



AGENCY FOR HEALTHCARE RESEARCH AND QUALITY



AHRQ Patient Reported Outcome (PRO) Clinical Decision Support (CDS) Dashboard Overview

Clinical Decision Support Innovation Collaborative – Innovation Center

Dashboard Purpose & Use Cases

- ▶ **As part of the AHRQ funded Clinical Decision Support Innovation Collaborative, two dashboards for measuring the performance of patient-centered clinical decision support were developed.**
- ▶ **The Patient-Reported Outcome (PRO) Clinical Decision Support (CDS) Dashboard is intended to support**
 - **Clinical Director-level personnel and**
 - **Informaticians/CDS Developers**
- ▶ **The dashboards depict the status and effectiveness (performance) measures of PRO CDS at an institution**
- ▶ **We developed dashboards depicting hypothetical use cases of PRO CDS:**
 - **Depression**
 - **Inflammatory Bowel Disease (IBD)**
- ▶ **The overarching goal of the dashboards are to improve quality and patient safety of the CDS interventions associated with the PROs collected**

For the purpose of this overview, we're going to use data from a hypothetical medical center called ACME Medical Center.

ACME has decided to start a new program where they encourage patients to complete the patient health questionnaire-9 (PHQ-9) before their visits to screen them for depression or suicidality.



PATIENT HEALTH QUESTIONNAIRE-9 (PHQ-9)

Over the last 2 weeks, how often have you been bothered by any of the following problems?
(Use "✓" to indicate your answer)

| | Not at all | Several days | More than half the days | Nearly every day |
|---|------------|--------------|-------------------------|------------------|
| 1. Little interest or pleasure in doing things | 0 | 1 | 2 | 3 |
| 2. Feeling down, depressed, or hopeless | 0 | 1 | 2 | 3 |
| 3. Trouble falling or staying asleep, or sleeping too much | 0 | 1 | 2 | 3 |
| 4. Feeling tired or having little energy | 0 | 1 | 2 | 3 |
| 5. Poor appetite or overeating | 0 | 1 | 2 | 3 |
| 6. Feeling bad about yourself — or that you are a failure or have let yourself or your family down | 0 | 1 | 2 | 3 |
| 7. Trouble concentrating on things, such as reading the newspaper or watching television | 0 | 1 | 2 | 3 |
| 8. Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual | 0 | 1 | 2 | 3 |
| 9. Thoughts that you would be better off dead or of hurting yourself in some way | 0 | 1 | 2 | 3 |

FOR OFFICE CODING 0 + _____ + _____ + _____
=Total Score: _____

If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all

Somewhat difficult

Very difficult

Extremely difficult

The PHQ-9 is a long-used validated instrument for depression and suicidality screening. There are also two additional variants:

- PHQ-2, which is used as a screening instrument and only asks the first two questions
- PHQ-8, which asks all of the questions except for the last, which is related to suicidality



Patient Health Questionnaire (PHQ-9)

Attached to a message from Admin A received 7/12/2022

* Indicates a required field.

Over the last 2 weeks, how often have you been bothered by any of the following problems?

* Little Interest or Pleasure in Doing Things

Not at all **Several days** More than half the days Nearly every day

* Feeling Down, Depressed, or Hopeless

Not at all Several days **More than half the days** Nearly every day

* Trouble Falling or Staying Asleep, or Sleeping too Much

Not at all **Several days** More than half the days Nearly every day

* Feeling Tired or Having Little Energy

Not at all Several days **More than half the days** Nearly every day

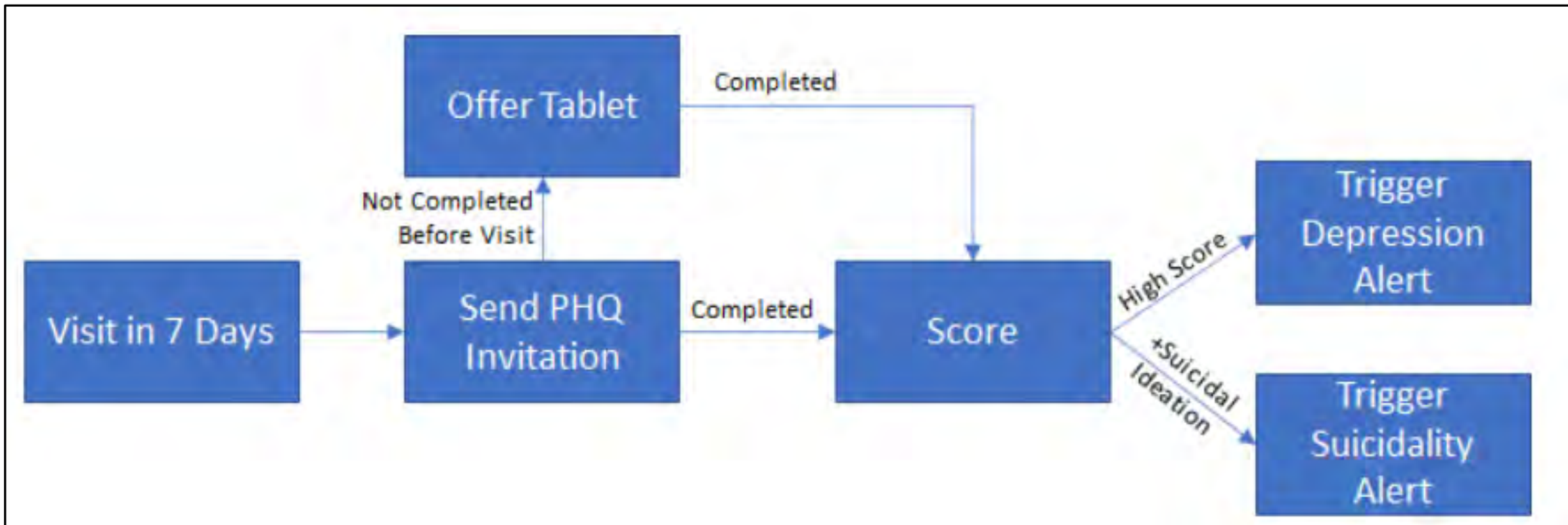
* Poor Appetite or Overeating

Not at all **Several days** More than half the days Nearly every day


* Feeling Bad About Yourself - or That You are a Failure or Have Let Yourself or Your Family Down

Not at all **Several days** More than half the days Nearly every day

Several days prior to an appointment, ACME patients receive an email asking them to complete pre-visit tasks, including the PHQ on the web.



If patients do not complete the PHQ prior to their appointment, they will be offered a tablet when they arrive to their appointment to complete it then. The results from the PHQ are stored in their medical record where they can be accessed by members of the care team. Any concerning results will automatically trigger clinical decision support alerts for the provider.





 PHQ Score 10-14 -- Moderate Depression

| Total Score | Depression Severity |
|-------------|---------------------|
| 0-4 | None |
| 5-9 | Mild |
| 10-14 | Moderate |
| 15-19 | Moderately Severe |
| 20-27 | Severe |

This patient's recent PHQ score indicates Moderate Depression.

Open the Order Set below to add visit diagnoses, make behavioral health referrals, prescribe common medications, order labs, and schedule follow up. To add diagnoses to problem list, use buttons below. Otherwise dismiss this CDS alert using acknowledgment reasons below.

If concerned about patient safety or suicidal ideation, call the Psychiatric Assessment Service at (333) 555-7000.

| | | |
|--|--|---|
| <input checked="" type="button" value="Open Order Set"/> | <input type="button" value="Do Not Open"/> | Adult Depression (Adult Primary Care)  |
| <input type="button" value="Add Problem"/> | <input checked="" type="button" value="Do Not Add"/> | Major Depression  |
| <input type="button" value="Add Problem"/> | <input checked="" type="button" value="Do Not Add"/> | Postpartum Depression  |
| <input type="button" value="Add Problem"/> | <input checked="" type="button" value="Do Not Add"/> | Reactive Depression (situational)  |

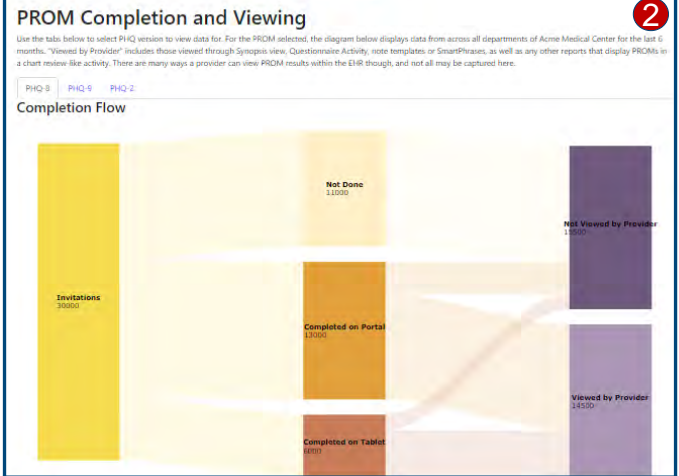
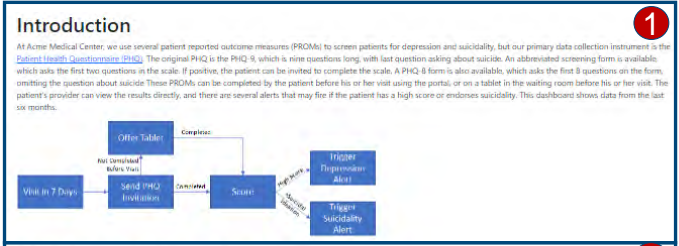
Acknowledge Reason

- Refuses all interventions
- Counseled about medications/referral options
- Already under care of specialist
- Known diagnosis managed by me

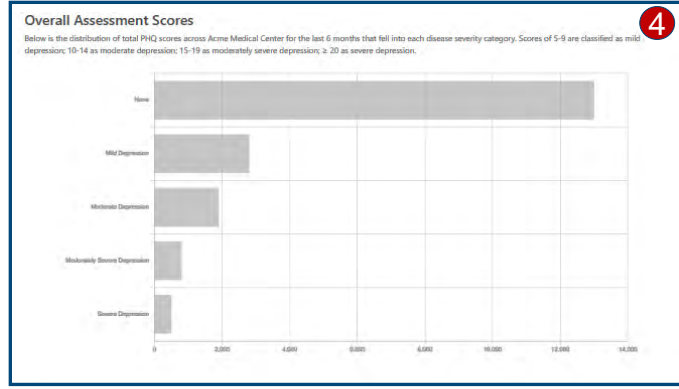
The doctor or health provider will receive the results of the questionnaire and, if there are concerning findings, will also receive a decision support alert in the EHR.

