

 **CASE STUDY**

for U.S. health care providers

# How Mass General Brigham Uses ePROs to Improve the Patient Encounter

Lessons learned and keys to success

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Mass General Brigham (MGB), a Boston-based hospital and physician network, rolled out a PROMs program across their enterprise with the goal of improving patient outcomes and the quality of care that is provided.

This case study is intended for organizations looking to use ePRO data to inform the patient-provider encounter across specialties.



# Quick Primer: ePROs 101

## What are ePROs?

A patient-reported outcome (PRO) is any report of the status of a patient’s health condition that comes directly from the patient, without interpretation of the patient’s response by a clinician or anyone else. Typically, PROs are used to assess symptoms, side effects of treatment, and health-related quality-of-life (HRQoL) measures—like pain, nausea, fatigue, physical function, mobility, depression, and anxiety. A Patient Reported Outcome Measure (PROM) is a tool to measure a PRO, and an ePRO is a PRO that’s collected via electronic platforms as opposed to paper-based forms.

## Why do ePROs matter?

ePROs allow clinicians and researchers to better understand a patient’s experience living with a condition or receiving treatment—and do so in a way that provides standardized, validated data points. For some conditions, ePROs provide supplemental information about treatment impact, and for other conditions they are the only way to measure the outcome of interest (e.g., pain can only be assessed by patients self-reporting their pain levels). In general, ePROs enable:

- More responsive, proactive treatment management
- Patient-centered assessments of provider quality
- More nuanced, patient-centered understanding of treatment impact

## How do ePROs work?

ePROs are typically collected via validated surveys as part of an organization’s ePRO program. They can be collected while patients are at home using smartphones or tablets, or during a check-in right before an office visit. ePRO data can then be shared with the clinician at the point of care and can be used to monitor the patient between visits. Successful programs create bi-directional engagement between the patient and clinician and integrate into clinician and patient “workflows.”



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# Overview

## The challenge

Leaders at MGB are always in search of tools to improve care quality, minimize variation, and better demonstrate the value of care that they provide to their patients.

## The organization

MGB is an integrated health system, which includes two academic medical centers, three specialty hospitals, seven community hospitals, a health plan, and a primary care network of more than 6,000 physicians. To date, MGB has one of the largest ePRO programs in the world, assigns more than 110,000 questionnaires per month, and has collected more than 14 million questionnaires.

## The approach

Recognizing that ePROs positively impact patient care and outcomes (e.g., patient's quality of life, time on treatment, and survival), MGB leadership provided top-down support to create a PROMs department to implement the use of ePROs across specialties, including oncology. Individual and aggregated ePROs are used to inform the patient-provider interaction.

## The result

Since implementing the PROMs program, MGB has seen sweeping uptake of the collection of ePROs used in patient care, with over 60 specialties using ePROs to care for patients. Additionally, MGB has leveraged aggregated ePRO data to identify care gaps for improvement at the provider, institution, and system levels. More broadly, the PROMs program has become a tool for MGB to support contracting and to inform pay-for-performance metrics.

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# Approach

For organizations looking to leverage ePRO data to support the point of care and drive improvement in overall quality and outcomes, below are MGB's five keys to success.

**01** Invest in buy-in and program staff, then user-friendly technology

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**02** Design the program for ease of use and clinical appropriateness

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**03** Use aggregated ePRO data to support the point of care

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**04** Address structural inequities in ePRO program access

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**05** Develop templates for program evaluation and success

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# 01 Invest in buy-in and program staff, then user-friendly technology

MGB’s quality and patient experience leaders recognized that spending money on infrastructure for an ePRO program would be futile if the organization didn’t first invest in a culture that would accept the program. Consequently, MGB intentionally invested in the following three factors while developing their program.

## Factor 1: Buy-in

Leaders went department by department to identify physician champions for the PROMs program. Physician champions helped to create buy-in among their peers and quicken the pace of the program’s rollout. For example, departments with strong physician champions stood up the program within a few months, whereas departments without champions took a few years to implement the program.

As part of this effort, leaders educated physicians about how ePRO data collection improves patient outcomes and how the data can support physicians during the patient encounter. Leaders also emphasized to physicians that the program would not significantly impact physician workflows.

