MODULE 5. MEASURING AND EVALUATING A FRUIT AND VEGETABLE PRESCRIPTION PROGRAM
Tools from this Module are available for download in the Network Resource Library

Pediatric Pre-Survey
Pediatric Post-Survey
Adult Pre-Survey
Adult Post-Survey
Nutritional Assessment Tool
Fruit and Vegetable Serving Size Guides
Measures and Data Collection Worksheet
# Module 5. Measuring and Evaluating a Fruit and Vegetable Prescription Program

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INTRODUCTION

This module discusses fruit and vegetable prescription program, or prescription program for short, measurement and effectiveness reporting, through the Centers for Disease Control's (CDC) six steps to evaluation design and monitoring framework. Data collection tools and additional evaluation resources are provided as samples to adapt and use within your own program should you wish. Content presented in this module can be applied to all stakeholder groups including: clinicians, retailers, and program administrators.

While this module goes into depth on measurement and evaluation methods, keep in mind that the kind of evaluation you undertake need only to meet the goals of your program and the needs of your funders and stakeholders. Based on your own program you may choose to use and implement only some of the information or tools presented within this module. Ultimately, any level of program evaluation you do is better than none at all.

1 PURPOSE OF EVALUATION

Simply put, program evaluation exists in order to understand the impact of a program. Was the program effective in meeting its goals? Impact can be measured in a variety of ways, depending on a specific program’s goals. Policy makers, program sponsors, and other stakeholders need to understand the impact of a program, to measure its success.

Wholesome Wave has adapted the CDC’s framework to better illustrate how prescription programs can be evaluated and save you time in developing your own evaluation goals and plans. If you are interested in reading the CDC’s workbook, “Developing An Effective Evaluation Plan”, in its entirety, it can be found here.

The steps outlined in the CDC’s workbook for creating an evaluation plan are below:

1. Engage stakeholders
2. Describe the problem
3. Focus the evaluation design
4. Gather credible evidence
5. Justify conclusions
6. Ensure use and share lessons learned

The framework will also be utilized to help you determine how to take your organization’s vision and identify program goals, how to capture data, and how to report on and improve your program as a result of learnings.

The CDC framework is designed via “steps”, but actions are not always linear and are often completed in a non-linear manner. The framework details how you might develop an evaluation plan and document.
2 ENGAGE STAKEHOLDERS AND DESCRIBE THE PROBLEM

As detailed in Module 2. Designing a Fruit and Vegetable Prescription Program, program design and development takes a community wide effort. The CDC framework agrees that engaging all stakeholders in identifying the goal(s) of your program is a key step. This module will not detail engaging of stakeholders here, as this is discussed in further detail in Module 1. Planning for a Fruit and Vegetable Prescription Program.

Clarify the Vision

Visions are broad, inspirational. The vision will help to clarify the need in your community that your program is addressing. You may have a vision whereby your program helps people with chronic conditions adhere to their self-care regimen. How will you measure this? How will you know that your vision is being realized? Questions that may assist in framing the discussion include:

• Why did you choose to design and implement a fruit and vegetable prescription program?
• Do you envision more retail locations due to the increased customer demand?
• Do you desire to improve the health of a subset of your patient population?

Describe the Problem

The next step involves detailing your program. A program description will clarify why your program exists: the vision, purpose, and activities. The CDC notes that most program descriptions include a logic model, which details the resources required to implement the program (inputs), program activities, and outcomes (outputs).

The logic model relays a hypothesis: that the work you (inputs) are undertaking (activities) will yield results (outputs). What results do you seek? What are the outcomes or outputs that mark progress to this goal?

Let’s think through an example of defining a vision and outcome together:

• Vision: To improve the health of patients with obesity
• Outcome: To reduce the BMI of program participants with obesity by an average of 5%

There may be multiple outcomes that could indicate progress towards the vision of “improved health.” Moreover, improved health is one vision; other visions for a prescription program could include increased market revenue, policy development, and broad nutrition education.

The CDC notes that “Describing the Program” includes listing specific expectations as goals, objectives, and criteria for success; this can be best achieved through the development of SMART goals.

Developing SMART Goals

As you document your list of program outcomes/goals, bring to mind the S.M.A.R.T. acronym. Goals will be: Specific, Measurable, Achievable, Results-focused, and Time-bound. SMART goals assist in clarifying the problem that you are attempting to solve.

• Specific: specific goals target one particular area for improvement (i.e., targeted population)
• Measureable: allow for measuring progress; quantifiable
• Achievable: realistic, given available resources
• Results: focused specific as to a “line in the sand”
• Time-Bound: identified within a certain timeframe

THE LOGIC MODEL

![Logic Model Diagram]
Utilizing the example from the previous page, let’s construct a SMART Goal

- **Vision:** To improve the health of patients with obesity
- **Outcome:** To reduce the BMI of program participants with obesity on average by 5%

**SMART Goal:**
To reduce the BMI of 85% of program participants by 5% in the 6 months post-program enrollment.

The goal is SMART:

- **Specific:** targeted population
- **Measureable:** BMI is captured in the E.M.R.
- **Achievable:** 5% BMI reduction in 6 months is reasonable in patients with obesity
- **Results Focused:** 5% is quantitative
- **Time-Bound:** within 6 months post-enrollment

Please note that as you begin developing SMART goals, it will be helpful to offer definitions for your program measurement. For example, how do you define “participant” or what constitutes “program enrollment”?

After you have constructed SMART goals, there is a need to identify how your program’s activities are linked to your goals (outputs).

In the BMI SMART goal example above, an assumption was made that the program activities support the outcome of reduced BMI of participants by 5%. What activities, exactly, are tied to this reduced BMI?

Immediate thoughts might include:

- **Increased consumption of fruits and vegetables**
- **Increased redemption of a prescription**
- **Increased knowledge of fruits and vegetables impact on nutrition/weight**

In truth, the above activities may be tied to BMI, however they are participant activities rather than program activities.

