



Memoro+

**Re-think
Care Management
Care Coordination
Patient Engagement**

June 2021

Memoro – Latin, for... “I Remember”

CONFIDENTIAL

Clinical Staff & Patient Interactions

The Goal: *Communication will lead to Education, Understanding & Compliance*

The Problem...

Breakdowns lead to:

- Patient complications
- Wasted time by clinical staff
- Added cost to overall care per Patient episode
- Unnecessary consequences, ER visits, missed appointments
- Avoidable readmissions
- Decreased overall Patient satisfaction
- Negative impact on Patient outcomes
- Consistency of Care issues
- Legal/Liability concerns
- Overall Reduction in Patient Quality of Care



Confusion
vs.
Care
Confidence

The Challenge...



Nursing Staff

Family

Caregiver

Primary Care Dr

Specialist

Care Team

“Patient-Specific” Care Instructions

Critical to patient care & outcomes

- ❖ Pre-op to Post-surgery
- ❖ Discharge & Recovery

Multiple, Complex care instructions...

- ❖ Simple to Medical/Nursing staff
- ❖ Confusing to patients & caregivers

How to Ensure Critical Information Sharing?

The Problem:

Example...

Have you ever experienced the “process” of being discharged from a hospital or surgery center following an in-patient visit or procedure,

receiving multiple pages of “discharge” instructions along with a flurry of verbal instructions from the nurse or doctor,

only to leave the hospital and immediately realize you don’t recall many critical details required to adequately begin appropriate care & recovery?

- Which medications to take and when?
- Incision Care instructions?
- Dietary guidelines?
- Possible adverse events to watch out for?
- Details regarding follow-up visits?
- Who do I call if there’s a problem?

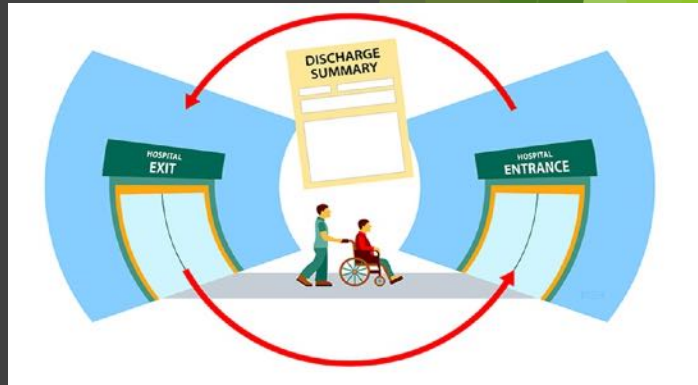
Contributes to:

- ❖ Revolving Door problems for hospitals
- ❖ Post-hospital or surgery complications
- ❖ Wasted hospital and/or staff time
- ❖ Increased overall Healthcare costs
- ❖ Negative impact on Patient Satisfaction & Experience
- ❖ Negative impact on Outcomes
- ❖ Negative impact of overall Quality of Care

How can we change?

- ✓ System that supports Effective Communication
- ✓ Provide Tools to Improve Education & Compliance
- ✓ Provide Ability to Retrieve ALL Patient-Specific Instructions
- ✓ Empower Patients & Caregivers

Lapses in Patient Education, Understanding & Compliance



Root Cause of Communication Breakdowns?

Critical Information Loss!

Approximately...

52% of a conversation is forgotten in an hour

65% in a day, up to **90%** in a week*



Healthcare Studies

50% of patients do not understand the information they receive while in the hospital.

60% of patients do not understand the information they are given about an upcoming treatment or procedure.



In a related study ...
80% forgot what they were told,
and
50% of the remembered data
was recalled incorrectly!**

* Source: McKinsey Study

** Synergy Broadcast Systems "How to Reduce Hospital Readmissions by Changing Patient Education"

Why We Forget

Neuroscientists have been studying the cause of Memory loss for years

The Interference Theory

According to interference theory, forgetting is the result of different memories interfering with one another. The more similar two or more events are to one another, the more likely interference will occur.

The Decay Theory of Forgetting

Trace theory proposes that the length of time between the memory and recalling that information determines whether the information will be retained or forgotten. If the time interval is short, more information will be recalled. If a longer period of time passes, more information will be forgotten and memory will be poorer.

The Retrieval Failure Theory

A common reason why we don't remember information is because it never made it into long-term memory in the first place.

According to the **trace theory** of memory, physical and chemical changes in the brain results in a memory "trace."

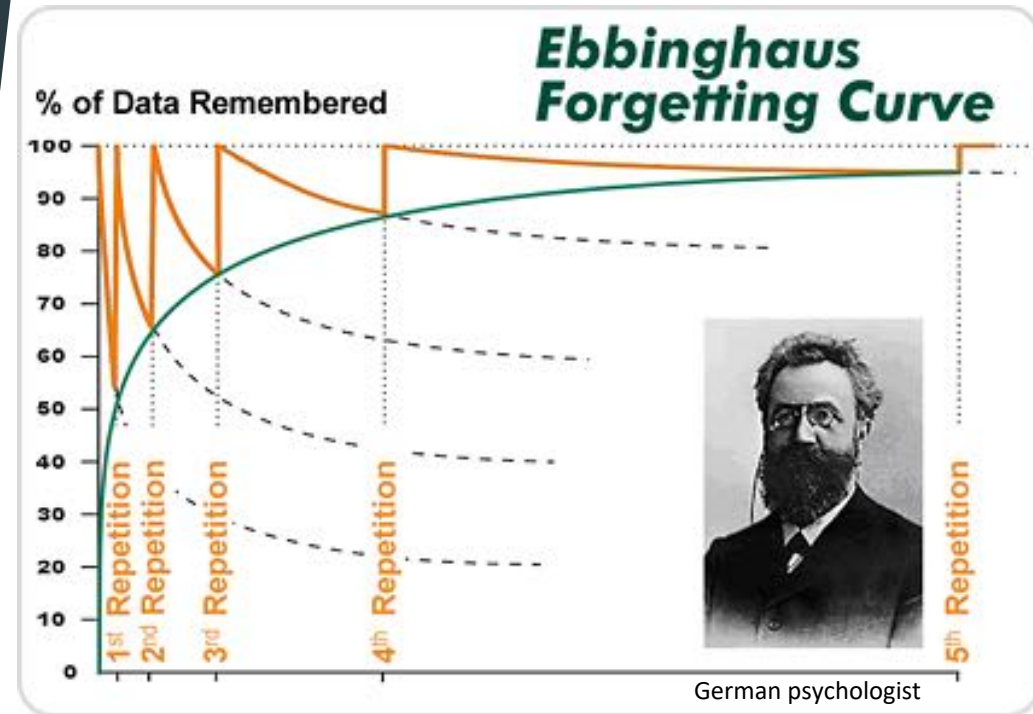
Information in **short-term memory** lasts several seconds and if it is not rehearsed, the neurochemical memory trace quickly fades.