For example, this patient's results indicate moderate depression, so the CDS offers providers the following options:

- Add problems to the patient's Problem List**
- Open an Order Set, which allows them to take actions on the patient or call a psychiatric hotline at the medical center for additional assistance**
- Acknowledge Reason, to indicate a reason for overriding the alert**



- ### Items
- Below are the questions included in the PHQ-9 selected. Click on each to see the distribution of patient responses from the last 6 months. Hovering over each bar displays the number in text.
- Over the last 2 weeks, how often have you been bothered by any of the following problems? Little interest or pleasure in doing things
 - Over the last 2 weeks, how often have you been bothered by any of the following problems? Feeling down, depressed, or hopeless
 - Over the last 2 weeks, how often have you been bothered by any of the following problems? Trouble falling or staying asleep, or sleeping too much
 - Over the last 2 weeks, how often have you been bothered by any of the following problems? Feeling tired or having little energy
 - Over the last 2 weeks, how often have you been bothered by any of the following problems? Poor appetite or overeating
 - Over the last 2 weeks, how often have you been bothered by any of the following problems? Feeling bad about yourself - or that you are a failure or have let yourself or your family down
 - Over the last 2 weeks, how often have you been bothered by any of the following problems? Trouble concentrating on things, such as reading, the newspaper, or watching television
 - Over the last 2 weeks, how often have you been bothered by any of the following problems? Moving or speaking so slowly that other people could have noticed, or the opposite - being so fidgety or restless that you have been moving a lot more than usual
 - If you checked off any problems how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?



Equity

The table below shows the PHQ completion rates for select minority groups from the last 5 months. The non-English category contains mostly Spanish-speaking patients and a smaller percentage of Arabic-speaking patients and speakers of other languages.

| Group | Invited | Completed by Patient | Viewed by Provider |
|-------------|---------|----------------------|--------------------|
| Everyone | 30,000 | 63.3% | 70.3% |
| Non-White | 4,500 | 62.2% | 75.0% |
| Non-English | 3,000 | 53.3% | 68.8% |
| Disabled | 4,000 | 43.8% | 74.3% |
| Female | 16,000 | 63.8% | 75.5% |

CDS

Acme Medical Center has four different CDS alerts related to concerning PHQ responses. The alert for Moderate Depression is non-interruptive, while the other three are triggered on chart open. Use the tabs to select a CDS alert to view its respective performance data for the last 180 days.

Mod Depr Most Sev Depr Sev Depr ≥9

PHQ Score 10-14 - Moderate Depression

| PHQ Score | Discussion Interest |
|-----------|---------------------|
| 10-14 | None |
| 15-19 | Probable |
| 20-27 | Severe |

The patients report PHQ scores indicate Moderate Depression.

Open the Order tab under the PHQ-9 diagnosis, under the Patient Health Questionnaire (PHQ-9) section, and select the Moderate Depression alert. To view diagnostic codes for this alert, click on the 'View Codes' link.

If assessment is not completed by the provider, click the 'Add Problem' button.



Patients

This is a list of patients who recently completed the PHQ-9 and received a score ≥ 15, or who indicated suicidality on question 9 (where administered).

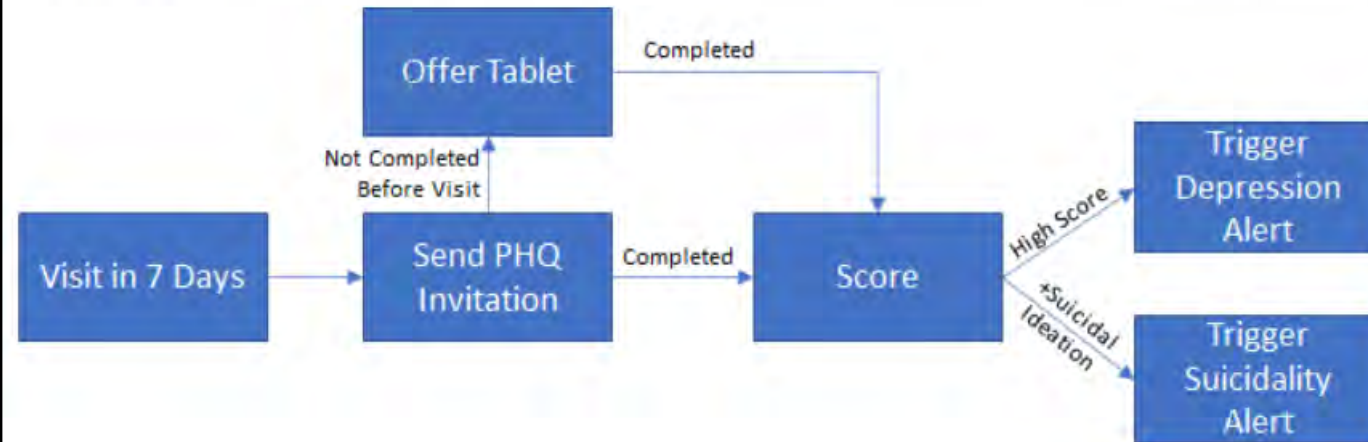
| MRN | Age | Name | Encounter Provider | Appt Date | Qx Date | PHQ Score | Suicidality | Mode | Viewed | Psych Visit | SW Visit | Referral | Psych Hosp |
|----------|-----|-------------------------|------------------------|-----------|-----------------|-----------|-------------------------|---------|--------|-------------|----------|----------|------------|
| 11787201 | 12 | Moslemian, Whitehead | Nafhanid, Benjamin, MD | 6/18/2023 | 6/11/2023 9:43 | 17 | Several days | MyChart | Y | N | N | Y | N |
| 65056241 | 17 | Shannon, Anastasia Neal | Anastasia Neal, MD | 6/12/2023 | 6/11/2023 8:59 | 25 | Nearly every day | MyChart | N | Y | N | Y | Y |
| 61362103 | 17 | Deeiree Mccarty | Jasmine Simmons, MD | 6/6/2023 | 6/6/2023 9:19 | 22 | Several days | Kiosk | Y | N | Y | Y | N |
| 30389127 | 18 | Anthony Lang | Jesus Aguirre, MD | 6/5/2023 | 6/4/2023 13:43 | 19 | Several days | MyChart | Y | N | N | Y | N |
| 1677027 | 15 | Eddie Goodman | Daniela Li, MD | 6/5/2023 | 6/2/2023 12:36 | 19 | Not at all | Kiosk | Y | N | Y | Y | N |
| 13415489 | 11 | Ella Lloyd | Dakota Eaton, MD | 6/2/2023 | 6/1/2023 9:52 | 17 | Not at all | MyChart | Y | N | N | N | N |
| 50630407 | 17 | Talan Grant | Karren Ray, MD | 6/2/2023 | 6/1/2023 14:16 | 16 | Several days | MyChart | Y | N | N | N | N |
| 57467191 | 11 | Karlee Nixon | Tristian Dillon, MD | 6/1/2023 | 6/1/2023 10:17 | 16 | Not at all | Kiosk | N | N | N | N | N |
| 26246133 | 20 | Micah Lester | Lemmon Harvey, MD | 5/30/2023 | 5/29/2023 14:25 | 25 | More than half the days | MyChart | Y | Y | Y | Y | Y |
| 65309464 | 17 | Alexandros Moody | Yoselin Sullivan, MD | 5/24/2023 | 5/22/2023 9:33 | 19 | Not at all | MyChart | Y | N | N | Y | N |
| 41934689 | 13 | June Pence | Aidan Ramos, MD | 5/29/2023 | 5/28/2023 10:11 | 17 | Nearly every day | MyChart | Y | Y | N | Y | Y |
| 81625272 | 16 | Marcus Frey | Cole Bryan, MD | 5/29/2023 | 5/29/2023 15:42 | 22 | Not at all | Kiosk | Y | Y | Y | Y | N |
| 84474181 | 16 | Achilles Sengouon | Cayden Mora, MD | 5/24/2023 | 5/23/2023 15:01 | 23 | Nearly every day | MyChart | Y | Y | Y | Y | Y |

A dashboard to view data related to PHQ use and its associated CDS was developed. ACME Medical Center personnel can access this depression dashboard in their web browser.

Over the next few slides, we will review the functionality of each component of the dashboard.

Introduction

At Acme Medical Center, we use several patient reported outcome measures (PROMs) to screen patients for depression and suicidality, but our primary data collection instrument is the [Patient Health Questionnaire \(PHQ\)](#). The original PHQ is the PHQ-9, which is nine questions long, with last question asking about suicide. An abbreviated screening form is available, which asks the first two questions in the scale. If positive, the patient can be invited to complete the scale. A PHQ-8 form is also available, which asks the first 8 questions on the form, omitting the question about suicide. These PROMs can be completed by the patient before his or her visit using the portal, or on a tablet in the waiting room before his or her visit. The patient's provider can view the results directly, and there are several alerts that may fire if the patient has a high score or endorses suicidality. This dashboard shows data from the last six months.



The dashboard starts with an Introduction that describes the PHQ and the associated workflow and alerts. The flow diagram indicates the general timeline of events from PHQ invitation to possible alerts being fired. The PHQ text is hyperlinked to another page that displays the full questionnaire.

PROM Completion and Viewing

2

Use the tabs below to select PHQ version to view data for. For the PROM selected, the diagram displays data from across all departments of ACME Medical Center for the last 6 months. "Viewed by Provider" includes those viewed through Synopsis View, Questionnaire Activity, note templates or SmartPhrases, as well as any other reports that display PROMs in a chart review-like activity. There are many ways a provider can view PROM results within the EHR though, and not all may be captured here.

