



Achieving Sustainable Patient Engagement

Improve Patient Retention, Satisfaction, and Revenue with
Intelligent Support and Automation

OVERVIEW

This white paper presents how Memora Health has helped hospitals and ambulatory surgical centers improve and sustain longitudinal patient engagement using artificial intelligence, sophisticated analytics, and user experience design.

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PART I What is Patient Engagement?

Patient engagement refers to both a patient's knowledge, ability, and willingness to manage his or her health and a sustained effort by health care organizations to promote positive patient behavior and health outcomes.¹

Health care is complicated. Many patients struggle to learn, communicate, and understand health information, services, and modalities for receiving care. Only 12 percent of U.S. adults are classified by the Department of Health and Human Services as having proficient health literacy.

Over one third of U.S. adults, 77 million people, have difficulty with common health tasks.² Patients with low health literacy have trouble following treatment instructions, adhering to medication regimens, or caring for themselves at home. Furthermore, the U.S. health care system has not done enough to improve health literacy among patients³, and many times does not factor in patient choices and needs in treatment decisions. Even when patients do receive the information they need to make an informed decision about their care, the sheer breadth and esoteric vocabulary of medical treatment can be overwhelming and leave patients anxious about their choices.

On average, poor health literacy costs health care organizations between 3-5% of total medical service expenses annually. On a per-patient basis, those with poor health literacy cost health care organizations between **\$143 to \$7,798** more relative to those with adequate health literacy.⁴

A growing body of research shows that patients who are more actively involved in their health care, via increased literacy, communication, autonomy, and decision making, experience better outcomes at lower cost.⁵ Patients with higher Patient Activation Scores showed

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an approximately 20% decrease in projected health care costs in the next six months following engagement interventions relative to patients with lower scores.⁶ As a result, many health care organizations are developing patient

engagement strategies⁷, including one-on-one patient education about medical conditions and treatment, distribution of text and audio/video information to patients before and after appointments, and collaborative, shared medical decision-making during consultations.⁸

Traditional patient portals and mobile applications have just a 2% usage rate among patients.

Following national adoption of electronic health records standards as part of the 2009 HITECH Act, many health care organizations attempted to utilize health record Patient Portals as a medium for patient engagement and activation. However, traditional patient portals and mobile applications have just a 2% usage rate among patients, primarily due to poor user experience, low technical literacy, and information overload.⁹ As a result, 7% of patients leave or transfer from a practice due to poor communication tools, costing on average \$350,000 annually. **Effective engagement can increase revenue by \$3.8M annually through improved retention and quality-based reimbursement.**

Mandates & Incentives:

In addition to inherent incentives to improve financial performance and patient outcomes via patient engagement and activation, federal mandates and incentives for engagement continue to grow and adapt to the capabilities of health care information technology.

Stage 3 Meaningful Use

Starting in 2018, all eligible hospitals and providers must attest to Stage 3 Meaningful Use, regardless of when the entity began participating in the programs. Reporting for Stage 3 Meaningful Use has been condensed to 90 consecutive days for 2018. Stage 3 Meaningful Use condenses patient engagement requirements into one rule.

“In the Stage 3 Patient Electronic Access Objective, we proposed to incorporate certain measures and objectives from Stage 2 into a single objective focused on providing patients with timely access to information related to their care.”¹⁰

MIPS Patient Engagement and Care Coordination Requirements

The Merit-based Incentive Payment System (MIPS), passed as part of the Medicare Access and CHIP Reauthorization Act of 2015 (MACRA), created patient engagement requirements through the Advancing Care Information component of the final MIPS score. Advancing Care Information serves as a replacement for Meaningful Use for eligible providers. Receiving a full score on the Advancing Care Information metric requires meeting patient engagement requirements:

1. Patients are able to view, download, and transmit health data
2. Remote, secure messaging with patients
3. Incorporate patient-generated health data for at least one unique patient.

Centers for Medicare and Medicaid Services (CMS) CPT Codes

CMS has developed a set of CPT codes for providers who deliver remote chronic care management for Medicare patients with two or more chronic conditions. More information can be found in this [CMS document](#).

99490

20 minutes of care management services per patient per month.
\$42.84 per patient per month

99091

Digital collection of physiologic data with 30 minutes or more of clinical staff time in a calendar month.
\$58.68 per patient per month

99487

Complex chronic care management.
\$94.68 per patient per month

99489

30 minutes of clinical staff time per patient per month for complex chronic care management.
\$47.16 per patient per month

990X0

Remote monitoring of physiologic parameters (e.g. weight, blood pressure, pulse oximetry, respiratory flow rate), initial; set-up and patient education on use of equipment.

990X1

Remote monitoring of physiologic parameters. Devices supply with daily recording(s) or programmed alert(s) transmission, each 30 days.