- **The program activities tied to the above (and ultimately BMI reduction) may include:**
  - **Enrollment phone calls**
  - **Prescription redemption**
  - **Nutritional education at each clinic visit**

Discussions around how your program activities will impact outcomes are essential and will clarify the work that you and your partners are undertaking. Ultimately, the goal in your program description documentation is to understand how you will measure progress toward your vision, and in documenting what activities support those outcomes.
FOCUS THE EVALUATION

Once you have clarified the problem you are trying to solve, identified SMART goals, and noted which activities are most likely to yield positive results; you are ready to focus the evaluation.

You potentially have limitless amounts of data you may capture throughout your program’s life cycle. This segment of the CDC framework requests “focus”. The key here is to understand how your measures will be used and who needs to be made aware of the results of those measures. What information is most pertinent to your stakeholders?

Will you use data to inform program improvement opportunities? Will you utilize the data to woo new partners? Do you wish to appeal for additional funding? As you document your goals and evaluation methods, note the audience(s) who will require this information.

Using Data: Process Goals and Outcomes Goals

In reviewing the CDC framework and logic model example, the first three boxes in the model focus on process measures and the last three boxes focus on outcomes.

Process Measures

Process measures answer questions about how the program operates. These measures can highlight challenges faced in delivering prescription programs and strategies for overcoming these challenges. They are useful to program staff and potentially other prescription program operators in replicating or adapting successful program strategies.

Process evaluations tend to be utilized most frequently for internal purposes: workflow improvement, training, staff engagement. Process measures may be captured monthly and used to inform program improvements. The primary audience of process indicators are internal: program managers, administrators, clinical team members, and retail staff.

Process measures, however, can also indicate future success in outcomes. In these instances, the audience may be external to your organization. You may utilize process indicators as leading indicators of long-term outcomes.

Outcome Measures

Outcome measures focus on questions of causality. For example, did your program have its intended effects? If so, what was the impact? What activities or characteristics of the program created the impact?

Outcomes can be delineated into short-term, intermediate, and long-term outcomes. An example of a sample prescription program logic model, below, will help to illustrate.

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Clinical Team, Retail Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activities</td>
<td>FVRx Prescriptions, Nutrition Education Clinical Appointment</td>
</tr>
<tr>
<td>Outputs</td>
<td># Program Participants, # Rx Redeemed, Other Operations</td>
</tr>
<tr>
<td>Short-term Outcomes</td>
<td>Increased Use of Retail, Increased FVRx Redemption, Increased F&amp;V Consumption, Increased PCP visits</td>
</tr>
<tr>
<td>Intermediate Outcomes</td>
<td>Satisfaction, Health Status, Reduced BMI</td>
</tr>
<tr>
<td>Long-term Outcomes</td>
<td>Reduced BMI, Cost Savings, Shopping Behavior, Reduced Morbidity/Mortality</td>
</tr>
</tbody>
</table>

In this example, program activities such as targeting a population with fruit and vegetable prescriptions and nutritional education could be measured by outputs such as numbers of program participants, number of prescriptions redeemed, etc. These activity metrics may demonstrate short-term outcomes such as increased customer usage of retail sites and increased visits to the doctor. In the long-term, you may see retail sites expanding hours (to accommodate influx of new customers).
Selecting Measures (Indicators)

In the last section, we discussed the difference between process and outcomes measurement. This portion of the module will focus on the measures, also known as indicators, within each of those areas.

<table>
<thead>
<tr>
<th>PROCESS MEASURES</th>
<th>OUTCOME MEASURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capture program activities</td>
<td>Capture causality (if this, then that)</td>
</tr>
<tr>
<td>Capture program process steps</td>
<td>Sometimes referred to as “effectiveness” indicators</td>
</tr>
<tr>
<td>Primarily internally focused</td>
<td>Primarily externally focused</td>
</tr>
</tbody>
</table>

Monitoring your program provides information on key aspects of how your program is operating and the extent to which your program objectives are being achieved (e.g., numbers of patients served compared to your target enrollment goal). Funders and policymakers often use these types of results to assess or promote the program’s performance and accomplishments.

You may be familiar with clinical process measures. The Centers for Medicaid and Medicare Services (CMS) and specifically the Healthcare Effectiveness Data and Information Set (HEDIS) will often measure processes before measuring outcomes (i.e., HbA1c test was administered rather than measuring HbA1c test results). The thinking behind this is that if processes are completed, the likelihood of improved outcomes increases.

Samples of Process Measures include:

<table>
<thead>
<tr>
<th>EVALUATION QUESTION</th>
<th>METRIC</th>
<th>DATA SOURCE</th>
<th>PROGRAM ACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are we targeting enough patients?</td>
<td>Number of patients targeted for outreach</td>
<td>Program enrollment spreadsheet</td>
<td>Enrollment targeting (list pull)</td>
</tr>
<tr>
<td>Are our engagement techniques working?</td>
<td>Number of participants enrolled in program</td>
<td>Program enrollment spreadsheet</td>
<td>Enrollment calls/events</td>
</tr>
<tr>
<td>Will we increase sales revenue?</td>
<td>Amount of prescription sales at retail location ($$$)</td>
<td>Retail log</td>
<td>Program promotion</td>
</tr>
<tr>
<td>Will majority of participants redeem their prescriptions?</td>
<td>Number of prescriptions redeemed</td>
<td>Retail log</td>
<td>Program promotion, Visit completion</td>
</tr>
<tr>
<td>Will we increase knowledge of importance of fruits and vegetables?</td>
<td>Number of participants aware of nutritional content information</td>
<td>Pre-/Post- Survey</td>
<td>Survey Administration</td>
</tr>
</tbody>
</table>

Outcome Measures

These, on the other hand, focus on questions of causality. Did your program have its intended effects? What was the impact? What activities or characteristics of the program created the impact?

As noted in the CDC framework, outcomes may be short-term or long-term in nature. When questioning a
Program’s effectiveness, many funders and stakeholders are envisioning long-term impacts of the program, such as improved health of a population, reduced costs to care, etc.