PHQ-8 PHQ-9 PHQ-2

Completion Flow



The PROM Completion and Viewing section of the dashboard includes a Sankey diagram to display the total numbers of PROMs assigned to patients, the number completed via Patient Portal before the appointment, via tablet during an office visit appointment, or not completed, as well as PROMs viewed by a provider or not.

Tabs on the upper left (PHQ-8, PHQ-9, PHQ-2) allow users to select which PHQ version data is displayed for. Hovering over the connecting bar displays the exact number of PROMs flowing from one category to the next.

Items

Below are the questions included in the PROM selected. Click on each to see the distribution of patient responses from the last 6 months. Hovering over each bar displays the number in text.

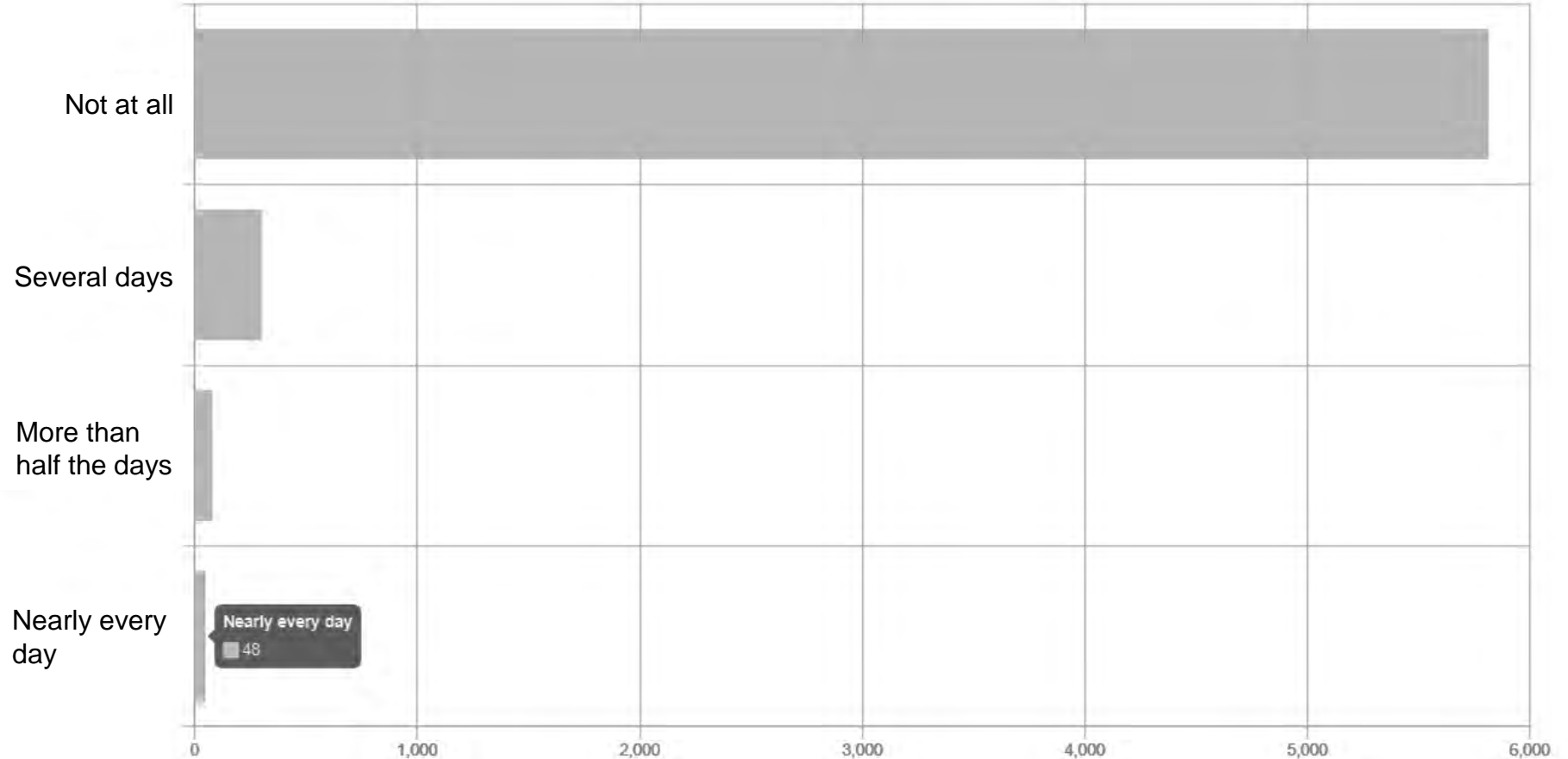
- [Over the last 2 weeks, how often have you been bothered by any of the following problems?: Little Interest or Pleasure in Doing Things](#)
- [Over the last 2 weeks, how often have you been bothered by any of the following problems?: Feeling Down, Depressed, or Hopeless](#)
- [Over the last 2 weeks, how often have you been bothered by any of the following problems?: Trouble Falling or Staying Asleep, or Sleeping too Much](#)
- [Over the last 2 weeks, how often have you been bothered by any of the following problems?: Feeling Tired or Having Little Energy](#)
- [Over the last 2 weeks, how often have you been bothered by any of the following problems?: Poor Appetite or Overeating](#)
- [Over the last 2 weeks, how often have you been bothered by any of the following problems?: Feeling Bad About Yourself - or That You are a Failure or Have Let Yourself or Your Family Down](#)
- [Over the last 2 weeks, how often have you been bothered by any of the following problems?: Trouble Concentrating on Things, Such as Reading the Newspaper or Watching Television](#)
- [Over the last 2 weeks, how often have you been bothered by any of the following problems?: Moving or Speaking so Slowly That Other People Could Have Noticed, or the Opposite - Being so Fidgety or Restless That You Have Been Moving Around a lot More Than Usual](#)
- [Over the last 2 weeks, how often have you been bothered by any of the following problems?: Thoughts That You Would be Better off Dead, or of Hurting Yourself in Some Way](#)

The Items section of the dashboard includes the list of questions included in each variant of the PHQ, depending upon which tab is selected in the section above. Each question can be clicked on to show the distribution of responses for each.

Items

Below are the questions included in the PROM selected. Click on each to see the distribution of patient responses from the last 6 months. Hovering over each bar displays the number in text.

Back



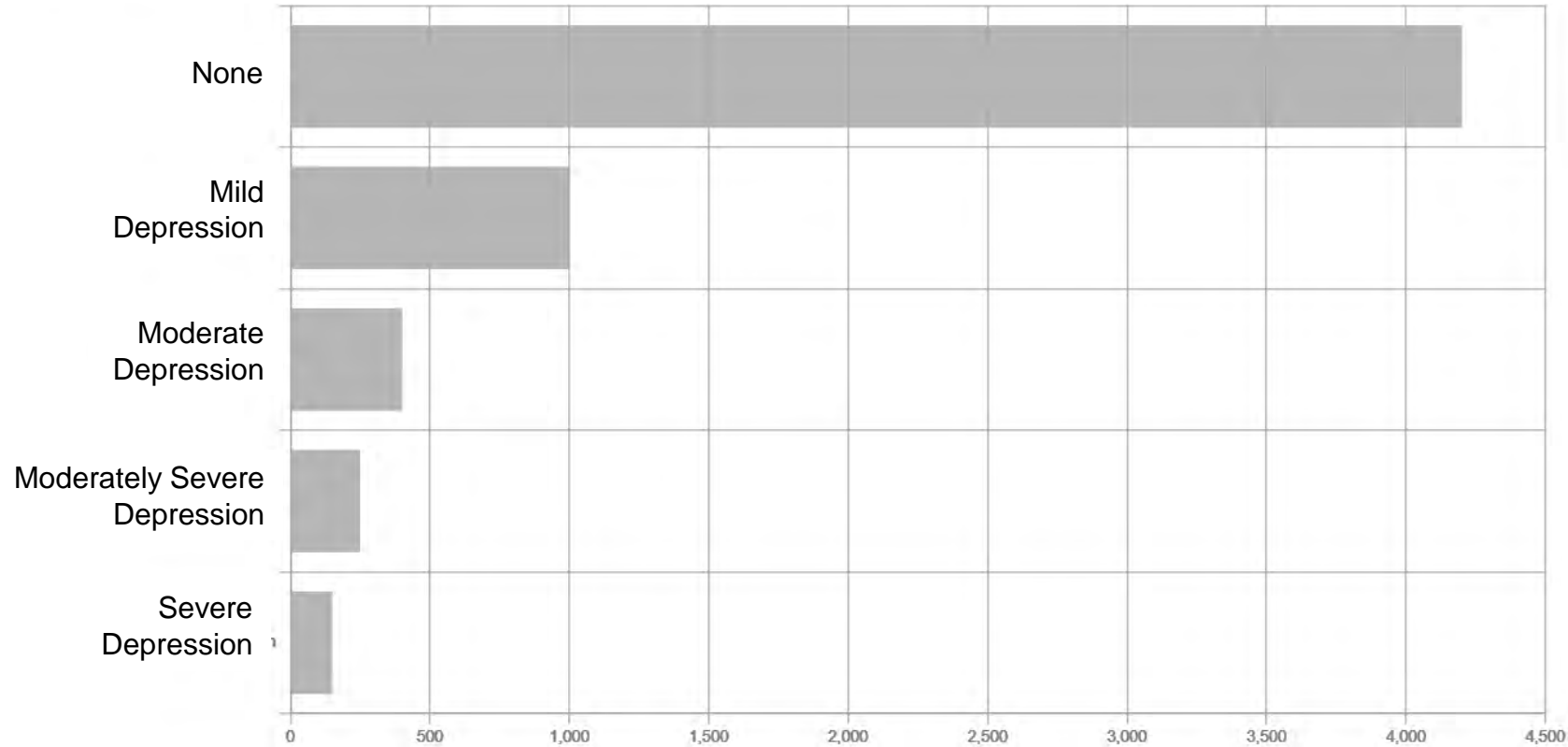
Each question in the Items section can be clicked on to show the distribution of responses for each.