According to the trace decay theory of forgetting, events that happen between the formation of a memory and recall of the memory have no impact on recall.

- ▶ Repetitions are shown with the orange line.
- ▶ Dotted line shows what happens if the next repetition does not occur.
- ▶ Green line shows the minimum amount of information remembered as you do more and more repetitions.
- ▶ Memory stabilizes at around 95% with 5 repetitions.

That's right - if you do five repetitions correctly, you'll permanently remember 95% of the information.

This is called “spaced repetition learning”.



The idea that memories fade over time is hardly new. Greek philosopher Plato suggested such a thing over 2,500 years ago. Experimental research by psychologists like Ebbinghaus bolstered this theory.

Science behind the Problem

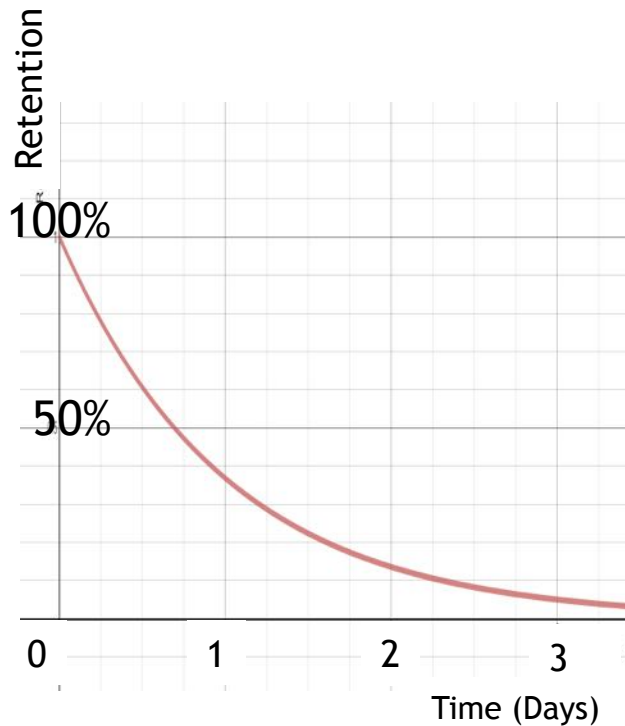


Figure 1: The how-bad-you-are-at-remembering-stuff curve. Aka the forgetting curve.

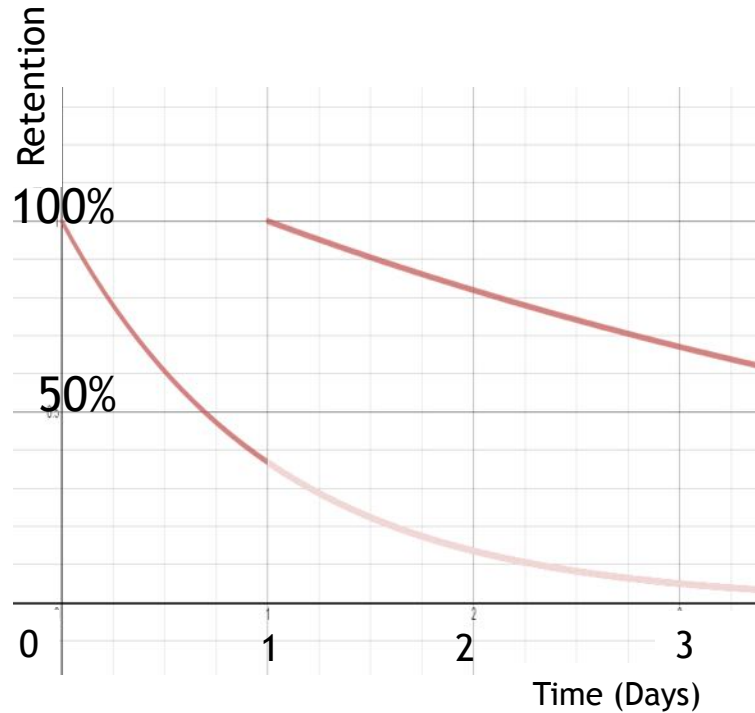


Figure 2: After a repetition, you forget slower

Current Healthcare EHR Software,
Healthcare Systems & Clinical Processes
are not designed to address the underlying problem

How much do patients actually remember after a counseling session?

About 50% of the information provided by healthcare providers is retained. Depending on conditions, 40%–80% may be forgotten immediately.

However, of the information that patients do recall, they remember about half incorrectly.

So half is forgotten immediately, and half of what is remembered is wrong.

If you remove 50% of the facts relating to a health problem and distort half the remaining information, the result can be a dangerously misunderstood message with potentially life-threatening consequences.

Don't patients remember the really important things?

Unfortunately, no. Patients often forget their medical diagnoses.

One study reported that patients could not recall 68% of the diagnoses told to them in a medical visit.

When there were multiple diagnoses, patients couldn't recall the most important diagnosis 54% of the time. Some of the diagnoses were serious, even life-threatening, conditions such as diabetes, hypertension, and liver disease.

Another study found that after counseling, patients and physicians agreed on problems that required follow-up only 45% of the time. When there was disagreement between the physician and patient on the need for follow-up, the likelihood of appropriate management was significantly lower.

Categorizing Information can Improve Retention

Stress causes
“attention narrowing”
which interferes with a
patient's ability to redirect
to a different topic.

Mode of Presentation:

Not surprisingly, information presented in a simple, easy-to-understand format is remembered better than information presented in a more complex manner.

The more information presented,
the lower the proportion that is recalled by the patient.

Information that is presented first
tends to be remembered better—*the primacy effect*.



Explicit Categorization:

Information that is organized in specific categories such as explanation of systems, diagnostic tests, results, prognosis, and recommendations.

The patient is told that the information will be presented in these categories, each category is announced, and the patient is asked if he/she has any questions before moving on to the next category.

The method can significantly enhance recall.

Readability of discharge summaries: with what level of information are we dismissing our patients?

Asad J. Choudhry, M.B.B.S. • Yaser M.K. Baghdadi, M.D. • Amy E. Wagie, M.H.A. • ...
Donald H. Jenkins, M.D. • Daniel C. Cullinane, M.D. • Martin D. Zielinski, M.D.   • Show all authors

Published: December 27, 2015 • DOI: <https://doi.org/10.1016/j.amjsurg.2015.12.005> •  Check for updates

Results

Total of 497 patients were included.
204 (65%) patients had functional reading skills at grade levels below the FKGL of their dismissal note

Conclusions

Patient discharge notes are written at too advanced of an educational level. To ensure patient comprehension, dismissal notes should be rewritten to a 6th-grade level.