Examples of Short-term and Long-term Outcomes

<table>
<thead>
<tr>
<th>OUTCOME</th>
<th>GOAL</th>
<th>DATA SOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SHORT-TERM</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body Mass Index (BMI)</td>
<td>25% of participants reduced BMI by the end of the intervention</td>
<td>BMI from EMR data</td>
</tr>
<tr>
<td>Fruit and Vegetable Consumption</td>
<td>85% of participants increase daily fruit and vegetable consumption by 1 cup</td>
<td>Patient Survey</td>
</tr>
<tr>
<td>Access to Fruits and Vegetables</td>
<td>85% of participants realize increased access to fruits and vegetables</td>
<td>Prescription Redemption Log</td>
</tr>
<tr>
<td>Health Status</td>
<td>85% of participants end program with “Top Box” satisfaction (Very Good, Excellent)</td>
<td>Patient Survey</td>
</tr>
<tr>
<td>Food security</td>
<td>50% of participants are more food secure during the intervention</td>
<td>Patient Survey</td>
</tr>
<tr>
<td>Fruit and Vegetable Sales</td>
<td>Fruit and vegetable sales increase by 1% during the intervention</td>
<td>Retail Accounts</td>
</tr>
<tr>
<td><strong>LONG-TERM</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduced Morbidity and Mortality related to condition</td>
<td>Reduced incidence of diabetes complications or hospitalizations</td>
<td>Morbidity/Mortality Rates and/or EMR data</td>
</tr>
<tr>
<td>Reduction in Total Cost of Care</td>
<td>Reduction in total cost of care</td>
<td>Healthcare Claims</td>
</tr>
</tbody>
</table>

Examples of Leading Indicators

<table>
<thead>
<tr>
<th>OUTCOME</th>
<th>LEADING INDICATOR</th>
<th>DATA SOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Mass Index (BMI)</td>
<td>Increased fruit and vegetable intake</td>
<td>Patient Survey</td>
</tr>
<tr>
<td>Hemoglobin A1c (HbA1c)</td>
<td>HbA1c test completed</td>
<td>Claims</td>
</tr>
<tr>
<td>Self-reported health status</td>
<td>Confidence measure</td>
<td>Patient Survey</td>
</tr>
<tr>
<td>Reduced Morbidity and Mortality related to condition</td>
<td>Reduced Blood Pressure</td>
<td>EMR</td>
</tr>
<tr>
<td>Increased availability to fruits and vegetables</td>
<td>Increased fruit and vegetable retail revenue</td>
<td>Retail accounting</td>
</tr>
</tbody>
</table>

Leading Indicators

When talking about clinical and cost-related outcomes, many of these are long-term. This means that you may not see clinical outcome improvement for a year or longer; cost reductions may not be realized for multiple years after the completion of your program. Since there is often need to demonstrate progress throughout program implementation, it is of the utmost importance to have short-term outcomes identified in addition to long-term outcomes. These are often referred to as “leading indicators”, because they indicate future success.

To put this in context of a prescription program, what could be a leading indicator for a future reduction in BMI?

What program activities might occur in the short-term that you hypothesize will have long-term clinical results? Are there any short-term clinical outcomes that may be witnessed?

Examples could include:

- Increased consumption of fruits and vegetables
- Increased redemption of prescriptions
- Increased knowledge of fruits and vegetables

Frequency of Measurement Reporting

There are different audiences who may require data at different frequencies. Program staff and managers will likely want to see process indicators weekly or monthly, while other stakeholders (such as funders and board members) may only require annual reports.

Sample Schedule of Reporting Frequency

<table>
<thead>
<tr>
<th>WEEKLY &amp; MONTHLY</th>
<th>QUARTERLY</th>
<th>ANNUALLY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide updates to team/staff on activities and process measures</td>
<td>Roll up monthly activities into quarterly results</td>
<td>Report patient, provider, and staff satisfaction rates with the program</td>
</tr>
<tr>
<td>Report on “hitting your numbers”</td>
<td>Report out on leading indicators</td>
<td>Report program outcomes data</td>
</tr>
</tbody>
</table>
As your program goals are being identified, your team will need to think through how to collect the data to answer the program questions. Data can be qualitative or quantitative; it may be experienced or observed. Data may already be captured and available for program use or your program may require new specifications for data capture. The CDC notes that credibility may also rely on: the evaluator, sources of data, how questions were posed, methodology, and quality assurance practices.

**Considering an Evaluator**

Who will evaluate your program on an ongoing basis? As you develop your evaluation plan, it will be important to understand who and how to provide management and outcomes reporting at regular intervals.

Things to consider:

- Should you use an external evaluator?
- What are the credentials of your evaluator?
- Do you need to secure resources to fund evaluation role/position?
- What are the audience preferences vis a vis evaluation needs?

**Qualitative or Quantitative Data**

There are two general types of data. Quantitative data is information that can be measured and is number-based, such as a person's height or weight. Qualitative data is information that can't actually be measured, such as a person's underlying reasons and motivations for behaving in a certain way.

Qualitative methods add depth, detail and meaning to your research. However, quantitative evidence is usually needed to show that a program had a significant impact on changing patients' health or health behavior. Quantitative data provide useful background information to help interpret qualitative data and using both qualitative and quantitative information can help provide a more holistic picture of how your program is performing and impacting your patients, their families, and the community.