### Sample talking points for building buy-in among physicians:

- “ePROs can provide additional context about the patient before walking into the exam room.”
- “ePRO data can save you time during the patient encounter since ePROs identify the patient’s key problems quicker and earlier.”
- “ePRO data provides timely insights about patients at the point of care and equips you with data to answer and support patient questions.”
- “ePROs help compare where the patient is today versus where you might expect them to be.”



## 1. INVEST IN BUY-IN AND PROGRAM STAFF, THEN USER-FRIENDLY TECHNOLOGY

### Factor 2: Staffing

Simultaneously, leaders created a dedicated team of individuals to roll out and support the program. MGB invested in building a PROMs department, which includes program managers, content specialists, EHR analysts, and clinic support staff. Today, MGB has almost 10 FTEs to support their enterprise-wide PROMs initiative that spans 90 specialties and 213 clinics. This central team is responsible for building patient questionnaires, managing the data warehouse, and training and supporting providers and staff.

### Factor 3: Technology

MGB invested in the necessary infrastructure (technology, internet, etc.) for their program. MGB worked with their EMR vendor to operationalize workflows, coordinated with IT and tablet manufacturers, and upgraded their WIFI in many parts of the institution to support in-office tablet distribution<sup>1</sup>.

With these three components in place (organizational buy-in, dedicated staff, and the required technology), MGB then rolled out the program across each specialty that had chair and practice manager signoff as well as physician engagement.

### “ Advice from MGB

Programs need to **first invest in people and technology to then build the infrastructure.** You need to have dedicated FTEs and physician champions who can get providers on board and continually show providers how to use the data patients are providing.

**Dr. Nadine Jackson McCleary**  
Mass General Brigham

1. In-office tablet distribution allows patients to fill out the ePRO questionnaire before their appointment in the waiting room.

# 02 Design the program for ease of use and clinical appropriateness

To be successful, an ePRO program must balance provider and patient ease of use and clinical utility. Here are some of MGB’s guiding principles for patient questionnaires<sup>1</sup> to achieve that outcome.



### Just because you can ask doesn’t mean you should

MGB’s questionnaires are validated instruments, psychometrically tested, and associated with improved patient outcomes. Consequently, every question must be clinically meaningful and tied to an improvement in outcomes. This means that just because a question is interesting doesn’t mean it should be asked.



### Ask questions when they clinically matter

MGB first assesses when a patient would expect to see a clinical improvement or deterioration, and then sends questionnaires at or before that point. The ePRO data collected then allows for benchmarking of a patient’s subsequent status against a patient’s initial status. Providers can then gauge improvement over time from the point of intervention or treatment.



### Respect patients’ time

Health is only one facet of patients’ lives, so MGB intentionally accounts for patient burden and limits the number of questions patients are being asked. MGB questionnaires do not exceed 30 questions.