> [Ann Emerg Med.](#) 2009 Apr;53(4):454-461.e15. doi: 10.1016/j.annemergmed.2008.05.016.
Epub 2008 Jul 10.

Patient comprehension of emergency department care and instructions: are patients aware of when they do not understand?

Kirsten G Engel ¹, Michele Heisler, Dylan M Smith, Claire H Robinson, Jane H Forman, Peter A Ubel

Study objective:

To be able to adhere to discharge instructions after a visit to the emergency department (ED), patients should understand both the care that they received and their discharge instructions. The objective of this study is to assess, at discharge, patients' comprehension of their ED care and instructions and their awareness of deficiencies in their comprehension.


Conclusion:

Many patients do not understand their ED care or their discharge instructions. Moreover, most patients appear to be unaware of their lack of understanding and report inappropriate confidence in their comprehension and recall.

Results:

78% of patients demonstrated deficient comprehension in at least 1 area;
51% of patients, in 2 or more areas.
Greater than 1/3 of these deficiencies (34%) involved patients' understanding of post-ED care.

Preventing readmissions with discharge education

Polster, Debra MS, APN, CCRN, CCNS [Author Information](#) 

Nursing Management (Springhouse): October 2015 - Volume 46 - Issue 10 - p 30-37

doi: 10.1097/01.NUMA.0000471590.62056.77

In Brief

Literacy, cognition, education level, socioeconomic status, and level of social support all contribute to a patient's adherence to discharge instructions. Careful attention to providing an individualized care plan sets patients up for success.

Reducing hospital readmissions is a national focus for healthcare reform. Consequently, patient discharge education is increasingly important for improving clinical outcomes and reducing hospital costs.

Reducing readmission risk

The CMS expects nurses and other healthcare team members to address modifiable factors that can increase the chance of rehospitalization. These include:

- unplanned and early discharge or insufficient post-discharge support
- inadequate follow-up
- therapeutic mistakes
- adverse drug events and other medication-associated concerns
- failed handoffs
- complications after procedures
- patient falls, healthcare-associated infections, and pressure ulcers.²

ORIGINAL RESEARCH PAPER |  Open Access |  

Communication and patient participation influencing patient recall of treatment discussions

Chronic diseases (CDs) are increasingly prevalent and contribute significantly to the financial burden of health care. Patient recall and understanding of pharmacological and lifestyle treatment information received during encounters are key intermediate variables towards better adherence, CD management and improved health outcomes.

Unfortunately, recall is often faulty. **Patients remember as little as a fifth of information discussed and immediately forget 40%-80% of the content of their medical encounters.**

Factors influencing recall cited in the literature can be classified into three categories:

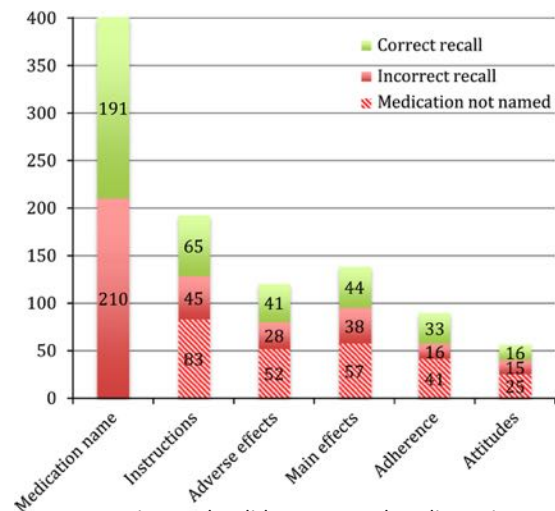
(i) Patient (ii) Information and (iii) Communication.

(i) Patient characteristics include age, education, health literacy and anxiety.

(ii) Information characteristics include modality (written vs aural), structure, number of instructions given and encounter length.

(iii) Clinicians' communication skills are also related to recall. Few studies have examined the effect of patients' communication skills on their recall of information.

Communication and patient participation influencing patient recall of treatment discussions



Patients who did not remember discussing a specific medication theme, despite recalling the medication name, are also shown (block red).

“There is a lack of shared language and empowerment in managing one's disease.”

The majority of medications discussed during the encounter were of two main statuses, either actively being taken or prescribed, consistent with a CD population.

Discussions were mostly initiated by physicians and had a low dialogue score.

Medication discussions were not extensive in terms of the number of themes discussed. The most often discussed theme besides the name was instructions, mentioned in less than half of the medication discussions.

Encounters with patients with CD need to engage in an explicit conversation about relevant lifestyle modifications and medications.

This conversation should ideally be thorough and engage patients in a true dialogue.

Providers and patients need to engage more frequently about treatment information in ways that encourage patients to be active participants in the discussion.

Improved discussions may impact treatment information recall.

This is an important step towards improved self-management, adherence and eventually better health outcomes.

Factors associated with patient recall of key information in ambulatory specialty care visits: Results of an innovative methodology

M. Barton Laws , Yoojin Lee, Tatiana Taubin, William H. Rogers, Ira B. Wilson

Published: February 1, 2018 • <https://doi.org/10.1371/journal.pone.0191940>

Observational study at two hospital-based outpatient cardiology clinics and one hospital-based outpatient nephrology clinic, based on coded transcripts of 189 outpatient encounters, and post-visit interviews with patients 1 week later.

- **49% of decisions & recommendations were recalled accurately**
- **36% recalled with a prompt**
- **15% recalled erroneously or not at all**

Findings suggest **patient recall could be enhanced if providers were to use more of the techniques to encourage patient engagement, such as open questioning, agenda setting, and teach-back; and limit the amount of information to be remembered in a single visit based on an assessment of patients' ability to recall.**

Factors associated with patient recall of key information in ambulatory specialty care visits: Results of an innovative methodology

M. Barton Laws , Yoojin Lee, Tatiana Taubin, William H. Rogers, Ira B. Wilson

Published: February 1, 2018 • <https://doi.org/10.1371/journal.pone.0191940>

We found that there is substantial variation in the number of threads and resolutions per visit. This is presumably a factor in the cognitive and decisional burden on patients.

We also found that recall-promoting behaviors by providers are rare, as are elements of shared decision making.

We also found that patients recall fewer items when physician utterances are more numerous compared to patient utterances (a measure called “verbal dominance” in the literature), which suggests a relationship between patient engagement and patient recall.

Studies have assessed patient recall of important information from ambulatory care visits, though none has done so recently. Little is known about features of clinical interactions which are associated with patient understanding and recall, without which shared decision making, a widely shared ideal for patient care, cannot occur.

We are not the first investigators to observe that there has been surprisingly little change in physician-patient interaction over the decades.

