	☐	☐
What are your child's favorite play activities?	Playing with dolls or stuffed animals	Reading books with you	Climbing, running and being active	Lining up toys or other things	Watching things go round and round like fans or wheels
(please check all that apply)	☐	☐	☐	☐	☐

For acknowledgments, validation, and other information concerning the POSI, please see www.theswyc.org/posi

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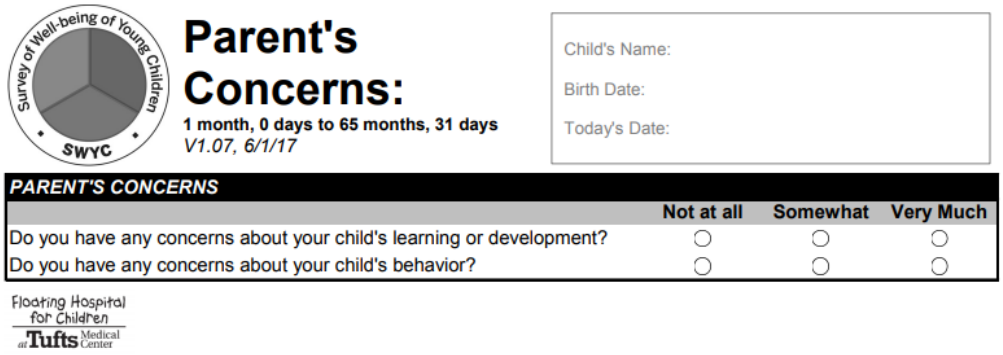
- 7-item screening for autism spectrum disorder
- Refer to POSI Scoring Guidelines for more information

5. Parent Concern
   - Two questions about whether the parent has any concerns about her/his child's development



Parent's Concerns:
1 month, 0 days to 65 months, 31 days
V1.07, 6/1/17

Child's Name:
Birth Date:
Today's Date:

PARENT'S CONCERNS

	Not at all	Somewhat	Very Much
Do you have any concerns about your child's learning or development?	○	○	○
Do you have any concerns about your child's behavior?	○	○	○

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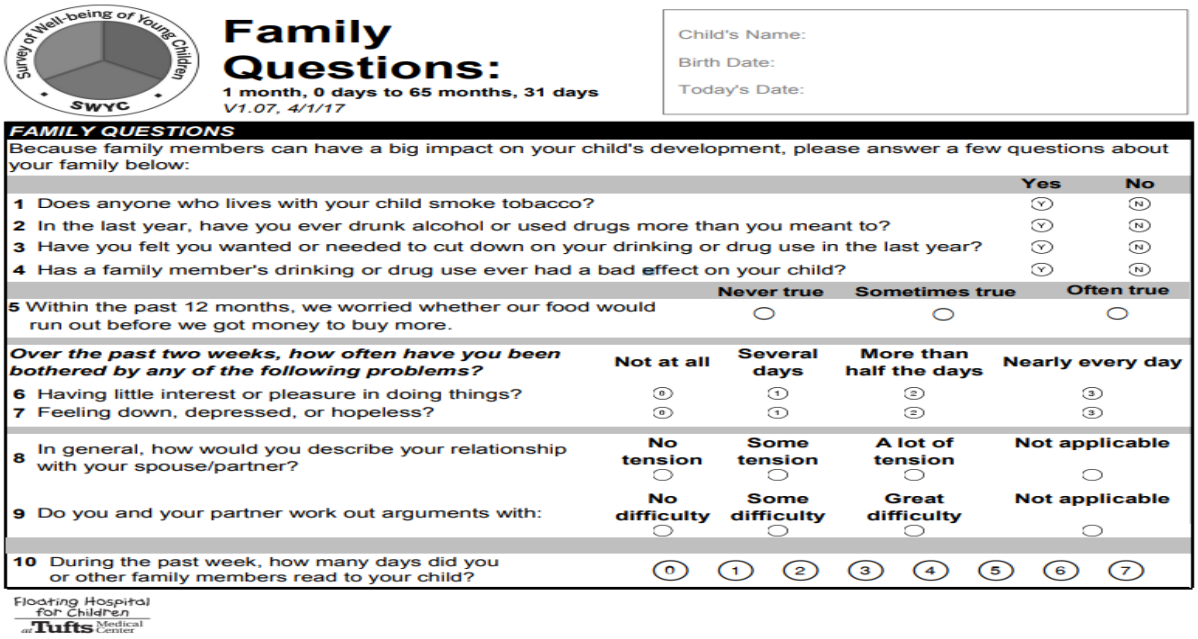
   - Response options: "Not at all", "Somewhat", or "Very Much".