1. For additional guidance from MGB on patient questionnaires, see the appendix.

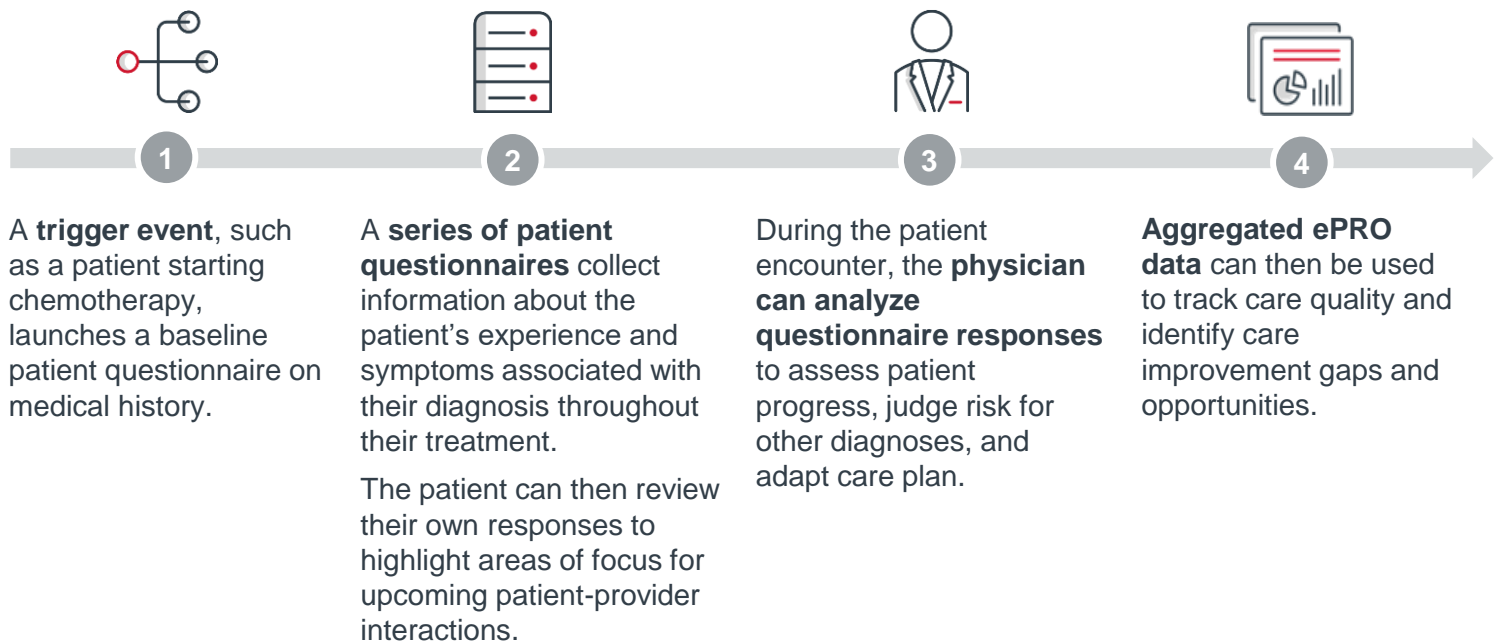




## 2. DESIGN THE PROGRAM FOR EASE OF USE AND CLINICAL APPROPRIATENESS

With these patient questionnaire principles in mind, MGB implemented the below workflow to execute their PROMs program<sup>1</sup>. Patients fill out simple, well-timed questionnaires via the patient portal at home or via tablets in the patient waiting room before their appointment. Providers can then access patient responses during the visit via the EMR to inform the patient encounter.

### Sample MGB physician workflow for oncology care



1. For a more in-depth view of MGB's ePRO program workflows, see the appendix.

# 03 Use aggregated ePRO data to support the point of care

Traditionally, ePRO programs collect an individual patient’s data to inform that patient’s care. MGB takes this model a step further and provides physicians with both individual and aggregated ePRO data, which provides context to support clinician decision-making and conversations with patients. Physicians can harness ePRO data to enrich the patient encounter in the following ways:



**Contextualize patient symptoms:** When a patient reports new symptoms via the questionnaire, their physician can use the data to determine whether the patient’s symptoms are in line with those experienced by other patients during that point in treatment. The provider can then decide to adjust the patient's care plan or share the aggregated ePRO data view with the patient to reassure them that they are not alone in experiencing those symptoms.



**Improve patient education:** Patient education is critical to patient experience, yet providers often feel ill-equipped to engage in these conversations. Aggregated ePRO data gives physicians the benchmarks to set patient expectations for treatment and recovery. Before a treatment starts, providers can align a patient with what they should expect 30- or 90-days after treatment based on the outcomes data of other patients.