### Comparing Methods

<table>
<thead>
<tr>
<th>QUALITATIVE</th>
<th>QUANTITATIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methods include focus groups, in-depth interviews, and reviews of documents for types of themes</td>
<td>Methods include surveys, structured interviews &amp; observations, and reviews of records or documents for numeric information</td>
</tr>
<tr>
<td>More subjective: describes a problem or condition from the point of view of those experiencing it</td>
<td>More objective: provides observed effects of a program on a problem or condition</td>
</tr>
<tr>
<td>Text-based</td>
<td>Number-based</td>
</tr>
<tr>
<td>More in-depth information from a fewer number of sources</td>
<td>Less in-depth but more breadth of information across a large number of sources</td>
</tr>
<tr>
<td>Unstructured or semi-structured response options</td>
<td>Fixed response options</td>
</tr>
<tr>
<td>No statistical tests needed</td>
<td>Statistical tests are used for analysis</td>
</tr>
</tbody>
</table>

**Data Sources and Tools**

There are various sources of data that can be collected to measure the effectiveness of your program, such as:

- **Electronic Medical Record (EMR) data**
- **Program Enrollment Information**
- **Retail Log Sheets, Accounting Records**
- **Publicly Reported Data**
- **Healthcare Claims Data**
- **Patient Reported Data (e.g., survey, clinical visit, focus group, health risk assessment)**

The source of your data will depend on the goal that has been selected. EMR data, as an example, serves organizations well for reporting clinical outcomes. EMR data may also be structured to capture program enrollment information, such as demographics (age, sex), but may not capture other program participant data (e.g., income).
Electronic Medical Record Data
As mentioned above, EMR data tends to be the source of clinical data which is most trusted by providers. EMR data is available as soon as it is entered into the system, permitting it is entered accurately; therefore, this data is seen as timely for action to be taken. EMR data will let you know that a test was administered as well as the result of that test (information not found in claims data).

Healthcare Claims Data
Each time a healthcare service is rendered, whether it is an office visit, pharmacy refill, or hospital stay (to name a few), there is a cost associated, and therefore, an invoice that is created. For those invoices sent to insurance companies, a “claim” is generated.

Healthcare claims include a wealth of information about a patient, what service was received, who provided the service, etc. In terms of reporting clinical process measures and healthcare cost measures, claims are used readily in the U.S. healthcare system.

While healthcare claims are reliable in that they mark whether or not a service happened, there are some challenges with claims data. The primary complaint with claims data is that it is not timely, and therefore, not “actionable”. The amount of time from date of service to claim payment is approximately 3 months; many refer to this information as “lagging.” It is helpful for long-term outcomes, but not necessarily as data that can promote immediate action.

When developing your evaluation plan, reducing cost of care may be a consideration. Many health promotion and prevention programs strive to demonstrate cost savings due to program participation. Claims data is one source that can support this type of data pull. Health plans may have access to claims data, but you may need to rely on the other data sources to get claims data. For a more complete discussion around reporting cost reductions, see Reducing the Cost of Care in the Toolbox on pg. 28.
Participant Reported Data

Patient reported data is primarily gained through surveys. There are multiple reasons to survey your program participants. Participant feedback lets you know not only how your program operations run, but can also lend insight to program outcomes and satisfaction. Surveys can also be used to gather information about participants’ consumption patterns, shopping habits, and knowledge of the importance of fruits and vegetables.

Pre-and post-surveys are typically self-administered by the participant and it is best to make the surveys available in the appropriate languages. When administering surveys, it is important that the administration method remains consistent for all participants before and after the program and should not be leading. For example, interviewers should ask questions exactly as they are phrased on the survey and use neutral phrases that allow patients to answer honestly, not as if they need to provide an answer the interviewer is looking for.

TIP

Posing Questions

A correctly designed survey or questionnaire is an excellent tool for collecting and evaluating data and as such should be considered in your evaluation plans. However, writing effective survey questions can be difficult. As such, it is recommended when possible to work with an experienced survey researcher or use already tested/validated questions when developing a survey or questionnaire. Due to the complexity of developing survey questions this toolkit will not go into detail on how to develop a survey but will highlight some of the “Do’s” and “Don’ts” for consideration when crafting a survey or administering a questionnaire.

DO:

• Provide confidentiality and anonymity — Provide a statement to assure the respondent that they and their answers will remain anonymous. Also, try to provide a confidential space where they can answer questions without others potentially listening in.

• Write questions and responses with clear objectives, concise language, complete sentences, correct grammar, and simple words.

• Utilize questions that allow you to compare your participants’ responses against questions that have been validated among other studies.

• Allow “don’t know” and “not applicable” responses where appropriate.

• Use probes to motivate the patient and focus their attention on the particular question — When a patient answers, “I don’t know” try asking, “What would be your best guess on that?”

• Test your questionnaire — Be sure to pilot or pre-test it on individuals who represent your target population to identify difficult wording or confusing questions.

DON’T:

• Use many abbreviations, acronyms, or jargon — Patients may not be familiar with technical terms or acronyms.

• Ask “double-barreled questions” — A double-barreled question contains two or more distinct questions but allows only one answer resulting in either a non-response or a response that is hard to interpret.

• Ask leading questions — A leading question suggests an answer and thus will influence the respondent’s answer.

• Ask double-negative questions — Patients can easily be confused deciphering the meaning of a question that uses two negative words. This is even more so if English is not the patient’s first language.

• Ask hypothetical questions — It is difficult to answer questions that relate to circumstances that you have not experienced.

• Ask open-ended questions unless necessary — Patients may feel overwhelmed with open-ended questions. Try to limit open-ended questions to one or two.
Survey questions, used in FVRx programs, are included in this module to provide samples of validated survey questions on topics such as participant satisfaction, self-reported health status, and behavior change. See the Toolbox from pg. 16 to pg. 23 for a Pediatric Pre-Survey, Pediatric Post-Survey, Adult Pre-Survey, and Adult Post-Survey used in FVRx programs, which can also be downloaded from the Network Resource Library and adapted to your needs.

For more information and resources on gathering patient reported data see the following links:
- National Health and Nutrition Examination Survey²
- What We Eat in America survey interview questions³
- Dietary Recall Questions⁴
- Measurement Guides for “dietary recall questions”⁵
- National Collaborative on Childhood Obesity Research (NCCOR) Measures Registry⁶

Retail Data
Collecting data on prescription usage at retail sites serves a greater purpose than keeping track of how much participants are spending and how much to be reimburse stores or vendors for prescription purchases. Retail data collected through prescription redemption can be used to show the program’s impact on participants’ health, participants’ access to fruits and vegetables, as well as ability to increase the viability of the partnering retailer.