6. SWYC Family Questions



Family Questions:

1 month, 0 days to 65 months, 31 days

V1.07, 4/1/17

Child's Name:
Birth Date:
Today's Date:

FAMILY QUESTIONS

Because family members can have a big impact on your child's development, please answer a few questions about your family below:

		Yes	No
1	Does anyone who lives with your child smoke tobacco?	Y	N
2	In the last year, have you ever drunk alcohol or used drugs more than you meant to?	Y	N
3	Have you felt you wanted or needed to cut down on your drinking or drug use in the last year?	Y	N
4	Has a family member's drinking or drug use ever had a bad effect on your child?	Y	N

		Never true	Sometimes true	Often true
5	Within the past 12 months, we worried whether our food would run out before we got money to buy more.	○	○	○

Over the past two weeks, how often have you been bothered by any of the following problems?		Not at all	Several days	More than half the days	Nearly every day
6	Having little interest or pleasure in doing things?	0	1	2	3
7	Feeling down, depressed, or hopeless?	0	1	2	3

8	In general, how would you describe your relationship with your spouse/partner?	No tension ○	Some tension ○	A lot of tension ○	Not applicable ○
9	Do you and your partner work out arguments with:	No difficulty ○	Some difficulty ○	Great difficulty ○	Not applicable ○

10	During the past week, how many days did you or other family members read to your child?	0	1	2	3	4	5	6	7

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Smoking

- One question about tobacco use where the child lives
- Response options: “Yes” or “No.”

Drug/Alcohol

- Three questions about alcohol and drug use
- Response to each question can be either “Yes” or “No.”

Hunger

- One question about food insecurity
- Response options: “Yes” or “No.”

Note: some cohort 1 sites elected not to use this question as they were administering their own full social determinants of health screener

Depression screening

- At the child’s 2, 4 and 6 month visits the mother is given the Edinburgh post-partum depression questions
- PHQ2 administered to parents of older children: 2 questions about depression
- Response options: “Not all”, “Several Days”, “More than half the days”, or “Nearly Every Day”.

DV

- Two questions about relationship functioning
- Response options: FQ8 –“No tension”, “Some tension”, “A lot of Tension”, “Not applicable.” FQ9 – “No difficulty”, “Some difficulty”, “Great difficulty”, “Not applicable.”

Daily reading

- One question about the number of days in past week someone read to the child
- Response options: Numeric value from 0 to 7
- Refer to Family Questions Scoring Guidelines for more information

Pediatric Symptom Checklist (PSC)