The Solution... Memoro⁺

- Captures Interactive Conversations
- Synchronized to an audio timeline
- Captures All Patient-Specific care instructions
 - Enables simple selective recall & review
 - Patients, family members, care providers
 - ALL Patient-specific Care Instructions
 - Optimize Patient Engagement

Overcome challenge
Clinical Teams face
trying to share
complex information



Targeted Use-Cases:

- ❖ Hospital: Pre-Op Planning and Discharge
- ❖ ASC: Pre-Op planning, Discharge & Rehab
- ❖ Patient Engagement
- ❖ Health Insurance: All Covered Members

Primary Goals:

- ✓ Patient education, engagement & compliance
- ✓ Effective patient & caregiver communications
- ✓ Improve patient experience & overall satisfaction
- ✓ Reduce avoidable readmissions, added costs
- ✓ Improve patient Quality of Care & Outcomes
- ✓ Empower Patients and their Caregivers

Secondary Goals:

- “Push” Critical Information & reminders to Patients
- Two-way interaction/connectivity with Patients
- Track and Improve Compliance & Outcomes
- “Telehealth” on Steroids

Capture Patient-Specific care instructions,
enable simple selective recall & review of ALL care instructions

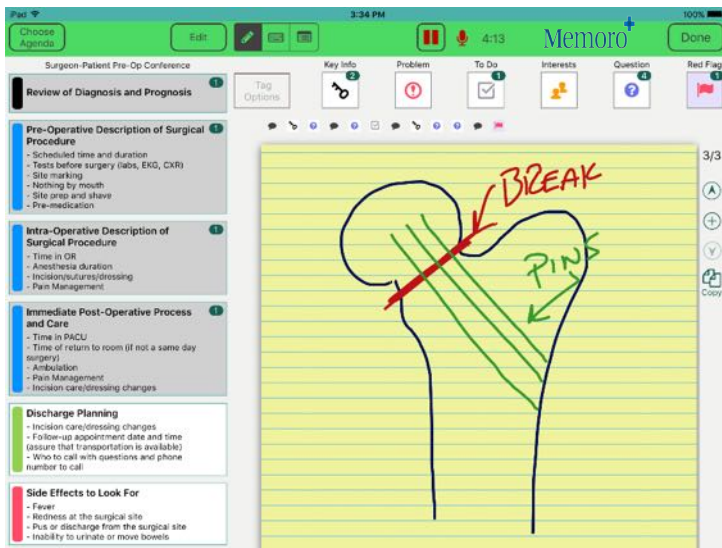
Improve...

Care Management
Care Coordination
Patient Engagement

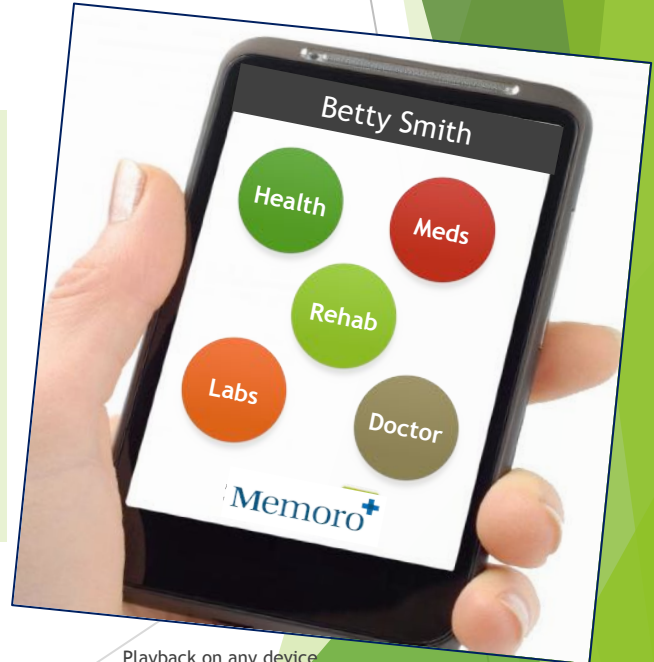


Capture Entire Clinician-Patient Interaction

Enables Retrieval & Playback



Interactive audio capture
Entire Patient Interaction
Records ALL Patient-Specific Instructions



Playback on any device
smart phone, computer, tablet
Memoro Phone App

- ❖ Multiple “Telehealth” applications
- ❖ Push critical reminders to patients/caregivers (Medications, follow-up, etc.)
- ❖ Provide post-surgery-recovery content (Rehab videos & more)

Multiple Benefits to Healthcare Systems

Optimize Care Management

Improve Patient Education

Improve Patient Compliance

Improve Patient Experience

Share with entire Care Team, Family

Enhance Quality Improvement processes

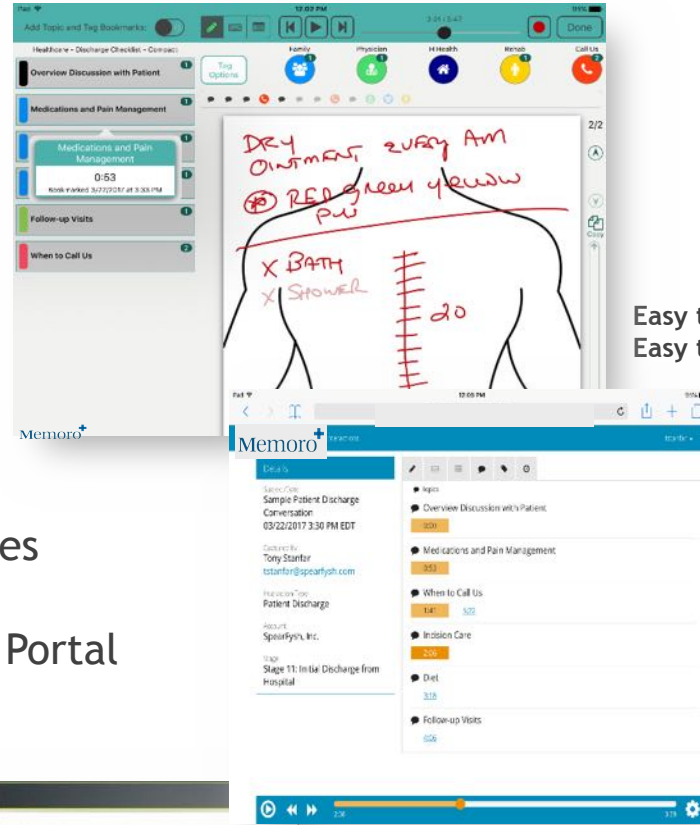
Integrate with existing EHR or Patient Portal