Public Data
There is a wealth of healthcare data that is publicly available. Local, regional, and State data can be found online regarding morbidity and mortality rates, nutritional/obesity programming, and fruits and vegetable availability. A long-term outcome of your program may be “reduced obesity related morbidity and mortality rates” in your local area; this can be measured utilizing public data.

While the benefit(s) of these data are that they are accessible, public data poses a challenge because the data cannot be linked explicitly to your program’s activities.

For a complete listing of Public Health data tools and statistics, visit the Partners in Information Access for the Public Health Workforce website⁸.

TOOLS

Fruit and Vegetable Serving Size Guides
The Fruit and Vegetable Serving Size tools provide a visual aid when assessing fruit and vegetable consumption. This tool may aid patients in understanding what a serving size is as well as estimating their fruit and vegetable consumption. Serving size guides can be found in the Toolbox on pg. 25 and pg. 26.

Measures and Data Collection Worksheet
The Measures and Data Collection Worksheet may be a useful tool when working with partners to determine and record your program’s key measures, the data sources to draw them from, and the frequency you intend on collecting them. The worksheet can be found in the Toolbox on pg. 27.

Fruit and Vegetable Consumption Assessment Tools
FVRx programs have typically used a brief dietary assessment tool to evaluate their program’s impact on increasing the consumption of fruit and vegetables in participants’ diet through measuring fruit and vegetable intake. A fruit and vegetable consumption assessment tool is typically integrated into each FVRx clinical visit and data is captured in an EMR or on paper through a form like the Clinical Visit Form. The dietary assessment questions included on the Clinical Visit Form are a modified version of the National Cancer Institute’s Eating at America’s Table Study, Quick Food Scan⁷. The sample dietary recall questions can also be found on the Nutritional Assessment Tool in the Toolbox on pg. 24. These tools are available in the Network Resource Library and customizable to your own needs.
Collecting Program Data

Program Data refers to both participant data (i.e., demographics) and program activity data that can be specifically captured in a spreadsheet or database (i.e., retail log or clinic form). Program data may also be captured in an EMR, in an accounts receivable system, or in participant surveys.

Since program data may come from a variety of sources, ensure that these data sources allow you to “de-duplicate” participants (i.e., each participant is only counted once). As we have previously discussed EMR and survey data, we will focus on program reporting tools or spreadsheets.

Program participant data is captured in order to understand the population you are targeting; participant information can include general demographics (age, sex) as well as BMI, income level, and eligibility for nutrition benefits, among other health and social indicators. These indicators may contribute to future health outcomes.

Program activity data supports assessing program effectiveness in terms of prescription redemption, engagement, and satisfaction. Reporting tools, such as spreadsheets can support the tracking and reporting of program activity. Farmers markets participating in FVRx program have used forms and spreadsheets, such as the Prescription Redemption Log and Prescription Redemption Log, whereas retailers such as grocery stores and convenience stores have used a Prescription Invoice to report on prescription redemption. These tools can be found in the Toolbox. For more information on how the tools can be designed within your particular program see Module 2. Designing a Fruit and Vegetable Prescription Program.

Quality Assurance

In addition to identifying appropriate data sources, it is paramount to understand how you will provide quality assurance for your data capture and collection.

“Garbage in, Garbage Out” is a term often quoted by data analysts. The information that you pull out of a system for reporting or analysis is only as good as the data you put into the system.

Considerations for Data Quality Assurance

- Provide “scales” for patient reported data (i.e., Rate from 1–5 or utilize “Poor”, “Fair”, “Good”, “Very Good”);
- When possible, utilize data that is already captured for other purposes. Minimizing duplicate system entry will not only help in encouraging staff to participate, it will reduce instances of human error.

Evaluation Plan Methods

Throughout this section on Gathering Credible Evidence, you have considered: the role of evaluation in capturing your program’s effectiveness; the data sources available (including quantitative and qualitative); the quality assurance process.

At this point in your evaluation planning, it is essential to think through how each data element will be captured. The primary target here is to pull together all the components you have learned throughout this section: linking the evaluation question to your expected use of data (and audience) and the method(s) by which you will collect that data.
5 JUSTIFY CONCLUSIONS

Once you are at the point in the process that you have data, you will need to think through how the data may answer the questions you originally posed.

- Interpret findings while keeping in mind
  - Program goals
  - Environmental considerations
  - Stakeholder needs (use of data)

- Think through how the data supports your program’s effectiveness. Can this data be used to improve the program? What is working well and what may need to be altered?

- Share preliminary findings with stakeholders. They may have insights that you have not considered.

It is essential to understand that the data analysis portion of understanding program effectiveness is a long (and iterative) process. As you review the data, you may discover a heightened need for additional resources (time, staff or vendors) to complete sufficient analyses.

6 SHARE FINDINGS AND LESSONS LEARNED

Once you find yourself at a point where you have:

- Identified measure types (process and outcomes)
- Identified and documented leading indicators
- Developed reporting templates and scheduling frequency
- Reviewed data sources and additional factors impacting the credibility of your evaluation
- Created and vetted conclusions as a result of your data

It is time to share the information you have collected and tell your program’s story. As you may surmise, documentation is critical throughout this (and other program development and implementation) process. Aligning your documentation in a structured format will allow your audience(s) to easily understand your findings.

The CDC template suggested for use can be found in the workbook, “Developing An Effective Evaluation Plan”. Ensure that your stakeholders are on board and understand your findings completely; they can be helpful in sharing findings with funders, policy makers, and other stakeholders involved in your process, operations, and financial viability (staff or vendor) to complete sufficient analyses.
FRUIT AND VEGETABLE PRESCRIPTION PROGRAM
Pre-Program Survey (Pediatric)

Please complete these questions when you get your first fruit and vegetable prescription. The survey should be completed by a person who lives with the child and does at least half of the grocery shopping for the family. Your answers will be kept private and will not affect your family’s food benefits in any way. Thank you!