For example, the image on the right shows the responses for question 9 related to suicidality. Hovering over each bar reveals a black box including the precise number of responses for that option.

Overall Assessment Scores

4

Below is the distribution of total PHQ scores across ACME Medical Center for the last 6 months that fell into each disease severity category. Scores of 5-9 are classified as mild depression; 10-14 as moderate depression; 15-19 as moderately severe depression; ≥ 20 as severe depression.



The Overall Assessment Scores section of the dashboard includes a graph displaying the distribution of total PHQ scores across Acme for the last 6 months that fell into each disease category related to depression.

The hypothetical data indicate the majority fell into the “none” category, while a smaller proportion fell into the “mild”, “moderate”, “moderately severe”, or “severe depression” categories.

Equity

5

The table below shows the PROM completion rates for select minority groups from the last 6 months. The non-English category contains mostly Spanish-speaking patients and a smaller percentage of Arabic-speaking patients and speakers of other languages.

| Group | Invited | Completed by Patient | Viewed by Provider |
|-------------|---------|----------------------|--------------------|
| Everyone | 10,000 | 60.0% | 76.7% |
| Non-White | 1,500 | 63.3% | 73.7% |
| Non-English | 1,000 | 55.0% | 77.3% |
| Disabled | 1,300 | 42.3% | 72.7% |
| Female | 5,200 | 62.5% | 73.8% |

The Equity section of the depression dashboard displays completion and viewed data for the specific variant of the PHQ selected by the user. The hypothetical data shows the percent of patients who are non-white, non-English speaking, disabled, and female who completed their assigned PHQ, and of those, the percent that were viewed by a provider. This data could be useful for identifying disparities related to PROM completion or viewing within special populations.

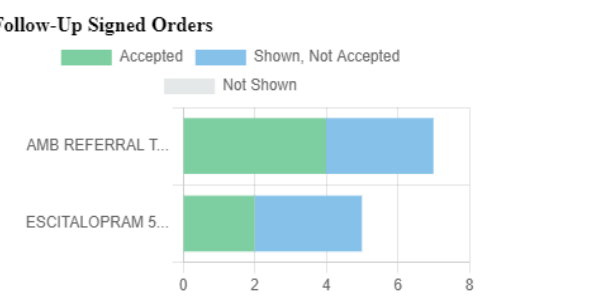
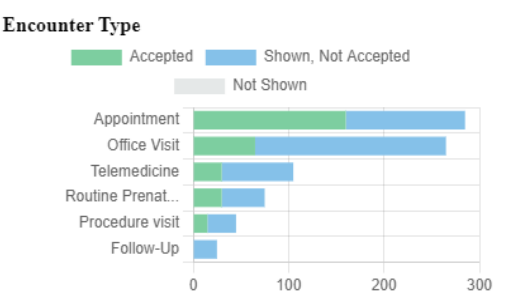
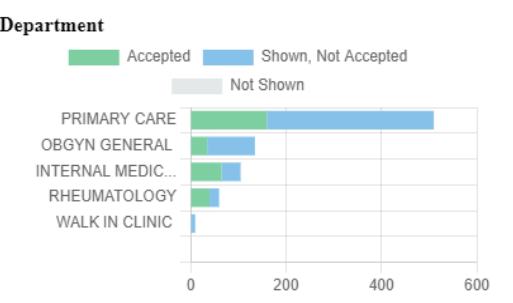
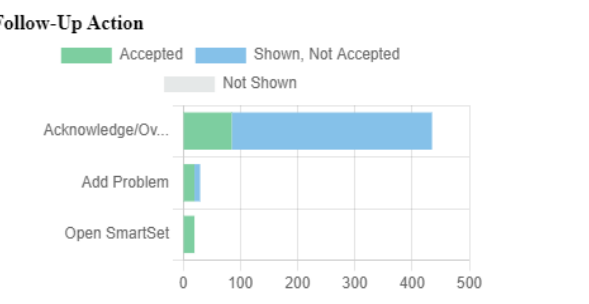
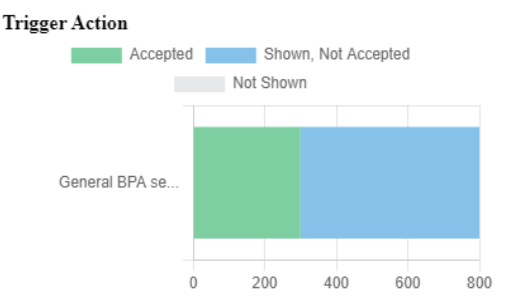
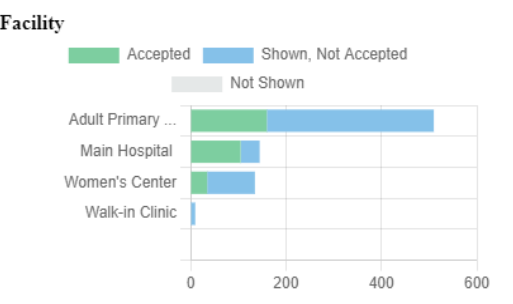
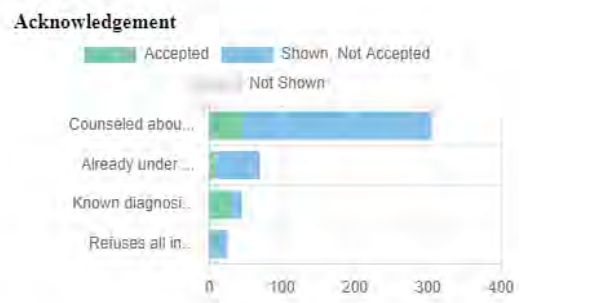
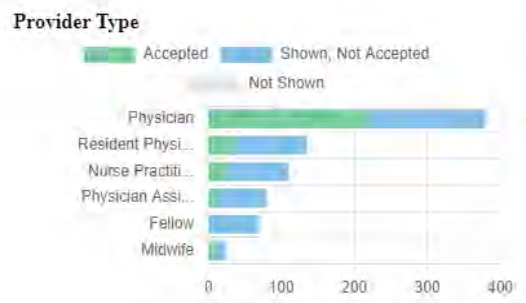
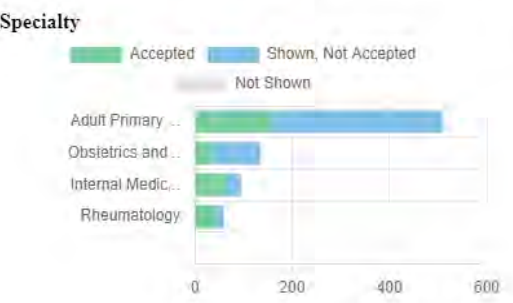
ACME Medical Center has four difference CDS alerts related to concerning PHQ responses. The alert for Moderate Depression is non-interruptive, while the other three are triggered on chart open. Use the tabs to select a CDS alert to view its respective performance data for the last 180 days.

Mod Depr | Mod-Sev Depr | Sev Depr | +SI



| Metric | Patients | Encounters | Firings |
|---------------------|----------|------------|---------|
| Not shown | 0 | 0 | 0 |
| Shown, not accepted | 500 | 500 | 500 |
| Accepted | 300 | 300 | 300 |

Comments



The CDS section of the depression dashboard displays a series of graphs related to performance data for PHQ-related CDS. These data allow the user to see:

- How often an alert is firing over time
- What care areas it's firing in
- How often it's accepted vs not accepted
- What follow up actions people are taking

For example, in this hypothetical example, they're primarily making referrals to behavioral health or prescribing a low dose of escitalopram medication for patients.

Patients

7

This is a list of patients who recently completed the PHQ and received a score of ≥ 15 , or who indicated suicidality on question 9 (where administered).

| MRN | Age | Name | Encounter Provider | Appt Date | Qx Date | PHQ Score | Suicidality | Mode | Viewed | Psych Visit | SW Visit | Referral | Psych Hosp |
|--------------------------|-----|----------------------|------------------------|-----------|--------------------|-----------|-------------------------|---------|--------|-------------|----------|----------|------------|
| 93787201 | 12 | Maximilian Whitehead | Nathanial Benjamin, MD | 6/13/2023 | 6/11/2023 9:43 | 17 | Several days | MyChart | Y | N | N | Y | N |
| 86906621 | 17 | Shannon Hamilton | Anastasia Neal, MD | 6/12/2023 | 6/11/2023 8:59 | 25 | Nearly every day | MyChart | N | Y | N | Y | Y |
| 63362103 | 17 | Desiree Mccarty | Jazmine Simmons, MD | 6/6/2023 | 6/6/2023 9:19 | 22 | Several days | Kiosk | Y | N | Y | Y | N |
| 30389127 | 18 | Antony Lang | Jesus Aguirre, MD | 6/5/2023 | 6/4/2023 13:43 | 19 | Several days | MyChart | Y | N | N | Y | N |
| 1477027 | 15 | Eddie Goodman | Daniela Li, MD | 6/5/2023 | 6/2/2023 12:36 | 19 | Not at all | Kiosk | Y | N | Y | Y | N |
| 33435489 | 11 | Elsa Lloyd | Dakota Eaton, MD | 6/2/2023 | 6/1/2023 9:52 | 17 | Not at all | MyChart | Y | N | N | N | N |
| 50630407 | 17 | Talan Grant | Kamren Ray, MD | 6/2/2023 | 6/1/2023 14:16 | 16 | Several days | MyChart | Y | N | N | N | N |
| 57457193 | 11 | Karlee Nixon | Tristian Dillon, MD | 6/1/2023 | 6/1/2023 10:17 | 16 | Not at all | Kiosk | N | N | N | N | N |
| 26246133 | 20 | Micah Lester | Lennon Harvey, MD | 5/30/2023 | 5/29/2023 14:25 | 25 | More than half the days | MyChart | Y | Y | Y | Y | Y |
| 66300464 | 17 | Alessandro Moody | Yoselin Sullivan, MD | 5/24/2023 | 5/22/2023 9:33 | 19 | Not at all | MyChart | Y | N | N | Y | N |
| 41934688 | 13 | June Ponce | Aidan Ramos, MD | 5/29/2023 | 5/28/2023 10:11 | 17 | Nearly every day | MyChart | Y | Y | N | Y | Y |

The Patients section of the dashboard provides patient-level data for those who received concerning PHQ scores. For this use case example, the data is only hypothetical and not reflective of real patients.