994X9

Remote physiologic monitoring treatment management services, 20 minutes or more of clinical staff/physician/other qualified healthcare professional time in a calendar month requiring interactive communication with the patient/caregiver during the month.

HCAHPS Scores

HCAHPS (the Hospital Consumer Assessment of Healthcare Providers and Systems) is a patient satisfaction survey required by the Centers for Medicare and Medicaid Services for all hospitals in the United States. Notably, this includes questions about communication with nurses and doctors, the responsiveness of hospital staff, communication about medicines, discharge information, care transition, overall rating of the hospital, and if they would recommend the hospital. Performance on the HCAHPS survey affects base operating Medicare payments for each hospital by 2.0%, positively or negatively, as part of the Hospital Value-Based Purchasing Program.

Opportunities for Revenue Generation:

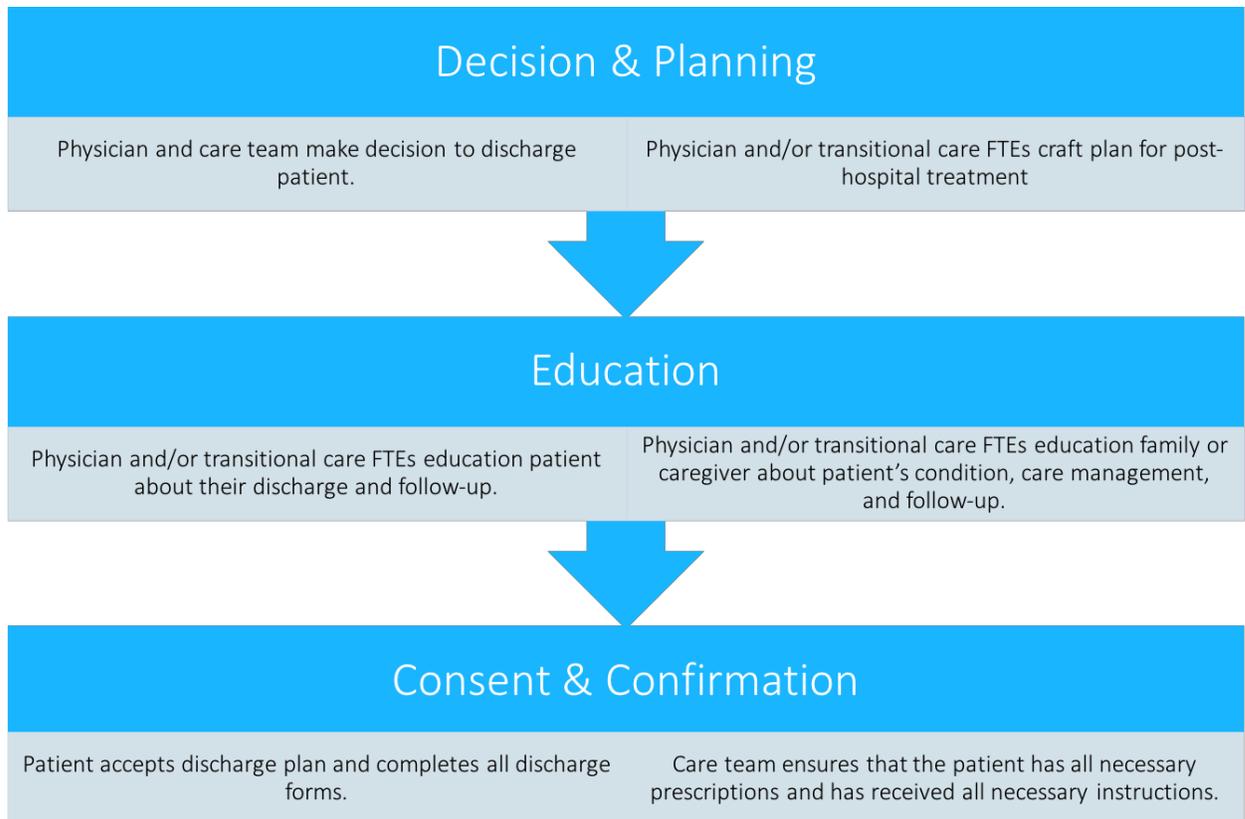
- I. Stage 3 Meaningful Use
- II. MIPS Patient Engagement Requirements
- III. CPT Codes for Remote Chronic Care Management
- IV. HCAHPS Scores and Hospital Value-Based Purchasing Program

Opportunities for Cost Reduction:

- I. Administrative Labor Efficiency and Reallocation
- II. Lower Complication Rate via Improved Health Literacy
- III. Higher Patient Retention
- IV. Reduced Turnover from Administrative Burnout

PART II Why is Engagement So Difficult?