3. USE AGGREGATED PATIENT DATA TO SUPPORT THE POINT OF CARE

**Train physicians on how to use ePROs for patient care**

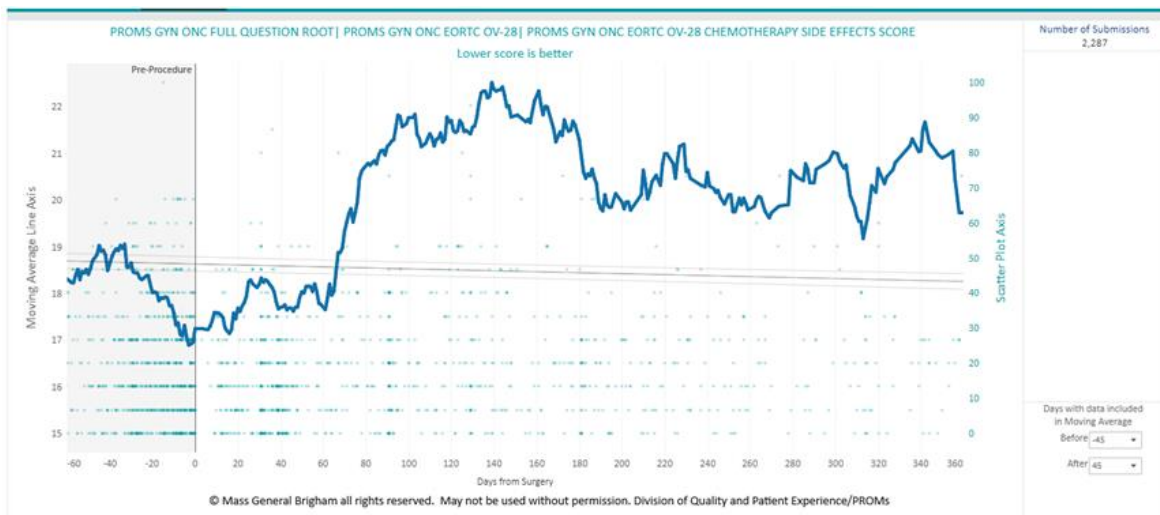
Physicians aren't traditionally trained in medical school on how to interpret ePRO data, so MGB offers group trainings to make ePRO data as easy for providers to leverage as possible.

When new questionnaires are launched, providers receive trainings through forums and best practice publications. Key elements of the training<sup>1</sup> include understanding the value of ePROs, the workflows for patients and providers, and how to read and consider both individual and aggregated ePROs in the EMR.

Within the EMR, MGB provides easy-to-understand and easy-to-use visualizations to make the ePRO data meaningful to providers. The intention is that providers shouldn't have to be data experts to interpret ePROs.

For example, using the below image physicians can see when chemotherapy side effects typically worsen for women with gynecological cancers. This information allows them to better support patients' expectations about their care journey and manage symptoms more effectively.

**Sample of MGB's PROMs aggregated data view for women with GYN cancers<sup>2</sup>**



1. For a more in-depth look at MGB's components for provider, practice manager, and staff trainings, see the appendix.  
2. Graph documents average chemotherapy side effect scores, before and after surgery, for women with gynecological cancers.

Source: Mass General Brigham, Boston, Massachusetts; Advisory Board interviews and analysis.

**Advice from MGB**

When a patient shares an experience, physicians often believe they have the best knowledge to interpret it. We are learning this is misguided thinking. What we see in the clinic is different from what patients are experiencing when they are not with us. **PROs help us capture what patients are really experiencing—the real-world data.**

**Dr. Nadine Jackson McCleary**  
Mass General Brigham

# 04 Address structural inequities in ePRO program access

MGB aims to ensure that the ePRO data influencing care delivery isn't coming from a homogenous patient sample but a group representative of the diverse patient populations they serve. This required MGB to identify inequities in access that exist in both the technology platform and operations of the program.

Below are three examples of the changes MGB made to ensure their PROMs program was inclusive.

## 1 Build for patients with the greatest need

Many digital health tools are designed for patients who have access to health care and few barriers to digital technologies. However, MGB leadership recognized that in order to improve outcomes for all patients, they would need to build for their highest-need patients, especially those without access to specific technologies, and/or who lack digital or health literacy. The ePRO team now consistently reflects on the question of "who is the system built for?" and challenges themselves to build for patients who might be outliers or have the greatest need.

### “ Advice from MGB

If ePRO data is coming from a homogenous population, you can't use it to make predictions about everyone.