1. How often do you or someone who lives in your home shop at farmers market?
   - □ 1. Never
   - □ 2. Less than once a month
   - □ 3. About once a month
   - □ 4. 2–3 times per month
   - □ 5. Weekly or more

2. How much do you feel you know about the following items?

<table>
<thead>
<tr>
<th>Item</th>
<th>Know a lot</th>
<th>Know some</th>
<th>Know only a little</th>
<th>Know nothing</th>
</tr>
</thead>
<tbody>
<tr>
<td>The fruits and vegetables that are grown locally in your area</td>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
</tr>
<tr>
<td>How to prepare fresh fruits and vegetables</td>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
</tr>
<tr>
<td>Where to buy locally grown produce in your area</td>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
</tr>
<tr>
<td>The retailer or farmers market(s) that participates in this program</td>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
</tr>
<tr>
<td>The importance of fruits and vegetables in your family’s diet</td>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
</tr>
</tbody>
</table>

3. In general, how healthy is your overall diet?
   - □ 1. Excellent
   - □ 2. Very good
   - □ 3. Good
   - □ 4. Fair
   - □ 5. Poor
Participant’s ID# ______________________   Today’s Date: ______________________

4. Please note if the following were often true, sometimes true, or never true for you and your household and your food situation in the last 30 days.

| The food that (I/we) bought just didn’t last, and (I/we) didn’t have money to get more | Often true | Sometimes true | Never true | Don’t know |
| I/we couldn’t afford to eat balanced meals | Often true | Sometimes true | Never true | Don’t know |

5. In the last 30 days, did you or other adults in your household ever cut the size of your meals or skip meals because there wasn’t enough money for food?

☐ 1 Yes
☐ 2 No
☐ 3 Don’t know

6. If you answered yes above, in the last 30 days, how many days did this happen?

_____ Days

7. In the last 30 days...

| Did you ever eat less than you felt you should because there wasn’t enough money for food? | Yes | No | Don’t know |
| Were you ever hungry but didn’t eat because there wasn’t enough money for food? | Yes | No | Don’t know |

8. Do you or anyone who lives with you get these benefits? (Please check all that apply, answering will not affect food benefits in any way).

☐ 1 Food stamps (SNAP)
☐ 2 Senior farmers market checks (FMNP)
☐ 3 WIC farmers market checks or Cash Value Voucher (CW)
FRUIT AND VEGETABLE PRESCRIPTION PROGRAM
Post-Program Survey (Pediatric)

Please complete these questions when you get your last fruit and vegetable prescription. The survey should be completed by the person who lives with the child and does at least half of the grocery shopping for the family. Your answers will be kept private and will not affect your family’s food benefits in any way. Thank you!

1. How often have you been to the retailer or farmers market to use your fruit and vegetable prescriptions this season?
   - □ 1 Never
   - □ 2 Less than once a month
   - □ 3 About once a month
   - □ 4 2–3 times per month
   - □ 5 Weekly or more

2. How much do you feel you know about the following items?

<table>
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<tr>
<td>How to prepare fresh fruits and vegetables</td>
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   - □ 1 Excellent
   - □ 2 Very good
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   - □ 5 Poor
Participant’s ID# ____________________ Today’s Date: ____________________

4. Please note if the following were often true, sometimes true, or never true for you and your household and your food situation in the last 30 days.

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<tr>
<th>The food that (I/we) bought just didn’t last, and (I/we) didn’t have money to get more</th>
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<th>Sometimes true</th>
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<td>I/we couldn’t afford to eat balanced meals</td>
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1. Yes
2. No
3. Don’t know

6. If you answered yes above, in the last 30 days, how many days did this happen?

____ Days

7. In the last 30 days...

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<td>Were you ever hungry but didn’t eat because there wasn’t enough money for food?</td>
<td>Yes</td>
<td>No</td>
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Participant’s FVRx ID# _______________  Today’s Date: _______________

FRUIT AND VEGETABLE PRESCRIPTION PROGRAM
Pre-Program Survey (Adult)

Please complete these questions when you get your first fruit and vegetable prescription. Your answers will be kept private and will not affect your family’s food benefits in any way. Thank you!

1. How often do you or someone who lives in your home shop at farmers market?
   □ 1  Never
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____ Days

7. In the last 30 days…

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8. Do you or anyone who lives with you get these benefits?  
(Please check all that apply, answering will not affect food benefits in any way).

☐ 1. Food stamps (SNAP)  
☐ 2. Senior farmers market checks (FMNP)  
☐ 3. WIC farmers market checks or Cash Value Voucher (CW)
Participant’s FVRx ID# ____________________ Today’s Date: ____________________

FRUIT AND VEGETABLE PRESCRIPTION PROGRAM
Post-Program Survey (Adult)

Please complete these questions when you get your last fruit and vegetable prescription. Your answers will be kept private and will not affect your family’s food benefits in any way. Thank you!

1. How often have you been to the retailer or farmers market to use your fruit and vegetable prescriptions this season?
   - 1 Never
   - 2 Less than once a month
   - 3 About once a month
   - 4 2–3 times per month
   - 5 Weekly or more

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| I/we couldn’t afford to eat balanced meals | Often true | Sometimes true | Never true | Don’t know |

5. In the last 30 days, did you or other adults in your household ever cut the size of your meals or skip meals because there wasn’t enough money for food?

- [ ] 1. Yes
- [ ] 2. No
- [ ] 3. Don’t know

6. If you answered yes above, in the last 30 days, how many days did this happen?

   ____ Days

7. In the last 30 days...

| Did you ever eat less than you felt you should because there wasn’t enough money for food? | Yes | No | Don’t know |
| —— | —— | —— | —— |

| Were you ever hungry but didn’t eat because there wasn’t enough money for food? | Yes | No | Don’t know |
| —— | —— | —— | —— |
SAMPLE NUTRITIONAL ASSESSMENT TOOL

Participant ID#: ______________________  DATE OF VISIT: ______________________

Please read this section to the patient before asking the questions below.

For the following four questions, please think about all the fruits and vegetables that you ate last week. Include those that were:

Eaten alone and mixed with other food
Eaten as snacks and at meals
Raw and cooked
Eaten at home and away from home

NUTRITIONAL ASSESSMENT:

1. Over the last week, how many times per day did you eat FRUIT?
   Prompt: Count any kind of fruit — fresh, canned, and frozen. Include fruit you ate at mealtimes and for snacks. Do not count juices.