The current standard of care involves patients either receiving verbal instructions from a physician or a stack of papers with post-discharge protocols. Patients often leave confused and, on average, *forget 80% of what they hear in conversations with their physician.*



There are a number of obstacles to effective patient engagement, attributable to both patients and health care organizations.

Patients:

Patients must have a level of health literacy in order to engage effectively in shared medical decision-making. Their level of engagement may also be affected by demographic factors, including age, sex, education, language, religion, and cultural differences.¹ Additionally, patients are often deterred from engaging with health care systems because they see engagement as a nuisance and distraction from lower-order needs, such as food, shelter, and transportation.

Health Care Organizations:

There is a need for change in both the operational workflow and the culture of medical practice in order to effectively engage patients both in and out of the clinic. The most frequently cited reason for poor patient engagement is lack of time. Additional barriers to effective patient engagement on behalf of health care organizations include insufficient training of clinicians, burnout, lack of incentives for engagement, and poor information technology systems.¹ **Additionally, traditional modes of engagement are expensive, costing an average of \$382 per-patient.**

Long-term patient follow-up outside of clinic visits is difficult and there are a lack of resources to manage a large volume of patients over time. Many hospitals have ramped up hiring of nurses, medical assistants, and other clinical support staff solely for the purpose of calling and following up with patients to collect basic data and provide post-discharge treatment instructions. Transitional care FTEs, paid on average an annual salary of \$63,741, current spend approximately 50% of their time on manual chart review and management, learning each patient's medical history among dozens of physician notes, and then deciding the best way to follow up under tight timelines^{10,11}. Of the 20% of patients that FTEs follow-up with, only 18% of them (~4% overall) answer phone calls¹⁰. Each FTE spends on average 150 minutes per patient per year delivering care management services over the phone¹². **Given an average panel size of 350 patients per FTE per year, each FTE spends 875 hours, or nearly 22 weeks of a 40-hour work week, communicating with patients over the phone per year¹³.** Other hospitals have set up follow-up clinics with physician-patient counseling 1-week post-discharge and call every few days for up to three weeks to check-in with patients. There is clearly a visible need for patient engagement to improve outcomes post-discharge; however, clinicians are limited by time in the number of patients they can reach per day manually, and these logistical efforts by clinical staff come at the expense of time for face-to-face patient care.

As new mandates and incentives to promote patient engagement compound with rising costs for disengaged patients, it will become even more essential for health care organizations to include patient engagement as part of their revenue and cost control strategy. Given the high per-patient costs for engagement using traditional tools, incorporating elements of automation would both scale patient engagement strategies to entire patient populations and reduce total operating overhead for health care organizations.

PART III Memora Health's Approach

Memora Health has built a suite of workflow and communications products that help patients receive the resources and information they need at the right time, while helping hospitals both avoid penalties and improve top-line revenue from federal initiatives, including Meaningful Use, MIPS, CMS CPT codes for remote chronic care management, and HCAHPS. Some of Memora's care pathway interventions include:

- Appointment scheduling
- Discharge Instructions
- Biometric tracking, e.g. blood sugar, weight, pain level
- Medication management
- Wellness checks
- Treatment-specific Q&A
- Condition-specific diet and exercise coaching

Enrolling, engaging with, and tracking patients on the Memora system was intentionally designed to be as simple as possible, to handle as few or as many patients as needed. Once a patient is enrolled in a particular care pathway, they will immediately receive a text message from "Felix", our intelligent assistant, asking for their consent to receive messages.



As a result, the 17,000 patients subscribed to Memora Health have shown a 75.8% response rate over 30 days, a discharge preparedness score of 28/30, and an 81.6% medication adherence rate, with 79.3% of all patient questions and concerns receiving an automated answer from Felix.

The Accessibility and Scale of SMS

SMS messaging has shown a significant positive impact on fostering desired behavior change among patients. A 2016 meta-analysis of academic studies pooling over 2700 patients showed that SMS reminders nearly doubled both short- and long-term medication adherence and patient motivation in various acute and chronic diseases¹⁴, including Type II Diabetes¹⁵, cardiovascular disease¹⁶, HIV¹⁷, and schizophrenia¹⁸, across the socioeconomic spectrum. Additionally, SMS reminders significantly improved patient satisfaction, with 93 to 100% of patients finding messages 'very helpful' in regard to improving their adherence, 90% claiming they would like to continue receiving messages, and 92% mentioning that they would recommend SMS-based interventions to family and friends.¹⁹ Including health literacy advice in conjunction with medication reminders further improved adherence, patient satisfaction, and the perception of feeling 'cared for' outside the hospital.²⁰