**Dr. Nadine Jackson McCleary**  
Mass General Brigham



4. ADDRESS STRUCTURAL INEQUITIES IN ePRO PROGRAM ACCESS

**2 Think beyond digital inequities**

Often when organizations implement PROMs programs, they focus on addressing digital inequities (e.g., access to smart phones, tablets, internet connectivity). However, it is equally as important to account for the languages and literacy levels of the patients being served. For example, MGB’s patient questionnaires were initially offered only in English and were inaccessible to patients who were visually or cognitively impaired.

In 2020, MGB embarked on a system-wide initiative (United Against Racism) to close disparities and increase health care equity. As part of this effort, MGB’s PROMs program has now translated and built over 500 questionnaires in seven different languages (Spanish, Portuguese, Traditional Chinese, Haitian, Creole, Arabic, and Russian). Additionally, dedicated coordinators are now available to help patients fill out their questionnaires as needed.

**3 Identify and address bias in operations**

MGB discovered that bias can exist not just in ePRO platforms and questionnaires but also in survey distribution channels. For example, MGB found that their front desk staff were less likely to offer ePRO tablets to patients of color compared to white patients. Program leaders then met with staff to discuss the problem. By simply pointing out the disparity and providing education, MGB increased tablet distribution from 30% to 86% in two months.

# 05 Develop templates for program evaluation and success

Standing up a PROMs program is an iterative process. To continuously improve the program, PROMs program staff conduct quality assurance checks to ensure program accessibility, usability, and ease. The team tracks a multitude of metrics to evaluate whether patients are appropriately engaging with the program, providers are using the ePRO data to inform the patient encounter, and the organization is using the data to better target quality improvement initiatives.

## Sample ePRO program assessment metrics from MGB

### Patient level

- Patient response rate
- Questionnaire assignment & tablet distribution
- Patient satisfaction scores
- Questionnaire burden/volume

### Provider level

- Provider and clinic PROMs collection rates
- PROMs utilization rate
- PROMs clinical documentation
- Percent of patients assigned PROMs-informed interventions (e.g., referral, prescription, hospitalization)

### System level

- Questionnaire assignment rates (denominators)
- Outcome improvements in specific treatments and procedures
- Disparities based on sociodemographic factors, disease center, practice setting, or other factors

Source: Mass General Brigham, Boston, Massachusetts; Advisory Board interviews and analysis.



5. DEVELOP TEMPLATES FOR PROGRAM EVALUATION AND SUCCESS

The quality assurance checks help improve the overall effectiveness of the PROMs program, but they also serve to guide how MGB defines what success looks like—and how the definition of success might evolve. Below is MGB’s current vision for what a successful PROMs program should accomplish.

**MGB’s vision for a successful PROMs program**

**For All**, technology platform must *work seamlessly*: WiFi, tablets, security, integration into EHR, real-time processing

- Patients**
- Must reach them in ways that are convenient for them
  - Most important determinant: did provider use the results
  - User-interface must be intuitive
  - Must avoid survey fatigue

- Front-Line Staff**
- Improve or minimally impact workflow
  - Administrative champion is key
  - Clinical providers must communicate the imperative

- Clinical Providers**
- Don’t interfere with workflow
  - PROMs must improve *individual* patient care
  - AND provide some other benefit
  - Removing other administrative burden is a bonus
  - Scores must be actionable

# Results

MGB categorizes the impacts of their PROMs program into four main categories, which they call the "4 C's":

## MGB's "4 C's" to illustrate PROMs program impact



### Clinic

The routine collection of ePROs in MGB's clinics has led to improved clinician satisfaction, improved understanding of diverse disease processes,<sup>1</sup> and has revealed structural inequities in how PROMs are collected.



### Convince

MGB uses ePROs to convince external stakeholders of the value of an intervention. MGB partners with pharmaceutical companies to capture quality of life and survival data for new cancer drug therapies.



### Compare

MGB's PROMs program improves benchmarking for quality outcomes across clinics, physicians, and patients. These comparative analyses help MGB address root causes to outlier care outcomes.



### Contract

MGB uses ePROs to inform pay-for-performance contracts with payer organizations. MGB is reimbursed for ePRO data collection in private payer contracts and through its Medicaid ACO.