This section allows the user to see the PHQ overall score and suicidality response for each patient and if their PHQ results were viewed by a provider. Follow up actions including visits with a psychiatrist or social worker, psych referral, or psych hospital admittance are also shown for each patient.

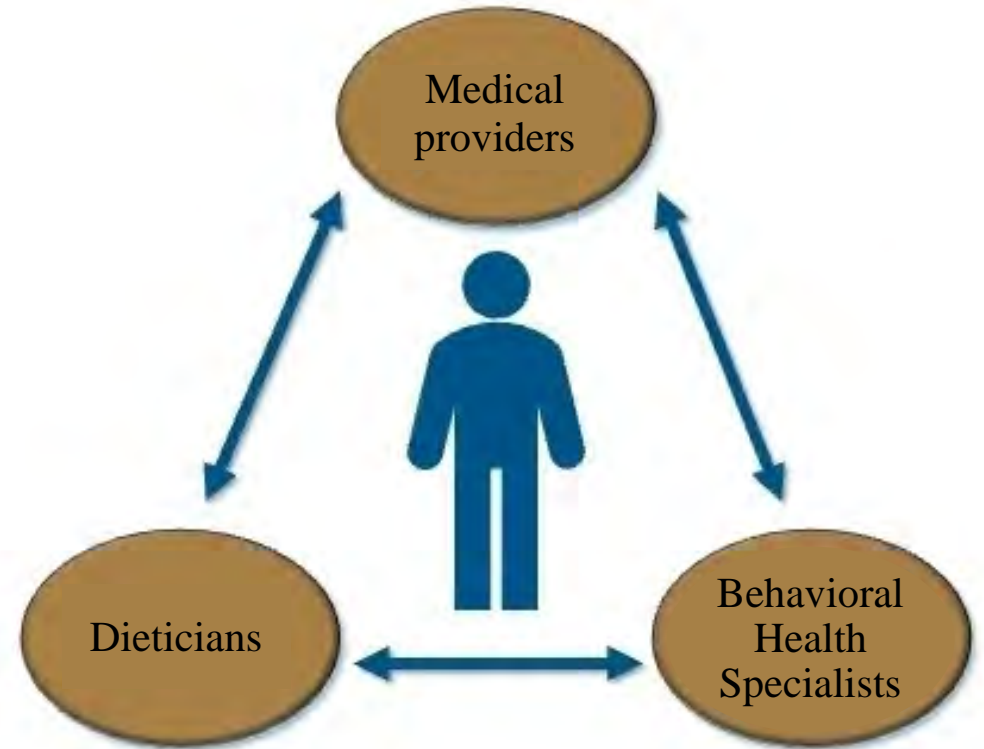
Inflammatory Bowel Disease (IBD) Dashboard

IBD Care Model

For our second use case, we focused on PROMs related to inflammatory bowel disease (IBD).

At ACME, they have a multidisciplinary process with the patient at the center involving medical providers, behavioral health specialists, and dietitians who provide care to patients with inflammatory bowel disease (IBD).

In addition to the PHQ scale, they also use two IBD-specific scales: the short inflammatory bowel disease questionnaire (SIBDQ), and the simple clinical colitis activity index (SCCAI).



Short Inflammatory Bowel Disease (IBD) Questionnaire

Patient Name _____ Date _____

This questionnaire is designed to find out how you have been feeling during the last 2 weeks. You will be asked about symptoms you have been having as a result of your inflammatory bowel disease, the way you have been feeling in general, and how your mood has been. Please check the box of your choice below each question.

1. **How often has the feeling of fatigue or being tired and worn out been a problem for you during the past 2 weeks?**
 - All of the time
 - Most of the time
 - A good bit of the time
 - Some of the time
 - A little of the time
 - Hardly any of the time
 - None of the time
2. **How often during the last 2 weeks have you delayed or canceled a social engagement because of your bowel problem?**
 - All of the time
 - Most of the time
 - A good bit of the time
 - Some of the time
 - A little of the time
 - Hardly any of the time
 - None of the time
3. **As a result of your bowel problems, how much difficulty did you experience doing leisure or sports activities during the past 2 weeks?**
 - A great deal of difficulty; activities made impossible
 - A lot of difficulty
 - A fair bit of difficulty
 - Some difficulty
 - A little difficulty
 - Hardly any difficulty
 - No difficulty; the bowel problem did not limit sports or leisure activities
4. **How often during the past 2 weeks have you been troubled by pain in the abdomen?**
 - All of the time
 - Most of the time
 - A good bit of the time
 - Some of the time
 - A little of the time
 - Hardly any of the time
 - None of the time
5. **How often during the past 2 weeks have you felt depressed or discouraged?**
 - All of the time
 - Most of the time
 - A good bit of the time
 - Some of the time
 - A little of the time
 - Hardly any of the time
 - None of the time
6. **Overall, in the past 2 weeks, how much of a problem have you had with passing large amounts of gas?**
 - A major problem
 - A big problem
 - A significant problem
 - Some problem
 - A little trouble
 - Hardly any trouble
 - No trouble
7. **Overall, in the past 2 weeks, how much of a problem have you had maintaining or getting to the weight you would like to be?**
 - A major problem
 - A big problem
 - A significant problem
 - Some problem
 - A little trouble
 - Hardly any trouble
 - No trouble
8. **How often during the past 2 weeks have you felt relaxed and free of tension?**
 - All of the time
 - Most of the time
 - A good bit of the time
 - Some of the time
 - A little of the time
 - Hardly any of the time
 - None of the time

Irvine EJ, Zhou Q, Thompson AK. [The Short Inflammatory Bowel Disease Questionnaire: a quality of life instrument for community physicians managing inflammatory bowel disease.](#) CCRPT Investigators. Canadian Crohn's Relapse Prevention Trial. *Am J Gastroenterol.* 1996;91(8):1571-1578. Copyright © McMaster University, Hamilton, Ontario, Canada

Use of the SIBDQ follows a similar workflow as the PHQ, though no CDS alerts have been linked with PROM results yet.

Simple Clinical Colitis Activity Index (SCCAI)

1. On average per day (24 hours), how many times did you use the toilet for defecation during the previous week? Blood and slime discharge is also considered as defecation.

- 0 to 3 times
- 4 to 6 times
- 7 to 9 times
- More than 9 times

2. On average per night, how many times did you get out of bed to use the toilet for defecation during the previous week?

- Never
- 1 to 3 times
- More than 3 times

3. During the previous week, were you able to hold up your stool for 15 minutes or longer, when you felt the urge to use the toilet?

- Yes
- No
- I do not know*

4. During the previous week, did you have to make adjustments to your activities, to ensure that there was a toilet nearby?

- Yes
- No
- I do not know*

5. During the previous week, have you found stool in your underwear?

- Yes
- No
- I do not know*

5. During the previous week, how many times did you see blood in your stool?

- Never
- Much less than half of the times
- A little less than half of the times
- More than half of the times

6. If you would have to rate your general well-being during the previous week by giving it a number, what number would you choose? (1 = very bad, 10 = perfect)

1 2 3 4 5 6 7 8 9 10

7. During the previous week, did you have joint pain which was worse at rest than after activity?

- Yes
- No
- I do not know*

8. During the previous week, were your joints red or swollen?

- Yes
- No
- I do not know*

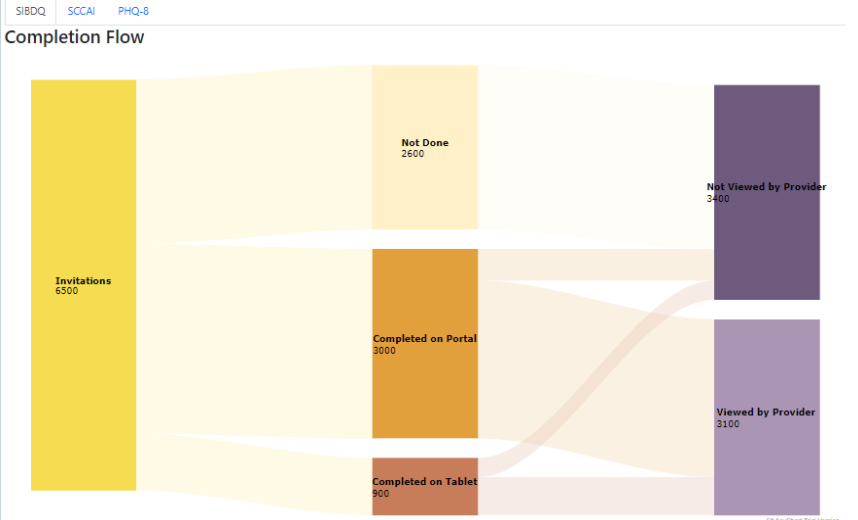
Walmsley RS, Ayres RC, Pounder RE. [A simple clinical colitis activity index](#). Gut 1998; 43: 29–32. Copyright © BMJ

Use of the SCCAI follows a similar workflow as the PHQ, though no CDS alerts have been linked with PROM results yet.

Introduction
 Acme Medical Center has an [Inflammatory Bowel Disease Clinic](#), which provides comprehensive care and management for IBD. The Acme Medical Center IBD specialists work together to offer patients long-term relief for their IBD symptoms, to minimize flare-ups and to help them achieve longer periods of remission. A key element of the IBD program is the use of PROMs to monitor symptoms, disease activity and mental health. The clinic uses the [Patient Health Questionnaire \(PHQ\)](#), the [Short Inflammatory Bowel Disease Questionnaire \(SIBDQ\)](#) and the [Simple Clinical Colitis Activity Index \(SCCAI\)](#). This dashboard shows data from the last six months.