Reduce avoidable readmissions

Training and Education

Key Data Analytics

Risk Management

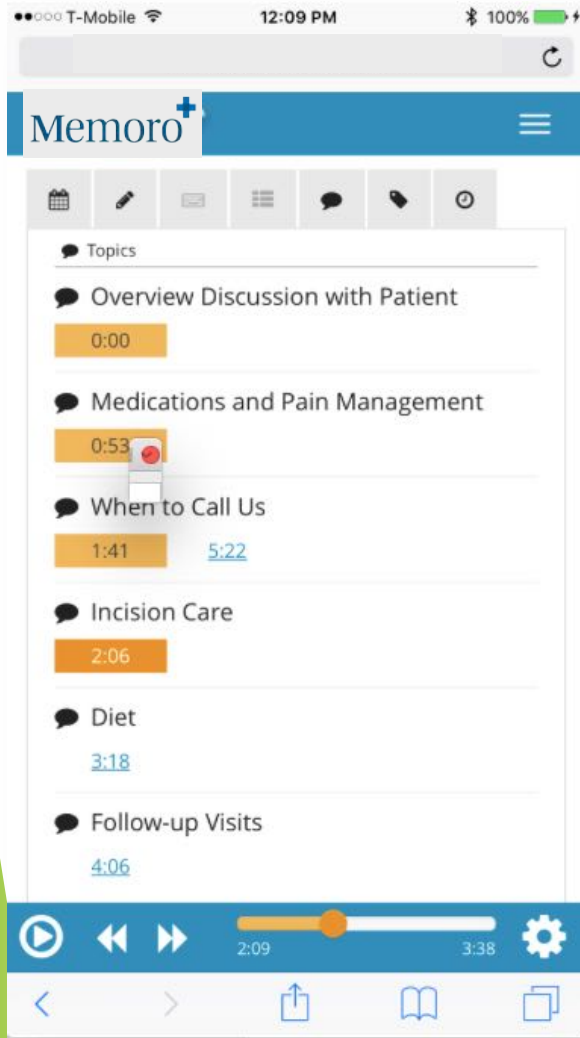


Easy to Learn
Easy to Use

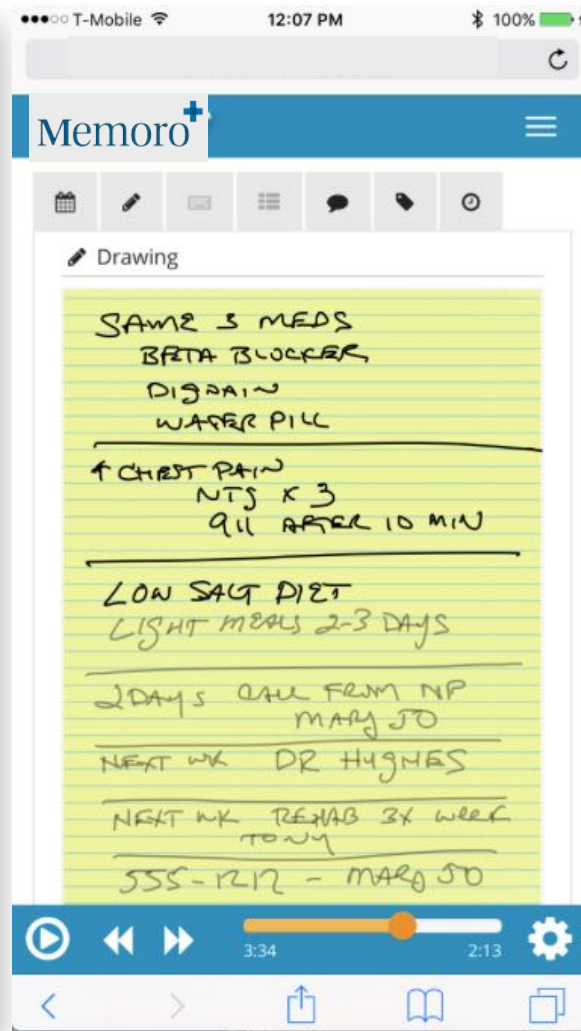


Captured communication of instructions using a novel “tagged” audio process enables selective recall & review by patients and care providers.

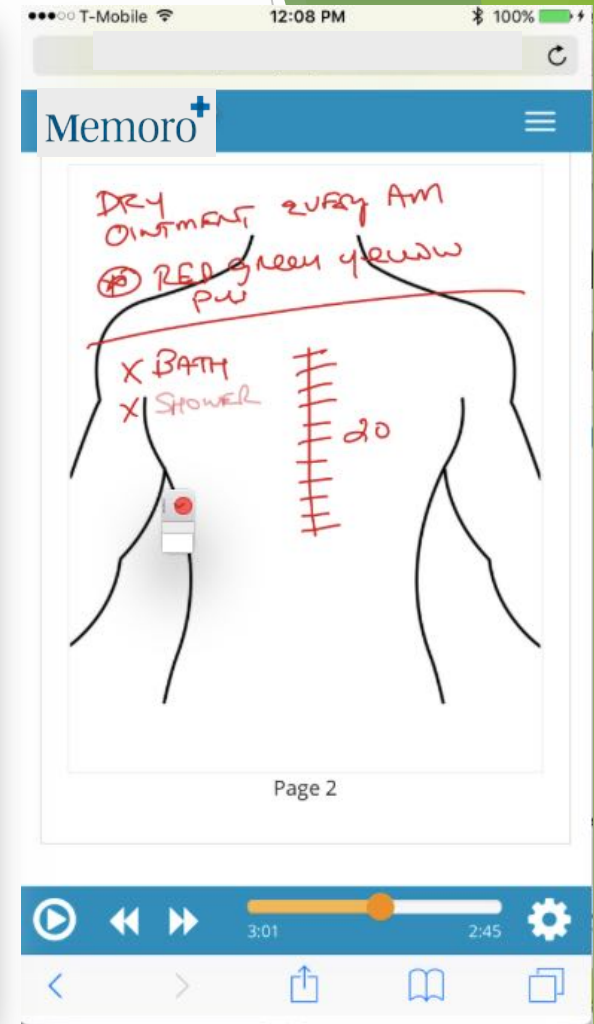
Patient Information Retrieval & Playback