   Never 1x per day 2x per day 3x per day 4x per day 5x per day

2. Each time you ate FRUIT, how much did you usually eat?

   Less than 1/2 cup  About 1/2 cup  About 1 cup  More than 1 cup

3. Over the last week, how many times per day did you eat VEGETABLES?
   Prompt: Count any kind of fruit — fresh, canned, and frozen. Include fruit you ate at mealtimes and for snacks. Do not count French fries.

   Never 1x per day 2x per day 3x per day 4x per day 5x per day

4. Each time you ate VEGETABLES, how much did you usually eat?

   Less than 1/2 cup  About 1/2 cup  About 1 cup  More than 1 cup
# FRUIT SERVING SIZES GUIDE

## EXAMPLES OF 1 CUP OF FRUIT

<table>
<thead>
<tr>
<th>Fruit</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 small apple</td>
<td></td>
</tr>
<tr>
<td>1 large banana</td>
<td></td>
</tr>
<tr>
<td>1 small watermelon wedge</td>
<td></td>
</tr>
<tr>
<td>8 strawberries</td>
<td></td>
</tr>
</tbody>
</table>

## EXAMPLES OF ½ CUP OF FRUIT

<table>
<thead>
<tr>
<th>Fruit</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 small orange</td>
<td></td>
</tr>
<tr>
<td>16 grapes</td>
<td></td>
</tr>
<tr>
<td>1 small peach</td>
<td></td>
</tr>
<tr>
<td>1 large plum</td>
<td></td>
</tr>
</tbody>
</table>
VEGETABLE SERVING SIZES GUIDE

EXAMPLES OF 1 CUP OF VEGETABLES

1 large bell pepper
1 medium potato
12 baby carrots or 2 medium carrots
1 large ear of corn

EXAMPLES OF ½ CUP OF VEGETABLES

1 small tomato
1 large celery stalk
5 broccoli florets
2 cups raw leafy greens
# MEASURES AND DATA COLLECTION WORKSHEET

This worksheet allows you to develop and record your plan for collecting key program measures. Included are suggested program indicators, space to note any additional program indicators, evaluation tools to collect the data, and when data will be collected.

<table>
<thead>
<tr>
<th>KEY MEASURES</th>
<th>DATA COLLECTION TOOL</th>
<th>MEASUREMENT TIMING/ FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example: Weight</td>
<td>Clinical Visit Form</td>
<td>At the monthly clinical visit</td>
</tr>
<tr>
<td>Height</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body Mass Index (BMI)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blood Pressure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fruit and vegetable consumption servings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fruit and vegetable consumption servings over time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge of fruits and vegetables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-reported health status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food security</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prescription redemption rates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Add Additional Indicator</td>
<td></td>
<td></td>
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<tr>
<td>Add Additional Indicator</td>
<td></td>
<td></td>
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<tr>
<td>Add Additional Indicator</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
REDUCING THE COST OF CARE

There is much research to attest to the cost of poor nutrition and obesity in America. Medical treatment for obesity (such as surgery) is still relatively rare, therefore the costs associated with obesity are more likely calculated from the conditions related to obesity such as diabetes, metabolic syndrome and cardiovascular disease. (Harvard). In 2012, the U.S. spent an estimated 20.6% of healthcare costs on obesity related conditions.

When measuring reductions in cost of care, we are entering a slippery slope. If we hypothesize that a subset of the population is going to cost x amount due to their poor nutrition/obesity, and we implement a program, and they cost x/2 (half) of what we predicted, did we “save” money? It is difficult to measure because we are measuring assumed savings.

This appendix will delve into the “Cost of Care”; by the end of this section, you will have a better understanding for what the term “total cost of care” means, what data you need to report it, and how to structure cost savings reports.

What is Total Cost of Care?

Across the nation, healthcare affordability is a concern. How will we continue to fund and support our sick-care system? HealthPartners of Minnesota is well known for disseminating a total cost of care measure across healthcare systems in the U.S. Their Total Cost of Care (TCOC) measure was the first to be endorsed by The National Quality Forum (NQF); TCOC is population-based and applies NCQA’s risk adjustment methodology (to account for illness burden, population disparities). TCOC is intended to be utilized by providers, payers, employers, researchers, and individuals in order to estimate overall costs of care and to alter actions accordingly. (Health Partners)

In layman’s terms, TCOC can be calculated as the “all in” cost of care – total healthcare costs for a population, including inpatient, outpatient, professional, and pharmacy costs. When thinking about healthcare costs, a few things to note:

- Healthcare costs do not happen all at once nor are they always consistent;
- A few people within the population tend to be the most costly. This is commonly referred to as the 80/20 Rule (80% of the membership accounts for 20% of the costs);
- Claims data is a “lagging” indicator, because they often take 3 months to process post-event. This means you may choose to consider additional “leading” indicators as a proxy for cost savings.
What Data Do You Need in Order to Calculate Total Cost of Care?

In healthcare as well as in other areas that detail cost calculations, there are direct costs and indirect costs. In healthcare cost savings, direct costs include: doctor visits, pharmacy prescriptions, etc. Indirect costs could be absenteeism, productivity, smoking, etc.

This section on cost savings will focus on direct costs, which can be most easily understood through the use of healthcare claims data.

Enquire with the health plans that you are working with to see if they can create cost savings reports for you, as health plans generally utilize cost savings methodologies in their standard reporting packages. If you are working with a health plan to generate reports, you can send a list of eligible program participants as well as program enrollees to the health plan in order to understand the costs associated with that population.

If you choose to produce cost savings reports in your organization, you will need to receive healthcare claims data. Claims data can be received from a health insurance company or through an all-payer claims database (APCD) or voluntary database. These databases are usually run by a state or region’s “healthcare improvement collaborative”. As claims data can be difficult to get from a health insurance company, you may also want to look into drawing on clinical (EMR) data, patient survey data, as well as FVRx retail data in order to produce leading indicators of future cost savings.