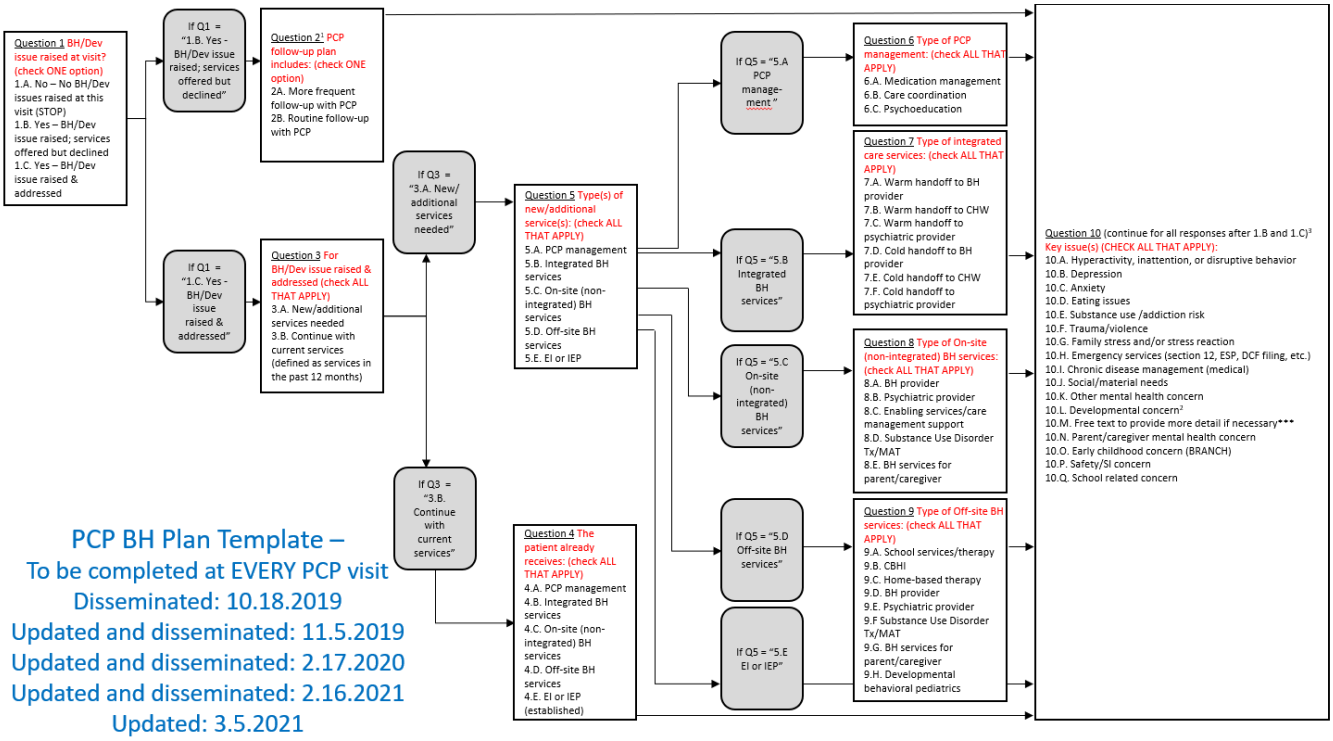
TEAM UP has decided that to use the Pediatric Symptom Checklist (PSC) at each well-child visit for a child between the ages of 5 years and 18.99 years. Of note, the PSC can come as the PSC-17 (17 items) or the PSC-35 (35 items). In addition, the PSC comes in two forms- the regular PSC, and the PSC-Y, which is completed by the child (usually adolescents). The PSC and PSC-Y contain the same items, though the order is different. All PSC screeners can be divided into a total score, an internalizing score, externalizing score, and attention score. The PSC has been used both as a screening instrument, and to follow symptomatology of children with BH issues over time. Below, we detail the information that we gather about the PSC:

- School age children 5-18.99 years behavioral questions- PSC (17, Y)
- Specifically, children 5-12.99 years should be given a PSC-17 (i.e., parent should complete the PSC); and children ages 13-18.99 years should be given Y-PSC-17 (i.e., child completes the PSC).
    - The PSC screens for emotional or behavioral concerns
    - For more information, refer to the PSC website

Patient Health Questionnaire (PHQ-9)

- The Patient Health Questionnaire (PHQ-9) is a 10-item tool to assess self-reported depressive symptoms in youth and adults. At both PCP and BH clinician visits, the PHQ-9 will be administered reflexively to children ages 12-18.99 years of age, who have a score of 5 or higher on the PSC's internalizing subscale. (Indicating that the child has a high risk for anxiety and/or depression.)
- The first 9 items are summed into a total score. The last item asks how difficult the child's problems have made for them to do their work, take care of things at home, or get along with other people.
- For more information, please refer to the PHQ website.

APPENDIX B: PCP BH Plan



PCP BH Plan Template –
To be completed at EVERY PCP visit
Disseminated: 10.18.2019
Updated and disseminated: 11.5.2019
Updated and disseminated: 2.17.2020
Updated and disseminated: 2.16.2021
Updated: 3.5.2021

APPENDIX C: Annotated screen shots of example datasets

Each month, sites give us data about psychotropic medication prescriptions. These data allow us to follow trends in prescribing that may be related to integrated care efforts (see example below)

For more information, refer to the TEAM UP data dictionary, or contact Grace Riordan.