- ✓ Patients & Care-providers can access from anywhere



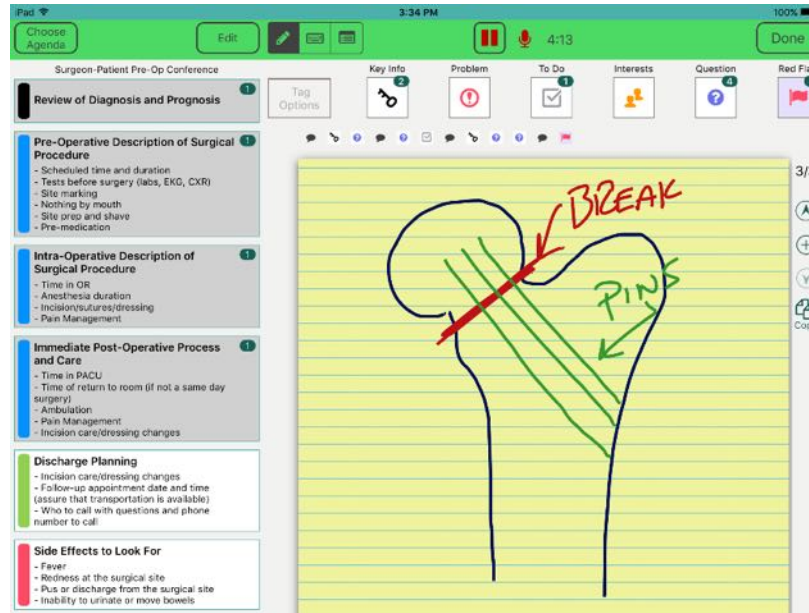
- ✓ Review and Recall ALL critical patient-specific care-instructions



- ✓ Retrieve using any device; smartphone, iPad/tablet, computer
- ✓ Phone App



Interactive iPad Capture



Admin Web-Interface

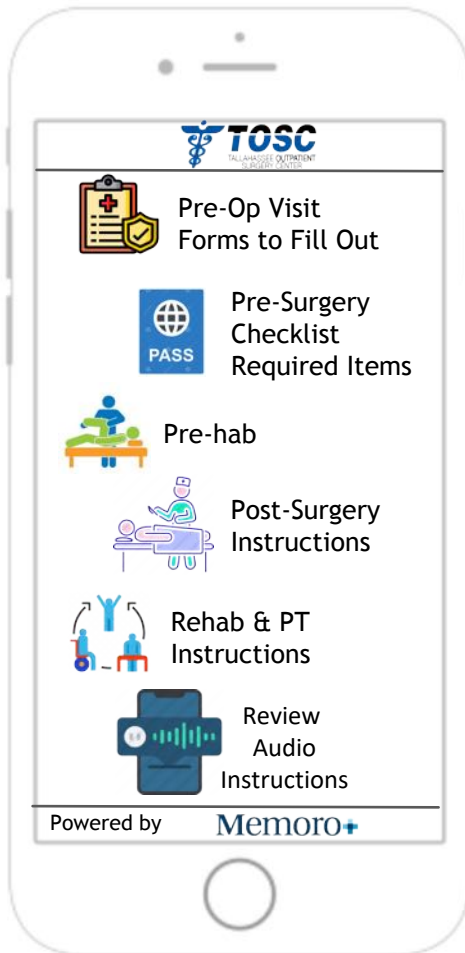


List View

View By	Search Appointments			
Patients	Renee Jameson 06/15/76	Fri Jun 18, 2021 4:15PM Knee Replacement Dr. Fred Smith	2 of 5 Checklists Completed 3 New Messages from Patient 1 New Image Upload	View Details New Access Code Change Status
Doctor				
Procedure	John Smith 04/05/79	Fri Mar 4, 2021 4:00 PM Dr. Josie Wilding	1 appointment needs interaction	View Details New Access Code Change Status
Date				
	Susan Vix 08/15/44	Mon Jul 12, 2021 8:00 AM Hip Replacement Dr. Josie Wilding	5 of 5 Checklists Completed 2 New Video Uploads	View Details New Access Code Change Status