How Do You Calculate Cost Savings

Per Member Per Month (PMPM) is a unit of measurement designed to understand how much something costs (or how much resource is utilized) each month across your membership (or program participation).

When trying to understand the costs of an effort, it is helpful to know how much that program costs and how that can be absorbed by the membership (program funding). Whether you create and deliver cost savings reporting yourself or have reports produced externally, the term “er” is one that you will hear associated with cost savings.

As an example, if a program costs $5,000 to operate in one month, and you have 1,500 members that month, what is the PMPM cost of that program?

### Monthly PMPM

<table>
<thead>
<tr>
<th>MEMBERS</th>
<th>PROGRAM COST</th>
<th>PMPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,500</td>
<td>$5,000</td>
<td>$3.33</td>
</tr>
</tbody>
</table>

### Annual PMPM

<table>
<thead>
<tr>
<th>MEMBERS</th>
<th>MEMBER MONTHS (members x 12 mos)</th>
<th>ANNUAL PROGRAM COST</th>
<th>PMPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,500</td>
<td>$18,000</td>
<td>$60,000</td>
<td>$3.33</td>
</tr>
</tbody>
</table>

Just as you can calculate PMPM cost for program implementation, you may also calculate PMFM savings due to program participation.

To calculate savings, the more historical data you have on your program participants, the better. If you have data on how much your program participants cost before they started the program this will provide a “Before” picture for comparison purposes.

### Before (Pre-Program Enrollment)

<table>
<thead>
<tr>
<th>MEMBERS</th>
<th>HEALTH COSTS (no Rx)</th>
<th>HEALTH COSTS (with Rx)</th>
<th>PMPM (no Rx)</th>
<th>PMPM (with Rx)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,500</td>
<td>$500,000</td>
<td>$750,000</td>
<td>$333.34</td>
<td>$500.00</td>
</tr>
</tbody>
</table>

This is a group of high health resource utilizers; either that, or you have a couple of high cost participants (whose costs are attributed to a catastrophic incident like a motor vehicle accident).

### After (Post-Program Enrollment)

<table>
<thead>
<tr>
<th>MEMBERS</th>
<th>HEALTH COSTS (no Rx)</th>
<th>HEALTH COSTS (with Rx)</th>
<th>PMPM (no Rx)</th>
<th>PMPM (with Rx)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,500</td>
<td>$300,000</td>
<td>$500,000</td>
<td>$200.00</td>
<td>$333.34</td>
</tr>
</tbody>
</table>
The numbers listed on the previous page demonstrate $166.67 in total health care cost savings per member per month (or almost $3 million in savings). As you can imagine, demonstrating this information on an annual basis can conclude large numbers and big savings opportunities. However, month-to-month, this sort of savings calculation may not fluctuate with such impact. For this reason, it will be important to include leading indicators of future cost savings.

**Leading Indicators of Cost Savings**

What indicates cost savings? The largest healthcare costs are associated with inpatient stays (hospital, skilled facility, etc). Emergency department use (outpatient cost) is also a high cost activity. What activities do we see as having an impact on those large dollars?

If a participant sees his/her provider on a regular basis, will that reduce his/her healthcare costs? If a participant has low income, is s/he more likely to use the Emergency Department for care?

Healthcare research has shown that socioeconomic status, lifestyle (obesity, smoking), high utilization of services and increased pharmacological intervention all contribute to high healthcare costs (Squires). Based on this research and the data available via the FVRx program, the following leading indicators may be used for future cost savings:

- **Number of healthcare touch points** — claims data
- **Utilization of Emergency Dept.** — claims data
- **Appointments kept** — EMR data and/or Clinic FVRx spreadsheet
- **FVRx prescriptions redeemed** — FVRx Retail log
- **Patient Survey data** — FVRx Survey
- **Number prescriptions moved to in house (clinic or retail) pharmacy** — Retail log

**Reporting Frequency**

As mentioned previously, Total Cost of Care utilizes claims based data (with potentially a three month lag in data receipt). Reports are best structured utilizing a 12-month rolling design. This means that each month, you will look back at the previous 12 months. The last quarter of your reporting will be most valuable, whereas the first three quarters of TCOC reporting will act as “leading indicators” of future TCOC outcomes (Q4, Total Year).

When reporting “leading indicators”, you may include monthly reports of # of appointments kept, Emergency Department utilization, # prescriptions redeemed, etc.
Claims Data Requirements for Cost Savings Reporting

If you choose to pull the data in your own organization, you may decide to utilize a methodology such as HealthPartners, whereby specifications have been built and documented for public use. In this case, please see the complete data specifications and requirements here: [website].

When reporting "leading indicators", you may include monthly reports of # of appointments kept, Emergency Department utilization, # prescriptions redeemed, etc.

Claims Data will include:

<table>
<thead>
<tr>
<th>Inpatient Claims</th>
<th>Outpatient Claims</th>
<th>Professional Claims</th>
<th>Pharmacy Claims</th>
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<tbody>
<tr>
<td>MEMBER_ID</td>
<td>MEMBER_ID</td>
<td>MEMBER_ID</td>
<td>MEMBER_ID</td>
</tr>
<tr>
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<td>ENC_NO</td>
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<td>ENC_SER_NO</td>
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<tr>
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<td>PROCMOD</td>
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<td>PILL_CNT</td>
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<tr>
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<td>BILL_TP_CD</td>
<td>PLACE_OF_SERV_CD</td>
<td>PAID_DAYS_SUP_QTY</td>
</tr>
<tr>
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<td>RVN_CD</td>
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<td>BILLED_AMT</td>
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<td>TOTREIM_AMT</td>
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</tbody>
</table>

Complete SAS and non-SAS user recommendations can be found on the HealthPartner’s TCOC Toolkit website.

References


2. Health Partners, Total Care Relative Resource Values Application. Available at: [website]

A Closer Look at Examining Obesity’s Toll. Available at: [website]


AADE [website]
REFERENCES