Medication Prescriptions example data:

Variable Name for Datasets sent to BMC	values	Notes	Examples:		
Child_ID		Child ID based on scrambled data from medical record	id 7		Id 11
Sex	1 = female 2 = male	Sex/Gender of child	2	1	2
Age_Prescription	1.0-227.9 months	Child age in **months** at encounter where prescription was written **Truncate to 1 decimal place** E.g. 5.29 months becomes 5.2	144.5	132.7	60.2
Race		Race of child			
Ethnicity		Ethnicity of child			
Language		Preferred language of child			
Diagnosis_Code	##.##	ICD10 diagnosis code(s) associated with the prescription. Please include all diagnoses associated with the prescription. We do not consider any diagnosis to be a primary diagnosis. All codes should be in the same column separated by semicolons.	F33.0	F90.2	F90.0
Med_Name	TEXT (all upper case)	Name of Medication	FLUOXETINE	LISDEXAMFETAMINE	LISDEXAMFETAMINE
Refills	1-10 or 999		2	999	999
Prescribing_Provider	1= PCP 3 = Psychiatric Provider (psychiatrist or psychiatric NP)	Type of provider that prescribed this medication	1		3
Date_Prescription	mm/dd/yyyy	Date of medication prescription	1/1/2001	1/2/2001	1/3/2001

APPENDIX D. Statistical Process Control (SPC) Charts

We will be tracking a large number of metrics from your practice. This can feel overwhelming, but statistical process control can help in two ways:

1. Every month, almost every metric will go up or down. SPC can help identify which changes are worth paying attention to because they are likely to represent a real change.
2. When you try to improve something at your practice, you may expect to see a change in one or more metrics. SPC can help determine whether the change you see is both real and reliable.

The theory can be complex, but in practice SPC is pretty simple. Following the IHI's guidelines, we use four "detection rules" to detect whether a change has occurred. Metrics that trigger one or more detection rules will be flagged on the cover page of the monthly report. In the example below, you can see that "parent concern - % complete" triggered detection rules 3 and 4 at Site B. "Hunger - % positive" triggered detection rule 3 at Site B and rules 2 and 3 at Site C. Page numbers on the right tell you how to learn more.

TEAM UP FOR CHILDREN

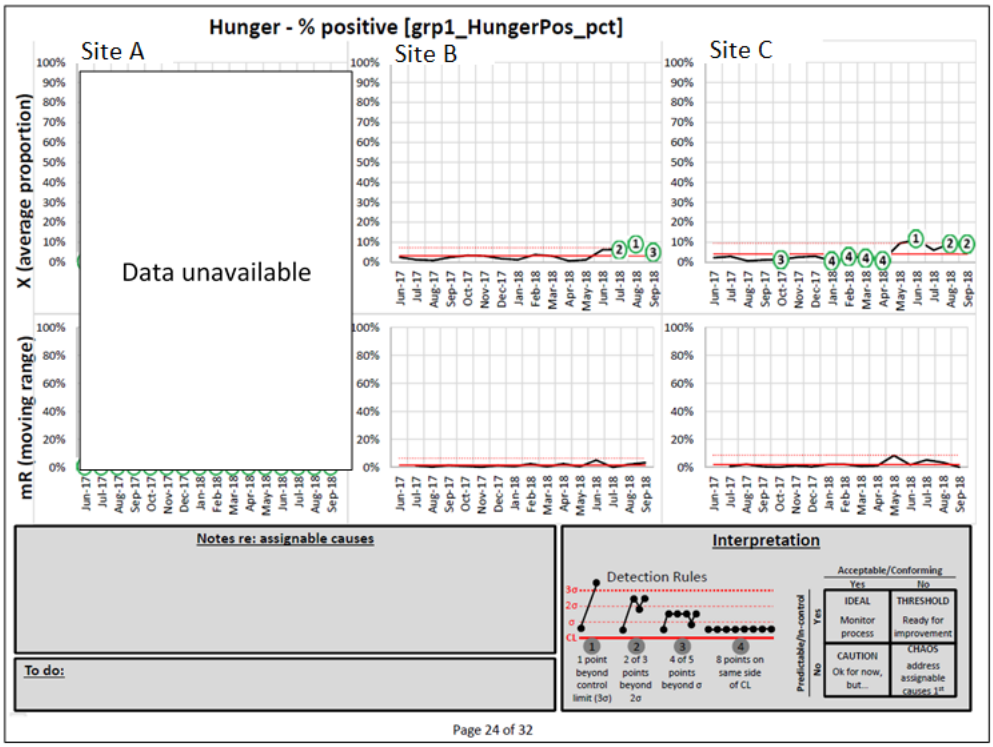
DASHBOARD

ALL SITE MONTHLY EMR REPORT

Results for: 9/1/2018

	Change noted at			page
	site A	site B	site C	
SWYC BPSC inflexibility - % complete				1
SWYC BPSC inflexibility - % positive				2
SWYC BPSC irritability - % complete				3
⋮				⋮
parent concern - % complete		34		19
parent concern - % positive				20
MN - % complete				21
MN - % positive				22
Hunger - % complete	N/A			23
Hunger - % positive	N/A	3	23	24