Source: Mass General Brigham, Boston, Massachusetts; Melnic C et al., "Patient-Reported Mental Health Score Influences Physical Function After Primary Total Knee Arthroplasty," *The Journal of Arthroplasty*, October 2020; Mou D et al., "Primary care physician's (PCP) perceived value of patient-reported outcomes (PROs) in clinical practice: a mixed methods study," *BMJ Quality & Safety*, May 2021; Mou D et al., "The Surgeon's Perceived Value of Patient-reported Outcome Measures (PROMs): An Exploratory Qualitative Study of 5 Different Surgical Subspecialties," *Annals of Surgery*, July 2020; Moura L et al., "Implementation of quality measures and patient-reported outcomes in an epilepsy clinic," *Neurology*, October 2019; Sisodia R, "Digital disparities: lessons learned from a patient reported outcomes program during the COVID-19 pandemic," *Journal of the American Medical Informatics Association*, July 2021; Sisodia R et al., "Initial findings from a prospective, large scale patient reported outcomes program in patients with gynecologic malignancy," *Gynecologic Oncology*, January 2022; Mass General Brigham, Boston, Massachusetts; Advisory Board research and interviews.

1. Epilepsy patients, patients with malignancy, and orthopedic patients.



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# Conversations you should be having

- 01** Identifying how ePROs can advance strategic priorities to establish a vision and gain buy-in

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- 02** Engaging cross-industry partners to identify opportunities for collaboration (especially among provider, technology, life science, advocacy, and research organizations)


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- 03** Deciding which components of an ePRO program should be condition-specific vs. condition-agnostic, taking into account both population-level and individual patient priorities

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- 04** Determining how to evaluate ePRO program success and leverage that success to engage payers

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Conversations focused on ePROs are likely related to ongoing conversations around care management and remote patient monitoring. To incentivize and finance ePRO programs, leaders should consider them as part of the larger infrastructure investments required to support the transition to value-based care and care at home. 

# Appendix

## Sample MGB communication slides to clinics about the ePRO program

### PROMs Introduction

Healthcare Systems have trouble measuring “Quality” & “Value”

**We are excellent at measuring:**

- 30-day readmissions
- Hospital acquired infections
- Surgical site infections
- Unplanned ICU admissions
- Lab values
- Length of stay
- Process measures

**What matters to patients:**

- How is my quality of life?
- Can I work?
- Am I in pain?
- Will I lose functionality (brain, body, sexual, physical)?
- Can I remain independent?
- Will I feel like my old self again?

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### Mass General Brigham PROMs Mission Statement

We believe PRO’s should be used to.....

1. **Improve the direct care** of individual patients through better monitoring and improved responsiveness
2. Guide **shared decision making** and set patient expectations

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3. **Compare** effectiveness between modalities, institutions, individuals
4. **Measure quality** more appropriately and demonstrate value to external audiences

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#### Program Implementation & Support

- Meet with clinic leads
- Coordinate build request and iPad order
- Host trainings for clinic team
- Coordinate launch
- Check in regularly/support

#### Questionnaire Build & Programming

- Determine feasibility
- Coordinate with implementation team
- Manage build request/QA testing
- Support/troubleshoot issues