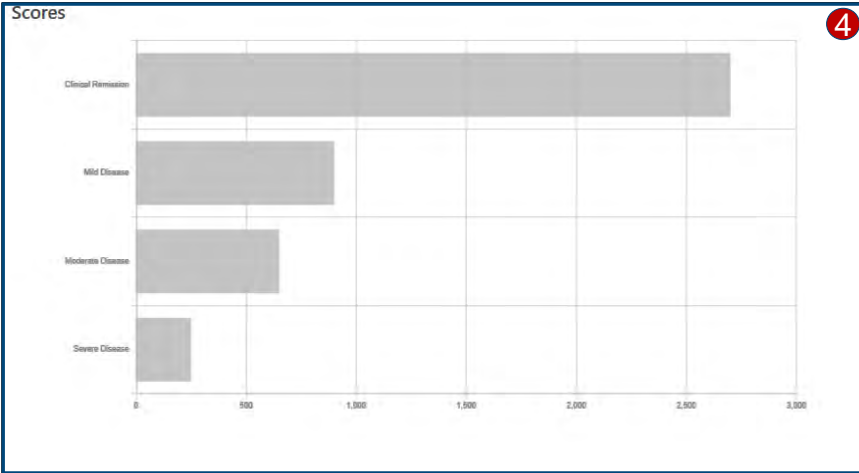
PROM Completion and Viewing

Use the tabs below to select PHQ version to view data for. For the PROM selected, the diagram below displays data from across all departments of Acme Medical Center for the last 6 months. "Viewed by Provider" includes those viewed through Synopsis view, Questionnaire Activity, note templates or SmartPhrases, as well as any other reports that display PROMs in a chart review-like activity. There are many ways a provider can view PROM results within the EHR though, and not all may be captured here.



Items

- Below are the questions included in the PROM selected. Click on each to see the distribution of patient responses from the last 6 months. Hovering over each bar displays the number in text.
- [How often has the feeling of fatigue or of being tired and worn out has been a problem for you during the last 2 weeks? \[106589\]](#)
 - [How often during the last 2 weeks have you had to delay or cancel a social engagement because of your bowel problem? \[106590\]](#)
 - [How much difficulty have you had, as a result of your bowel problems, doing leisure or sports activities you would have liked to have done during the last 2 weeks? \[107155\]](#)
 - [How often during the last 2 weeks have you been trouble by pain in the abdomen? \[106592\]](#)
 - [How often during the last 2 weeks have you felt depressed or discouraged? \[107161\]](#)
 - [Overall, in the last 2 weeks, how much of a problem have you had with passing large amounts of gas? \[107162\]](#)
 - [Overall, in the last 2 weeks, how much of a problem have you had maintaining or getting to the weight you would like to be? \(gaining weight to reach](#)



Equity

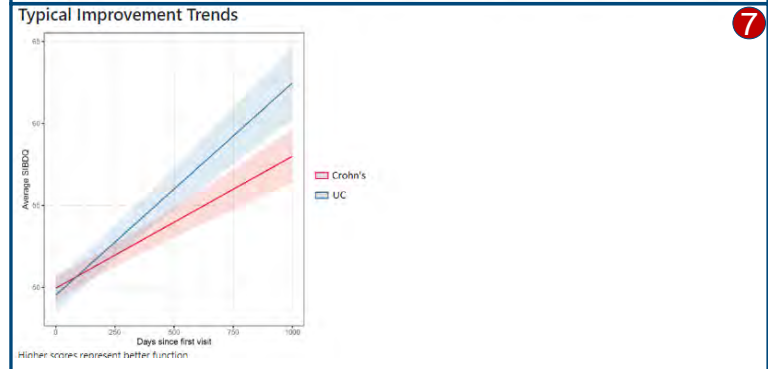
| Group | Invited | Completed by Patient | Viewed by Provider |
|-------------|---------|----------------------|--------------------|
| Everyone | 6,500 | 69.2% | 77.6% |
| Non-White | 1,000 | 60.0% | 75.0% |
| Non-English | 325 | 75.4% | 73.5% |
| Disabled | 500 | 46.0% | 78.3% |
| Female | 3,500 | 75.7% | 75.5% |

Patients with High PHQ-8 for Evaluation by PMHNP

| MRN | Age | Name | Provider | Appt Date | Qx Date | PHQ Score | Mode | Seen by NP |
|--------------------------|-----|--------------------|------------------------|-----------|-----------------|-----------|---------|------------|
| 93787201 | 41 | Kenny Vasquez | Nathaniel Benjamin, MD | 6/2/2023 | 6/1/2023 9:43 | 17 | MyChart | Y |
| 86906621 | 56 | Joyce Kline | Anastasia Neal, MD | 6/1/2023 | 5/29/2023 8:59 | 15 | MyChart | N |
| 76245133 | 56 | Paul Johnson | Lennon Harvey, MD | 5/30/2023 | 5/29/2023 14:25 | 25 | MyChart | Y |
| 63362103 | 22 | Josephine Bartlett | Jazmine Simmons, MD | 5/24/2023 | 5/24/2023 9:19 | 22 | Kiosk | Y |
| 66300464 | 25 | Inaya Marquez | Yoselin Sullivan, MD | 5/22/2023 | 5/21/2023 9:33 | 19 | MyChart | Y |

Patients with Low SIBDQ and Submaximal Treatment

| MRN | Age | Name | Provider | Appt Date | Qx Date | SIBDQ Score |
|--------------------------|-----|-------------------|------------------------|-----------|-----------------|-------------|
| 93128812 | 48 | Leah Mack | Dakota Eaton, MD | 6/13/2023 | 6/12/2023 9:43 | 13 |
| 51271349 | 21 | Juana McCarthy | Yoselin Sullivan, MD | 6/16/2023 | 6/14/2023 8:59 | 10 |
| 81720613 | 22 | Alice Singleton | Dakota Eaton, MD | 6/14/2023 | 6/14/2023 9:19 | 19 |
| 81347278 | 64 | Angelica Carson | Jazmine Simmons, MD | 6/10/2023 | 6/9/2023 12:36 | 21 |
| 36559346 | 43 | Pete Alvarado | Daniel L, MD | 6/4/2023 | 6/4/2023 9:52 | 20 |
| 79620556 | 19 | Miranda Sherman | Alden Ramos, MD | 5/30/2023 | 5/28/2023 14:25 | 20 |
| 92255244 | 75 | Marcella Schwartz | Lennon Harvey, MD | 5/24/2023 | 5/24/2023 9:33 | 23 |
| 98826670 | 52 | Anne Rice | Nathaniel Benjamin, MD | 5/23/2023 | 5/22/2023 10:11 | 12 |
| 93158426 | 40 | Judy Morton | Anastasia Neal, MD | 5/10/2023 | 5/9/2023 12:36 | 21 |



A dashboard to view data related to the IBD center’s use of PROMs was created. ACME Medical Center personnel can also access this dashboard in their web browser.

Over the next few slides, we will review the functionality of each component of this dashboard.

Introduction

Acme Medical Center has an [Inflammatory Bowel Disease Clinic](#), which provides comprehensive care and management for IBD. The Acme Medical Center IBD specialists work together to offer patients long-term relief for their IBD symptoms, to minimize flare-ups and to help them achieve longer periods of remission. A key element of the IBD program is the use of PROMs to monitor symptoms, disease activity and mental health. The clinic uses the the [Patient Health Questionnaire \(PHQ\)](#), the [Short Inflammatory Bowel Disease Questionnaire \(SIBDQ\)](#) and the [Simple Clinical Colitis Activity Index \(SCCAI\)](#). This dashboard shows data from the last six months.

The dashboard starts with an Introduction that describes the IBD clinic and the PROMs they use with their patients. Each questionnaire is hyperlinked to a page showing the full survey.