If you turned to page 23 because you were interested in the hunger results, you would see on the bottom charts that the magnitude of month-to-month changes fall within expectations (i.e., no detection rules have been triggered), while the top charts suggest that the % of parents reporting food insecurity has been high at two different practices for 3-4 months. The question is why—and here's where we need your help. SPC can tell us that a change has occurred, but it can't tell us why. We need your insights and opinions, so we'll ask you two brief questions like those



below. We'll share responses back with the group so you can see other's thoughts, and we'll track hypotheses about causes on the SPC charts themselves. In time, we hope to develop a detailed story of improvement at practices participating in TEAM UP.

Regarding the rise noted in the proportion of families who report hunger…

1. Why do you think this change might have occurred? [check all that apply]
   - ◯ because of a change in our practice (*please describe*)
   - ◯ because of a change in our patient population (*please describe*)
   - ◯ no clear cause—may be random variation
   - ◯ other possible cause (*please describe*)

2. Do you have any plans to do anything about this change?
   - ◯ yes—we plan to monitor future data more closely (& the evaluation team will help)
   - ◯ yes—we plan the following change (*please describe*)
   - ◯ no—we aren't convinced the change noted in this variable warrants action at this time

Evaluation Manual Addendum | April 2021

This addendum includes information on TEAM UP evaluation activities planned or in progress during Phase 2 Implementation Years 1-3.

CHC IT Analyst Role: Data collection and EMR functionality are meant to support clinic decision making and practice transformation, in addition to their value to the TEAM UP evaluation. This work is enabled through the Foundations' support of your CHC's IT analyst role; and the expectation is that these individuals will not only provide data but will also discuss and engage around the metrics in concert with other members of the core and therapeutic team and optimize EMR functionality to support the integrated care model.

IRB Updates: The TEAM UP evaluation has multiple components, each of which requires a separate BMC IRB and separate approval letters from your CHC. We anticipate that there will be additional BMC IRBs, as well as updates to existing IRBs, to be submitted over the course of your TEAM UP participation. To better understand the iterative nature to our evaluation, we reference our initial evaluation memo from 2016 which describes our expectation that the number and specificity of the evaluation metrics will grow throughout the timespan of TEAM UP.

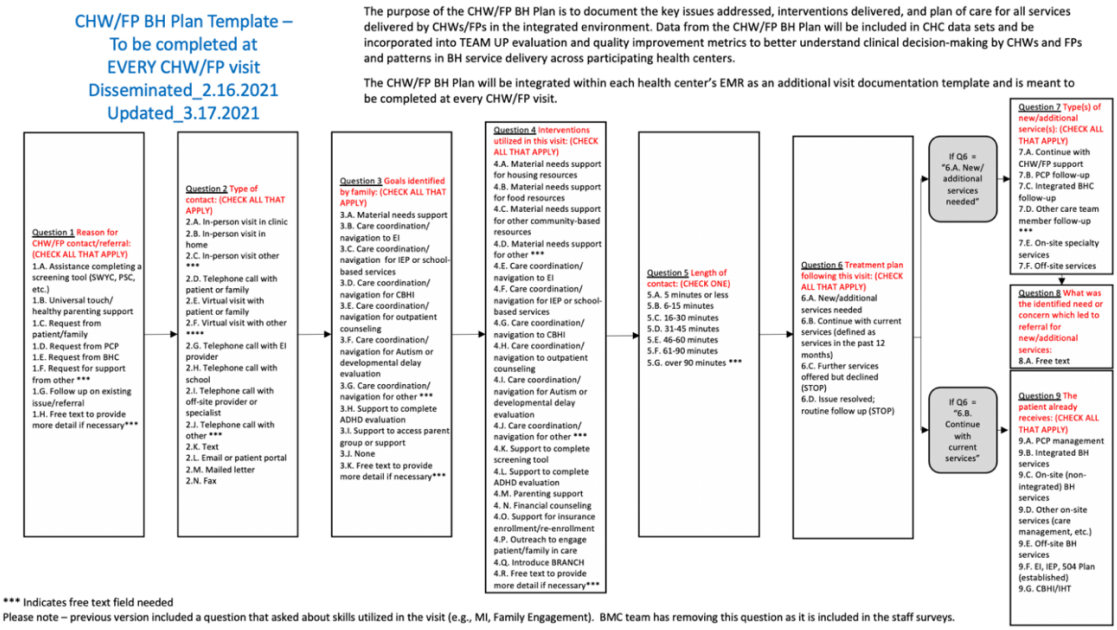
Screening Tool Updates: Throughout the implementation years, we anticipate there may be version updates to the TEAM UP screeners and we will communicate these updates if and when they occur. Beyond the official TEAM UP universal screening tools (i.e., SWYC, PSC, PHQ-9), if a CHC makes any changes to their material needs screener, please communicate these changes as early as possible to the evaluation team. We will work with your CHC to update the TEAM UP data dictionary and manage the transition in your data sets.