Showing 1 to 3 of 3 entries Previous | Next

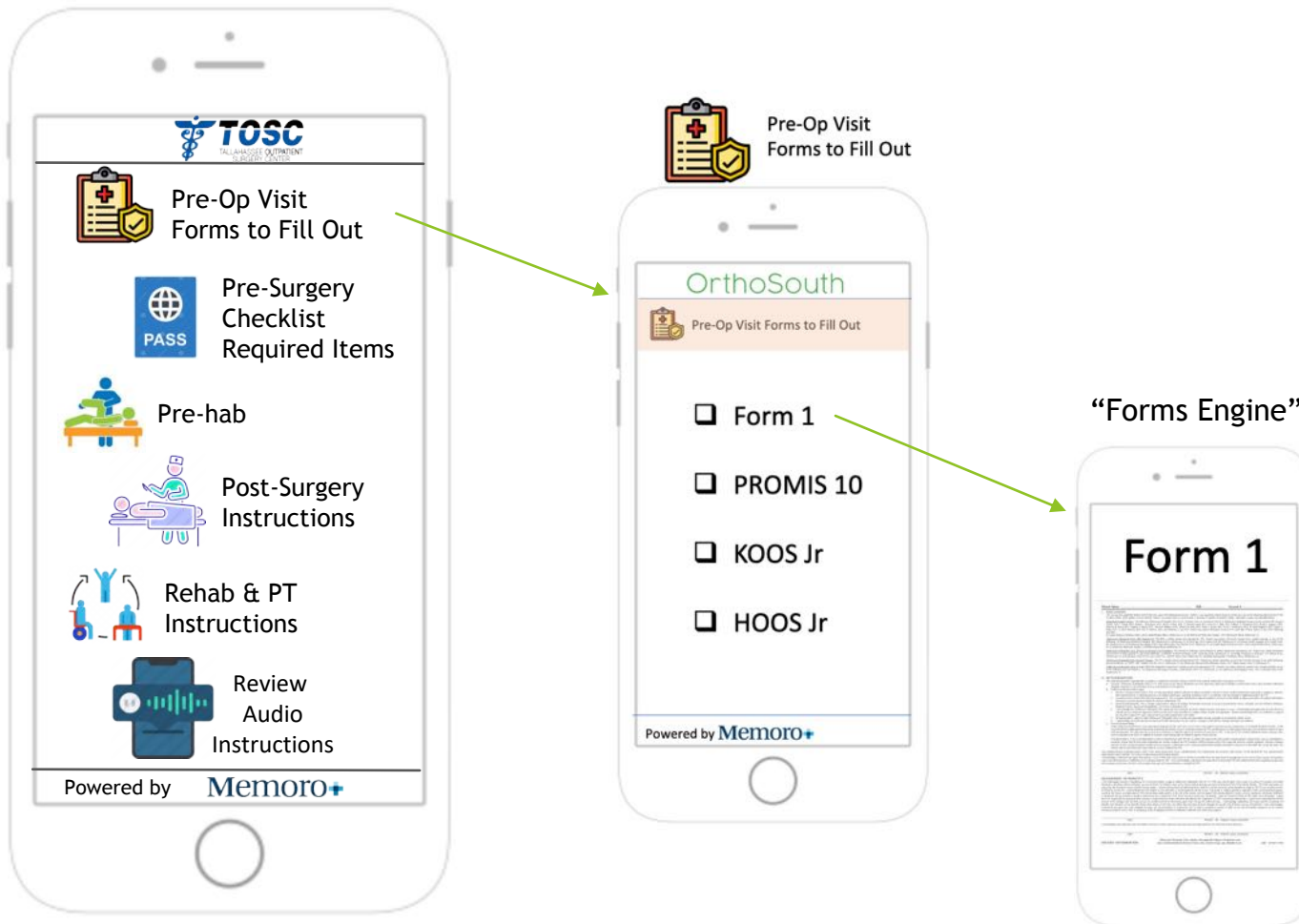
Care Coordination



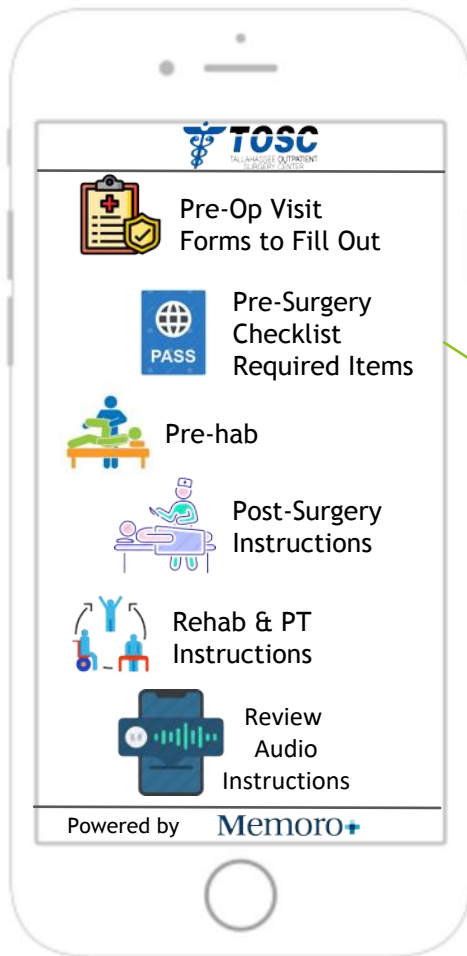
Memoro Patient-Phone App



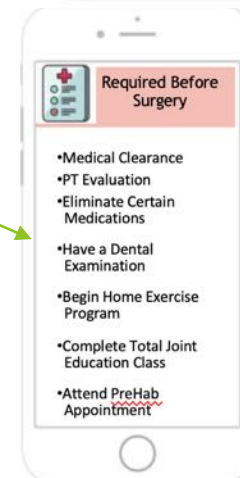
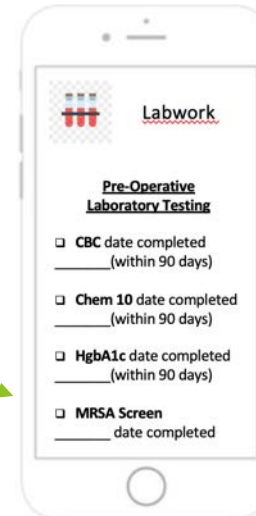
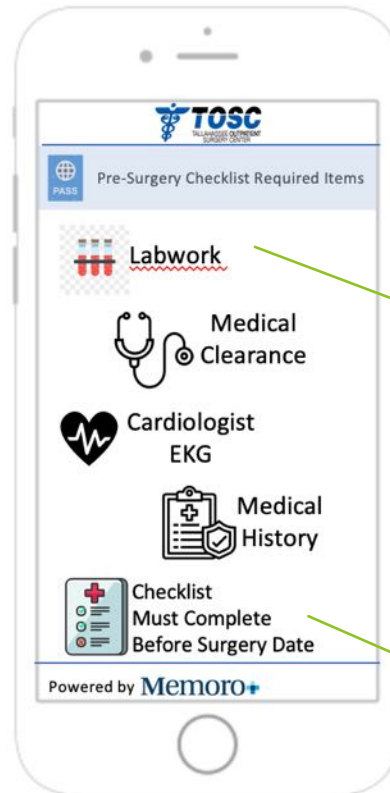
Memoro Patient-Phone App