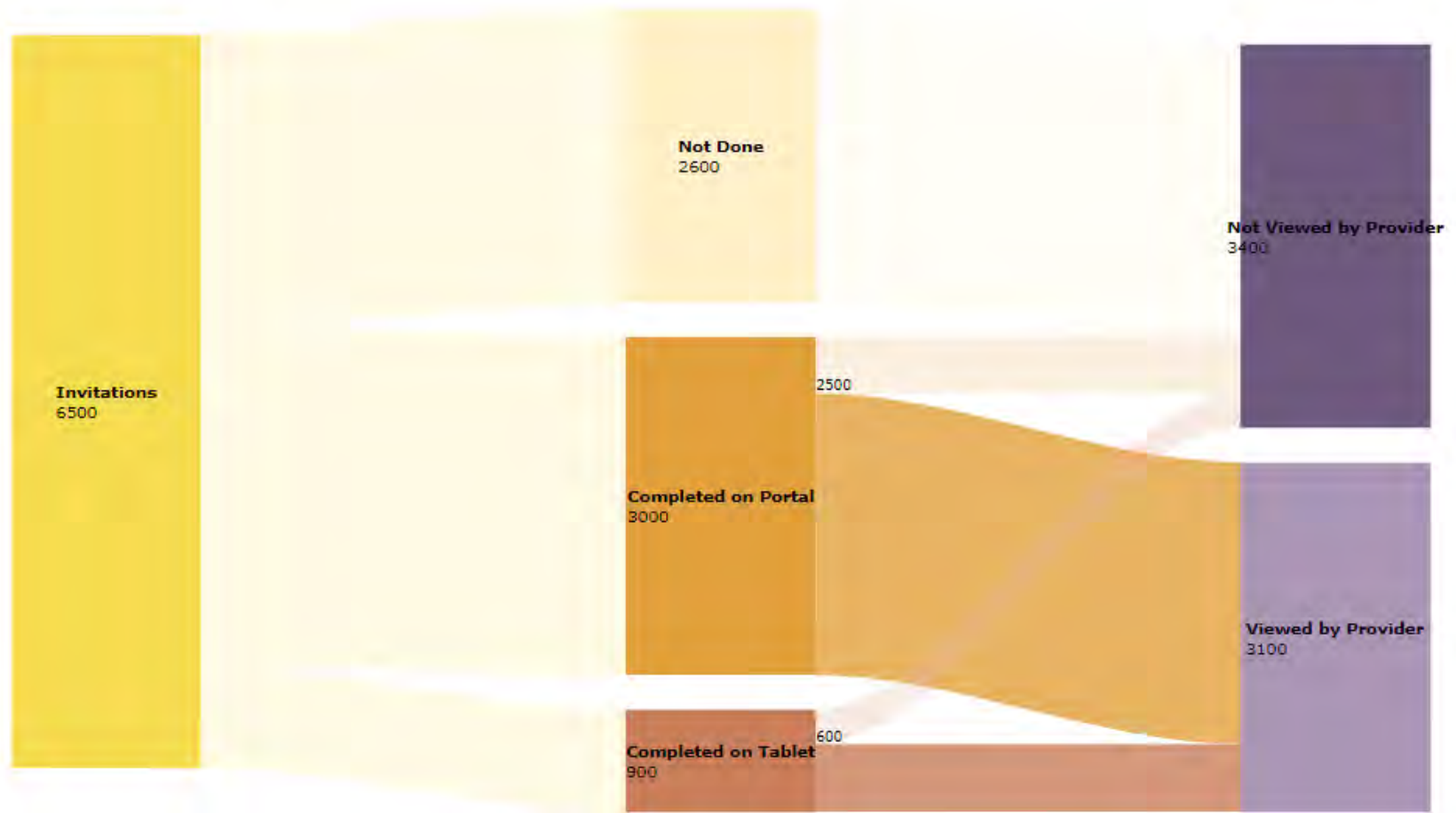
PROM Completion and Viewing

2

Use the tabs below to select PROM to view data for. For the PROM selected, the diagram displays data from across all departments of ACME Medical Center for the last 6 months. "Viewed by Provider" includes those viewed through Synopsis View, Questionnaire Activity, note templates or SmartPhrases, as well as any other reports that display PROMs in a chart review-like activity. There are many ways a provider can view PROM results within the EHR though, and not all may be captured here.

SIBDQ SCCAI PHQ-8

Completion Flow



Similar to the depression dashboard, the IBD version includes a PROM Completion and Viewing section including a Sankey diagram to display the total numbers of PROMs assigned to patients, the number completed via Patient Portal before the appointment, via tablet during an office visit appointment, or not completed, as well as PROMs viewed by a provider or not.

Tabs on the upper left allow users to select the PROM of interest, including the PHQ, SIBDQ, and SCCAI. Hovering over the connecting bar displays the exact number of PROMs flowing from one category to the next.

Items

Below are the questions included in the PROM selected. Click on each to see the distribution of patient responses from the last 6 months. Hovering over each bar displays the number in text.

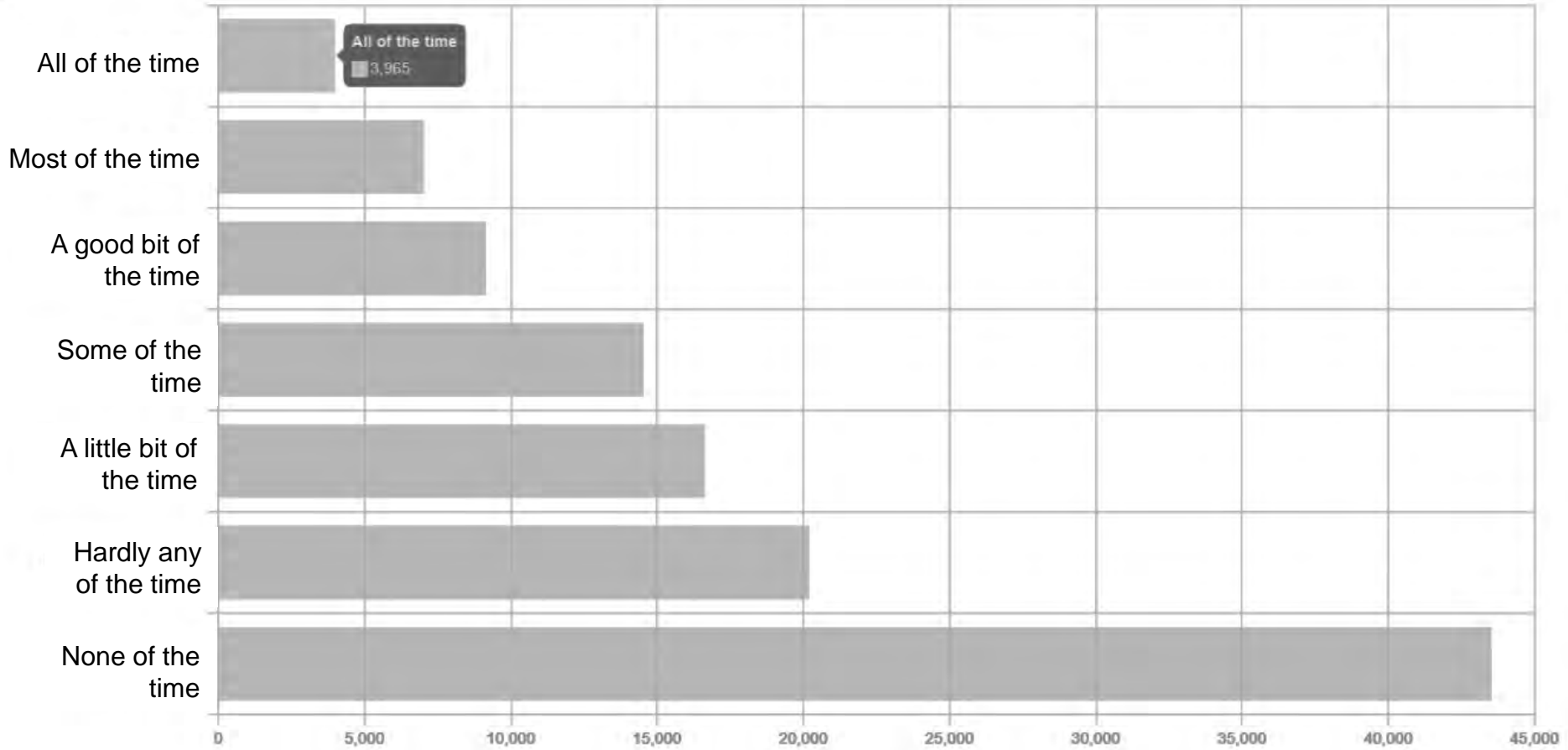
- [How often has the feeling of fatigue or of being tired and worn out has been a problem for you during the last 2 weeks? \[106589\]](#)
- [How often during the last 2 weeks have you had to delay or cancel a social engagement because of your bowel problem? \[106590\]](#)
- [How much difficulty have you had, as a result of your bowel problems, doing leisure or sports activities you would have liked to have done during the last 2 weeks? \[107155\]](#)
- [How often during the last 2 weeks have you been trouble by pain in the abdomen? \[106592\]](#)
- [How often during the last 2 weeks have felt depressed or discouraged? \[107161\]](#)
- [Overall, in the last 2 weeks, how much of a problem have you had with passing large amounts of gas? \[107162\]](#)
- [Overall in the last 2 weeks, how much of a problem have you had maintaining or getting to the weight you would like to be? \(gaining weight to reach your goal\) \[107163\]](#)
- [How often during the last 2 weeks have you felt relaxed and free of tension? \[107164\]](#)
- [How much of the time during the last 2 weeks have you been troubled by a feeling of having to go to the bathroom even though your bowels were empty? \[107165\]](#)
- [How much of the time during the last 2 weeks have you felt angry as a result of your bowel problem? \[106598\]](#)

The Items section of the IBD dashboard includes the list of questions included in each PROM, depending upon which tab is selected in the section above.

Items

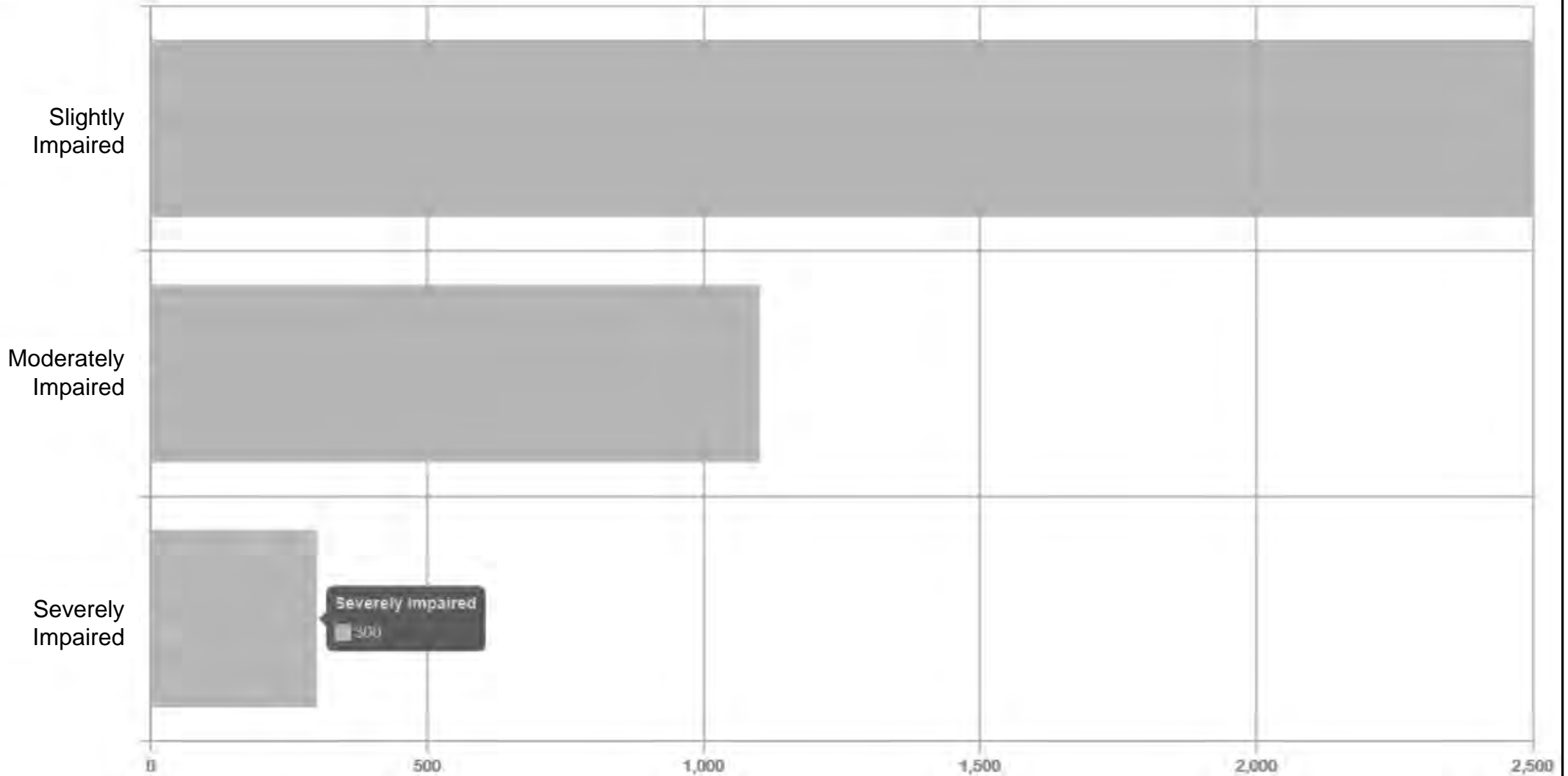
Below are the questions included in the PROM selected. Click on each to see the distribution of patient responses from the last 6 months. Hovering over each bar displays the number in text.