New BH Plans: TEAM UP strives to understand how children access behavioral health services, and often a visit with a primary care provider (PCP) provides the starting point. The PCP Behavioral Health (BH) Plan documents the PCP's plan of care in a standardized and extractable way for each patient's behavioral health services (including if there are no issues or if the parent declined services). The PCP BH Plan is completed at every PCP visit.

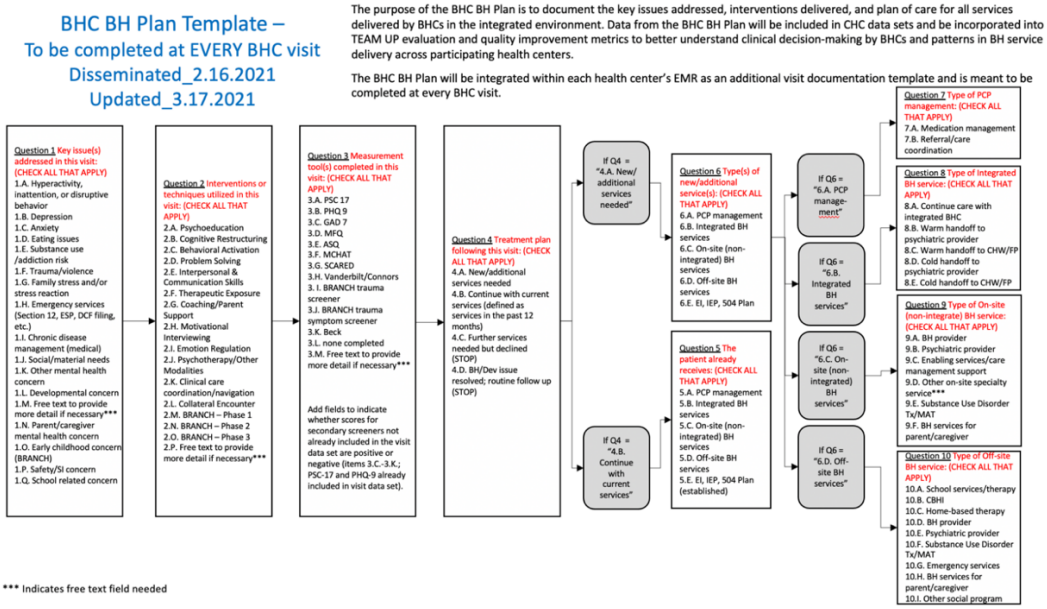
In addition to the PCP, behavioral health clinicians (BHCs) and community health workers/family partners (CHWs/FPs) play an integral role in identifying developmental, behavioral, and social issues and delivering pediatric BH care. Therefore, as of 2/16/2021, the TEAM UP Steering Committee finalized BHC and CHW/FP BH Plans to document the services provided by these roles in the same standardized and extractable way as was developed for the PCP role.

After receiving IRB approval, data from the BHC and CHW/FP BH Plans will be included in CHC data sets and incorporated into TEAM UP evaluation and practice transformation metrics to better understand clinical decision-making by BHCs and CHW/FPs, and patterns in BH service delivery across participating CHCs. The BHC and CHW/FP BH Plans will be integrated within each CHC's EMR as an additional visit documentation template, to be completed at each BHC and CHW/FP encounter, respectively. For BHCs, this will include visit encounters and collateral encounters; for CHW/FPs, this will include visit encounters and telephone encounters.