SMS-based health interventions which reminded patients with diabetes to maintain an active lifestyle over six months, resulted in a 1% reduction in hemoglobin A1c, the clinical measure of blood sugar control. Clinically, A 1% drop in hemoglobin A1c is considered medically significant and reduces the risk of heart attack by 14% and diabetes-related death by 21%. In comparison, the standard drug for diabetes, metformin, gives an average of 0.5% drop in hemoglobin A1c, meaning this **SMS intervention was at least as effective as an oral pharmaceutical.**²¹

SMS offers simplicity for both patients and providers. While mobile interventions introduce a natural selection bias, using SMS as a mode of communication is inclusionary of all demographics, compared to other technological solutions. In 2013, mobile phone penetration had been estimated at 86% among American households earning less than \$30,000 per year, 93% of which regularly send text messages.²² In the same demographic, only 59% have access to a desktop or laptop, while just 47% have broadband at home, supporting text messaging as the best medium for automated interventions.²³ **SMS interventions have a 98% read rate, better than any smartphone app on the market.** A meta-analysis found that poor physician-patient communication results in a 19% higher risk of nonadherence.²⁴ Providers currently cite inadequate time with patients and lack of communication tools as the most important barriers to improving medication adherence.²⁵ Memora Health addresses both challenges by automating the process of patient health education and streamlining secure patient-provider communication.

The Artificial Intelligence Behind the Scenes:

Although the aforementioned text messaging interventions have shown success in clinical domains such as medication adherence, the technology has generally been limited to one-way reminders. There's only so much intelligence that was originally paired to text messaging. We've taken a proven concept in medical quality improvement research and supercharged it by applying our own natural language processing engine to deliver personalized messages and parse SMS responses into clinically relevant insights for clinicians.

More involved digital interventions employ wearables, mobile apps, and telemedicine-style health coaches, but for many patients these have become more cumbersome and are inherently more difficult to scale.

Felix is every bit as smart and reliable as those technologies, but all of our AI is behind the scenes—users only engage over text message, and it feels every bit as natural as texting a friend. We have designed advanced technology in an entirely automated workflow with the ability to text thousands of patients at a time, and are continuously learning and improving from user behavior, as shown below in our postoperative care pathway program:

Hello Lisa, Felix here, hope your recovery is going well! You will likely feel tired for at least 1 week after your surgery. Take your pain medicine as needed with food in order to stay active, but rest as needed for recovery. Don't drive until you have been seen for your first post-operative clinic visit.

I feel gross, can I take a bath?

You may shower the day after surgery and allow clean, soapy water to run over your incision, but don't expose your incisions to soaking water (e.g. hot tub, bath tub or swimming pools) for the first six weeks after surgery.

Take short walks 2-3 times a day. This will help reduce the risk of blood clots following surgery. Don't lift heavy objects (more than 8 pounds) for the first 4 weeks. Make sure someone is around the first few times you use the stairs or exercise.

Use your pain medicine, vicodin, as prescribed. Pain medications may cause nausea on an empty stomach so we recommend you take with it food.

When should I be taking vicodin?

I'm sending you reminders to take vicodin at 9AM and 6PM.

When can I eat?

You can resume your regular diet when you return home, unless your doctor has put you on a special diet. It's normal to have less of an appetite after surgery, which will soon return to normal. In the meantime, try eating small meals several times a day.

PART IV Key Takeaways

Patient engagement and activation refers to a patient's ability to manage his or her health and a sustained effort by health care organizations to promote positive behavior and outcomes. Engagement can improve health outcomes and reduce per-patient costs by approximately 20%. As a result, federal mandates and incentives for patient engagement and care coordination have increased the necessity of more effective technology-enabled engagement tools.

However, effective patient engagement is difficult due to poor health literacy and constraints on both spending and communication. Poor health literacy alone costs health care organizations between 3-5% of total medical service expenses annually. Another 7% of patients leave or transfer from a practice due to poor communication tools, costing health care organizations on average \$350,000 annually. Finally, effective engagement can increase revenue by \$3.8M annually through improved retention and quality-based reimbursement.

Memora Health's suite of interventions help patients improve their health literacy, engagement, and outcomes, while giving hospitals the resources to scale their existing engagement initiatives cost-effectively and capture new streams of revenue from both federal programs and increased patient retention.

2%

Status quo
patient portal
adoption rates

\$350K

Increased
revenue from
effective
patient
engagement

75.8%

Memora
Health's 30-day
patient
engagement
rate

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About Memora Health

Memora Health is a San Francisco-based health care technology company helping health care organizations reduce overhead and scale patient follow-up efforts by analyzing existing patient follow-up initiatives and automating post-discharge instructions, reminders, health coaching, and collection of patient-reported outcomes via text message.

Learn what Memora Health can do for you

Email: info@memorahealth.com

Phone: 415.874.9390

Website: <https://memorahealth.com>