Back



Each question in the Items section can be clicked on to show the distribution of responses for each.

For example, the image on the right shows the responses for frequency of abdominal pain. Hovering over each bar reveals a black box including the precise number of responses for that option.



The Overall Assessment Scores section of the IBD dashboard includes a graph displaying the distribution of total PROM scores across ACME for the last 6 months that fell into each disease severity category related to the PROM selected. The hypothetical data shown is for the SIBDQ.

Equity

The table below shows the PROM completion rates for select minority groups from the last 6 months. The non-English category contains mostly Spanish-speaking patients and a smaller percentage of Arabic-speaking patients and speakers of other languages.

| Group | Invited | Completed by Patient | Viewed by Provider |
|-------------|---------|----------------------|--------------------|
| Everyone | 6,500 | 60.0% | 79.5% |
| Non-White | 1,000 | 60.0% | 75.0% |
| Non-English | 325 | 67.7% | 75.0% |
| Disabled | 500 | 42.0% | 71.4% |
| Female | 3,500 | 71.4% | 76.0% |

The Equity section of the IBD dashboard displays completion and viewed data for the PROM selected by the user. The hypothetical data above shows the percent of patients who are non-white, non-English speaking, disabled, and female who completed their assigned SIBDQ, and of those, the percent that were viewed by a provider. This data could be useful for identifying disparities related to PROM completion or viewing within special populations.

Patients with High PHQ-8 for Evaluation by PMHNP

6

| MRN | Age | Name | Provider | Appt Date | Qx Date | PHQ Score | Mode | Seen by NP |
|--------------------------|-----|--------------------|------------------------|-----------|-----------------|-----------|---------|------------|
| 93787201 | 41 | Kenny Vasquez | Nathanial Benjamin, MD | 6/2/2023 | 6/1/2023 9:43 | 17 | MyChart | Y |
| 86906621 | 56 | Joyce Kline | Anastasia Neal, MD | 6/1/2023 | 5/29/2023 8:59 | 15 | MyChart | N |
| 26246133 | 56 | Paul Johnson | Lennon Harvey, MD | 5/30/2023 | 5/29/2023 14:25 | 25 | MyChart | Y |
| 63362103 | 22 | Josephine Bartlett | Jazmine Simmons, MD | 5/24/2023 | 5/24/2023 9:19 | 22 | Kiosk | Y |
| 66300464 | 25 | Inaya Marquez | Yoselin Sullivan, MD | 5/22/2023 | 5/21/2023 9:33 | 19 | MyChart | Y |
| 41934688 | 23 | Ridwan Glass | Aidan Ramos, MD | 5/19/2023 | 5/18/2022 10:11 | 17 | MyChart | N |
| 1477027 | 70 | Esme Moss | Daniela Li, MD | 5/10/2023 | 5/10/2023 12:36 | 19 | Kiosk | Y |
| 33435489 | 62 | Ebony Alvarado | Dakota Eaton, MD | 5/4/2023 | 5/3/2023 9:52 | 17 | MyChart | Y |

Patients with Low SIBDQ and Submaximal Treatment

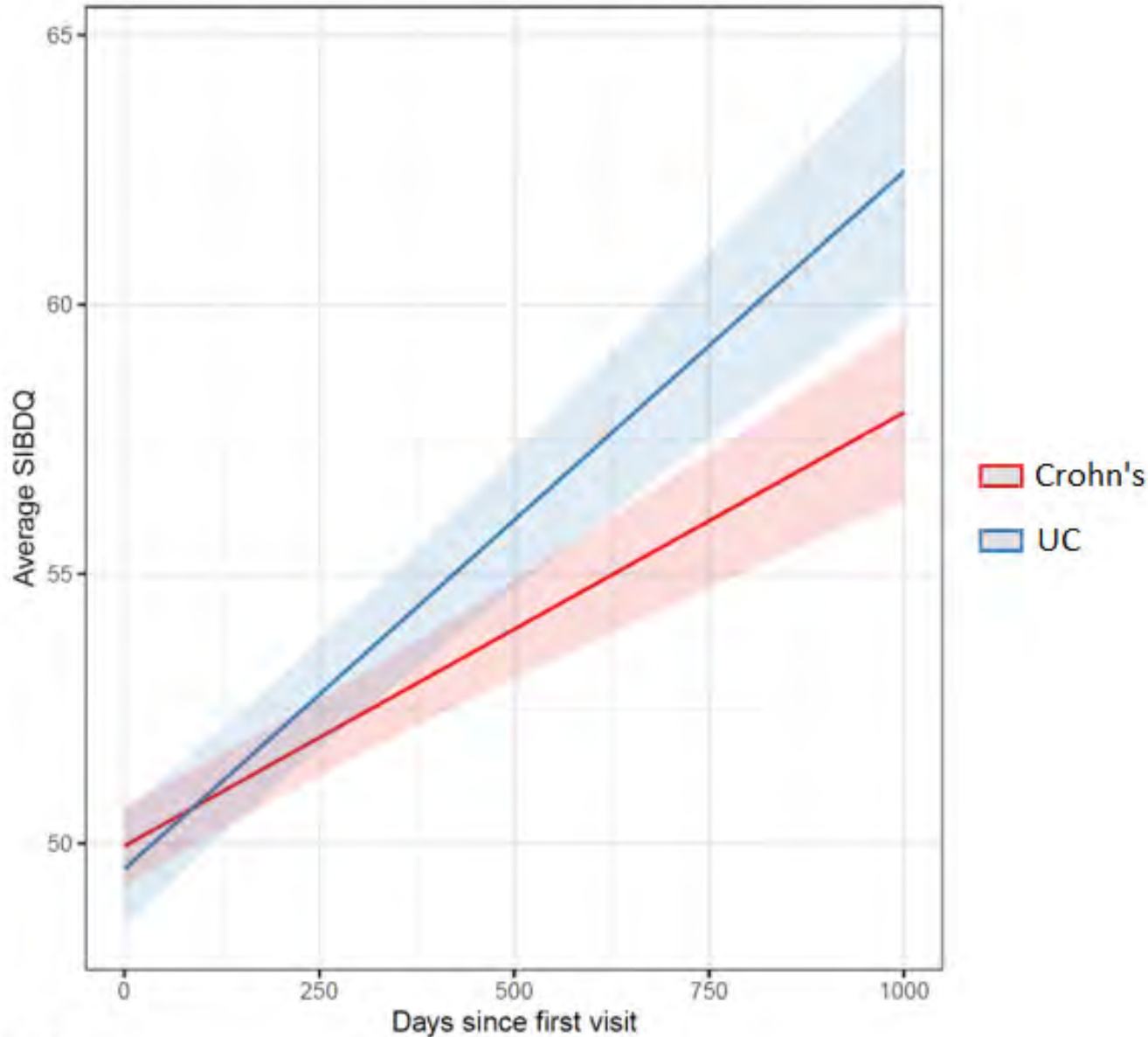
| MRN | Age | Name | Provider | Appt Date | Qx Date | SIBDQ Score |
|--------------------------|-----|-------------------|------------------------|-----------|-----------------|-------------|
| 63128612 | 48 | Leah Mack | Dakota Eaton, MD | 6/13/2023 | 6/12/2023 9:43 | 13 |
| 51271349 | 21 | Juana Mccarthy | Yoselin Sullivan, MD | 6/16/2023 | 6/14/2023 8:59 | 10 |
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| 81347278 | 64 | Angelica Carson | Jazmine Simmons, MD | 6/10/2023 | 6/9/2023 12:36 | 21 |
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| 86826670 | 52 | Anne Rice | Nathanial Benjamin, MD | 5/23/2023 | 5/22/2023 10:11 | 12 |
| 43188426 | 40 | Judy Morton | Anastasia Neal, MD | 5/10/2023 | 5/9/2023 12:36 | 21 |

The Patients section of the IBD dashboard provides patient-level data for those who received concerning PHQ-8 and SIBDQ scores. For this use case example, the data is only hypothetical and not reflective of real patients.

This section allows the user to see the overall PROM score for each patient as well as their provider and appointment time, as well as if they were seen by a psychiatric mental health nurse practitioner (PMHNP).

Typical Improvement Trends

7



Higher scores represent better function

The Typical Improvement Trends section of the IBD dashboard includes a graph displaying the average SIBDQ score over time relative to a patient's first visit for both Crohn's disease and ulcerative colitis patients. In this example, higher scores represent better function and both types of patients show marked improvement in SIBDQ score over time.

Conclusion

The intent of both example dashboards is to allow leaders to analyze data and figure out whether their PROMs and associated decision support tools are effective.

The dashboards can be integrated with an organization's electronic health record to receive data about both the PROMs and the associated decision support tools in use, rendered in a way that encourages organizations to take meaningful action.

For more information, please visit the CDSiC website:

<https://digital.ahrq.gov/ahrq-funded-projects/clinical-decision-support-innovation-collaborative-cdsic>