CHW/FP BH Plan



BHC BH Plan



ADHD Abstraction: ADHD is one of the most prevalent behavioral health conditions in children, and children with an ADHD diagnosis are at risk for multiple adverse outcomes. The TEAM UP ADHD intervention includes clinical training and practice transformation support to optimize ADHD care for children. Therefore, the goal of this component of the TEAM UP intervention is to examine whether participating CHCs provide more guideline adherent care after participation in TEAM UP activities as compared to care provided prior to official implementation of TEAM UP. When it is safe to come in person to sites, members of the TEAM UP evaluation team will manually abstract data from the electronic medical records of children with a new diagnosis of ADHD during two time intervals: January 1, 2019-December 31, 2019 (pre-TEAM UP) and June 1, 2021-May 31, 2022 (towards the end of Cohort 2). To facilitate data abstraction, an IT person at each CHC will create a list of children with a new diagnosis of ADHD during this study period. This list will never leave your CHC. BMC evaluation

staff will go to each of the CHCs to conduct a manual, retrospective chart review which will not collect any PHI. De-identified data will be entered into a REDCap database. Extracted variables will focus on care delivery for this population. The data will be reported in formal TEAM UP reports. An example of the ADHD chart abstraction report from Cohort 1 CHCs is included below for reference.

ADHD Chart Abstractions from Cohort 1 CHCs

Table 1. Descriptive statistics comparing outcomes for children with a new ADHD diagnosis before and after practice transformation

Note: *Orange = decrease from before to after practice transformation; Green = increase from before to after practice transformation.*

Clinical Pathway Steps	Data Point	Before practice transformation (n=70)	After practice transformation (n=92)	OR (95% CI)	p-value
Diagnosis	% **Teacher** Vanderbilts/CBCL returned to CHC *Note: denominators = total number of Vanderbilt or CBCL given to parent for* ***Teacher***	69.1% (29/42)	69.4% (43/62)	1.0 (0.4, 2.4)	0.973
	% screened positive on **Teacher** Vanderbilt/CBCL *Note: denominators = total number of* ***Teacher*** *Vanderbilts/CBCL returned to CHC*	79.3% (23/29)	86.1% (37/43)	1.6 (0.5, 5.6)	0.452
	% **Parent** Vanderbilt/CBCL returned to CHC *Note: denominators are the total number of Vanderbilt or CBCL given to parent for* ***Parent***	73.8% (31/42)	67.74% (42/62)	0.8 (0.3, 1.8)	0.507
	% screened positive on **Parent** Vanderbilt/CBCL *Note: denominators = total number of* ***Parent*** *Vanderbilts/CBCL returned to CHC*	90.3% (28/31)	69.1% (29/42)	-------	**0.044** [a]
Follow-up After Diagnosis	% of children with at least 1 touchpoint in the first 30 days after diagnosis • Yes • No *Note: denominators = total number of children followed for ≥30 days after diagnosis*	62.9% (44/70) 37.1% (26/70)	78.3% (72/92) 21.7% (20/92)	**2.1 (1.1, 4.3)**	**0.033**
	Touchpoint 1 Type • In person • Phone call *Note: denominators = total number of children with one touchpoint ≤30 days after diagnosis*	61.4% (27/44) 38.6% (17/44)	97.2% (70/72) 2.8% (2/72)	-------	**<0.001** [a]
	Touchpoint 2 Type • In person • Phone call *Note: denominators = total number of children with two touchpoints in the first 30 days after diagnosis*	80.6% (25/31) 19.4% (6/31)	81.8% (27/33) 18.2% (6/33)	1.1 (0.3, 3.8)	1.000 [a]
	Touchpoint 3 Type • In person • Phone call *Note: denominators = total number of children with three touchpoints ≤30 days after diagnosis*	75.0% (12/16) 25.0% (4/16)	80.0% (8/10) 20.0% (2/10)	-------	1.000 [a]
Medication Use	% prescribed psychotropic medication in the first 30 days after diagnosis • Yes • No *Note: denominators = total number of children followed for ≥30 days after diagnosis; children prescribed medication were excluded if time to first prescription was unknown* [b]	61.4% (43/70) 38.6% (27/70)	43.9% (36/82) [b] 56.1% (46/82) [b]	**0.5 (0.3, 0.9)**	**0.031**

Demographic Info: Once IRB approved (hopefully Spring 2021), TEAM UP will be collecting demographic data regarding patient race, ethnicity, and preferred language as part of the EMR data sets.