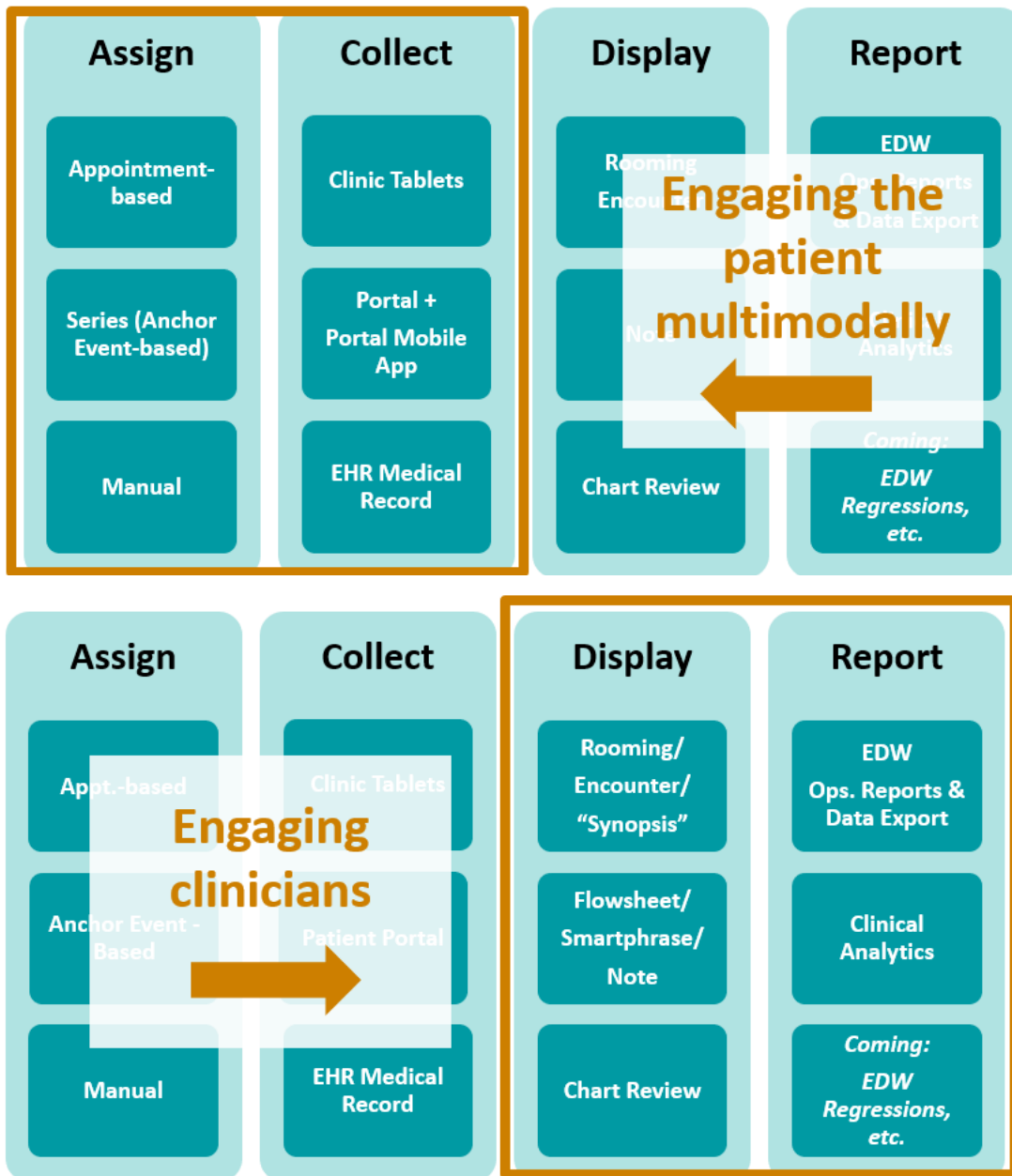
#### Data & Analytics

- Coordinate with build team post go-live
- Manage content/features and new needs for PROMs Central
- Support clinics in their unique data pull requests and/or analytical needs

Source: Mass General Brigham, Boston, Massachusetts.

APPENDIX

MGB's ePROs workflow





APPENDIX

## MGB's Guidance for Patient Questionnaires

# Patients: Multimodal PROMs Collection is Essential for Patients

### Collection "at home" is ideal

- We primarily use the patient portal.
  - "Tickler" email invites patients to log into Partners Patient Gateway (PPG)
  - PROMs is a "Task" that is completed in PPG – look and feel is *MyChart* (Epic patient portal product)
  - Collection rates over the portal without additional messaging are relatively low: <10%
- Myth: "My patients are older and don't know how to use the computer."
  - 92% of patients were able to enter their email addresses into a tablet interface (n>30,000)
- We have tried regular email: collection rates vary, information security an issue
- We have tried phone with interactive voice response: expensive with very low success rate

### Collection in clinic is essential

- There will always be patients who don't have access to the portal or forget to complete PROMs at home
- We collect in clinic using iPads running *Welcome* (Epic kiosk product)
- Implementing in clinical settings is challenging
- Tablet collection is not subject to the racial/ethnic/language disparities observed with Patient Gateway collection

# Patients: What Makes the Difference Between Completing and not Completing?

## 1. Getting the survey

- Most of the battle is getting the survey into the hands of the patient
- Using the platform has to be relatively easy and intuitive, the IT must work, language should be that of the patient

## 2. The belief that this will be used for your clinical care

- The first time, they must be told in a believable way
  - Automated text on the platform
  - "Instructions" from staff: "Dr. Kang would like you to answer these questions."
- Subsequent times, they have to have seen it used by their clinician. This is essential.

## 3. Avoiding survey fatigue

- ~30-35 questions is the most a patient can answer without wanting to give up
- You can't ask them to fill these out too frequently or in too many different settings

APPENDIX

**MGB's ePROs training program**

**PROMs Program Training Protocol**

**Faculty Meeting:**

- ✓ Why Collect PROMs?
- ✓ MGB Program Goals
- ✓ How to Read and Consider PROMs Scores
- ✓ Workflow for Patient and Provider
- ✓ How to view PROMs in Epic
- ✓ PROMs Central: Collections and Patient Level Data

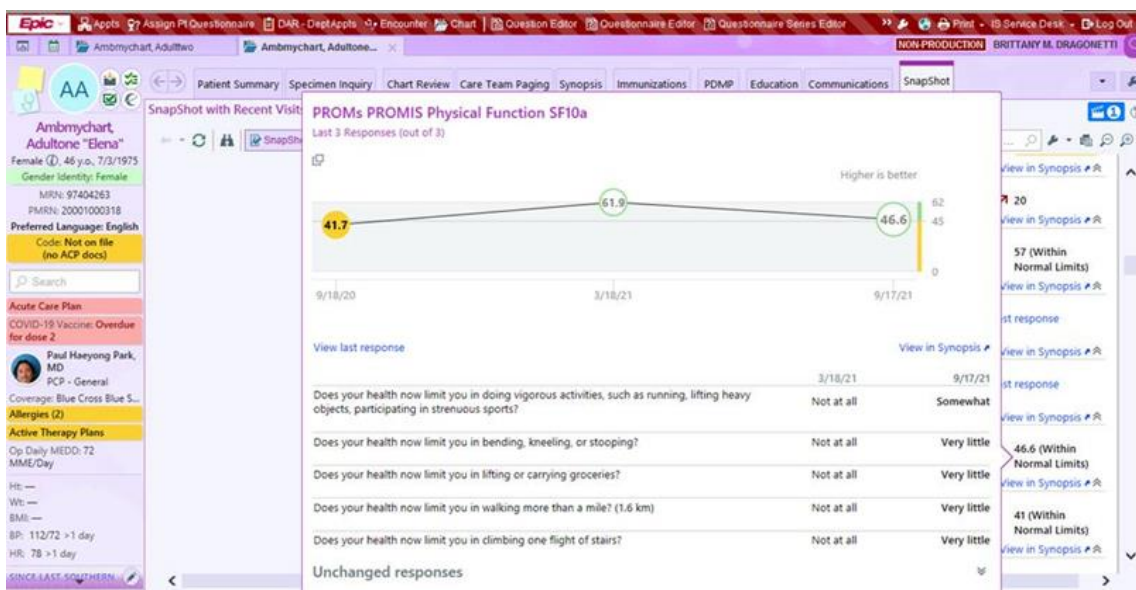
**Practice Manager Meeting:**

- ✓ Monitor collection reports: staff tablet hand-out vs. Patient Gateway
- ✓ Workflow training
- ✓ The 50% + in 1<sup>st</sup> month goal
- ✓ Ongoing support for tech/staff training needs

**Administrative Staff Training:**

- ✓ Why Collect PROMs?
- ✓ Workflow for Patient using the iPads
- ✓ How to educate patient on PROMs when handing out iPad
- ✓ iPad sanitation protocol
- ✓ Ongoing support for tech needs

**MGB provider view of PROMs data in Epic**




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Source: Mass General Brigham, Boston, Massachusetts.


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