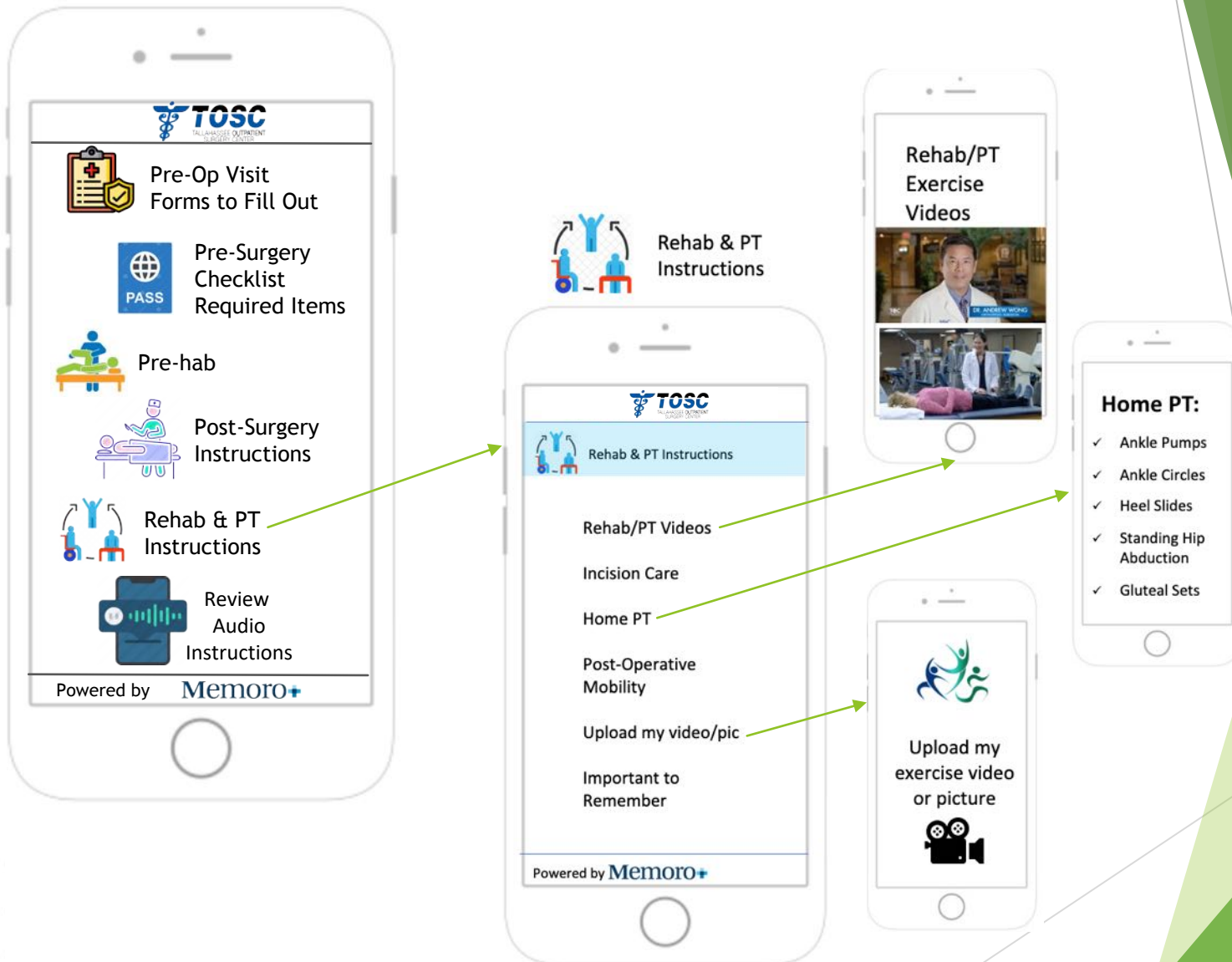
Memoro Patient-Phone App



PASS Pre-Surgery Checklist Required Items

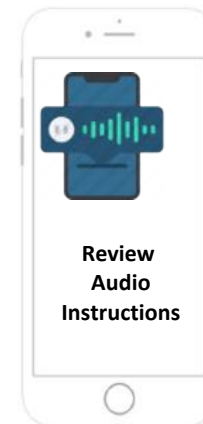
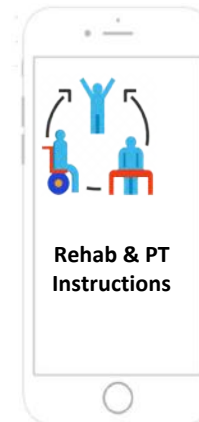
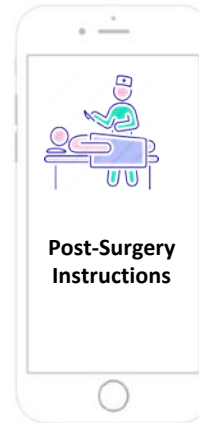
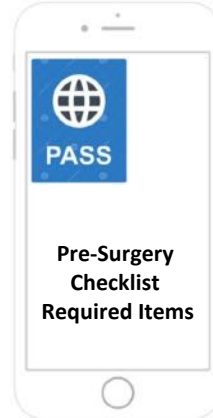
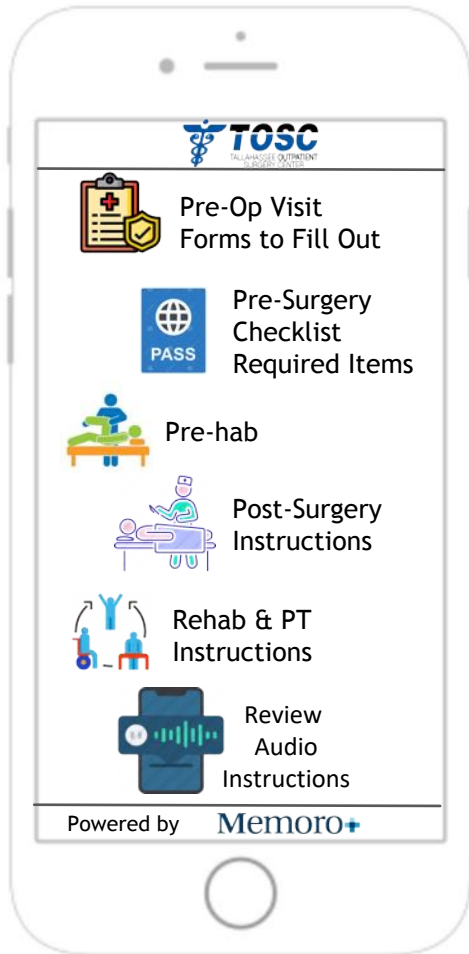


Memoro Patient-Phone App



Appointment w/Surgeon in 10-14 day
Push Patient Reminders

Memoro Patient-Phone App



Admin Web Interface



Memoro Admin

List View

View By Month Week Day Filtering Options

Patient

Doctor

Procedure

Date

August 9 - 13, 2021

Monday	Tuesday	Wednesday	Thursday	Friday
Kurt Mason Pre-Op Visit				
	Ann Miller Initial Consult			

Dr. Josie Wilding

Change Status

Showing 1 to 3 of 3 entries

Previous 1 Next

Admin Web Interface



List View

View By		Search Appointments			
Patients		Renee Jameson 06/15/76	Fri Jun 18, 2021 4:15PM Knee Replacement Dr. Fred Smith	2 of 5 Checklists Completed 3 New Messages from Patient 1 New Image Upload	View Details New Access Code Change Status
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Showing 1 to 3 of 3 entries

Previous 1 Next

Admin Web Interface



List View

View

Patient

Doctor

Procedure

Data



View Details

TOTAL KNEE REPLACEMENT **Fri Jun 18, 2021 4:15 PM** [New Access Code](#)
Renee Jameson [Change Status](#)
Age: 45
DOB: 06/15/76 Gender: Female email: rjameson@gmail.com Phone: 555.555.1234 131 Dover Street Marion, IN 46991

Patient App Communications

[Pre-Op Visit](#)

[Pre-Surgery Checklist](#)

[Pre-hab](#)

[Post-Surgery Instructions](#)

[Rehab & PT Instructions](#)

[Review Audio/Instructions](#)

Admin

[Alerts](#)

[Messages](#)

Labwork Medical Clearance Cardiologist EKG Medical History **Required Items Prior to Surgery** 1

2 Items of 4 Completed

Completed	Test Description	Date Completed	Timeline
<input checked="" type="checkbox"/>	CBC	06/02/2021	within 90 days
<input checked="" type="checkbox"/>	Chem 10	06/02/2021	within 90 days
<input type="checkbox"/>	HgbA1c		within 90 days
<input type="checkbox"/>	MRSA Screen		within 90 days

[Return to List View](#)

[Add New Test](#)

[Send Reminder](#)

[Code](#)

[Status](#)

[View](#)

[Print to Member](#)

[Order](#)

Admin Web Interface

M+ Memoro Admin

M+ Memoro Admin

M+ Memoro Admin

M+ Memoro Admin

List View

View

Patient

Doctors

Procedures

Data

View

TOTAL

Renee

Age: 45

DOB: 06/15/76

Patient

Pre-

Pre-

Pre-

Post

Rehab

Revi

Admin

Alert

Mess

View Details

TOTAL KNEE REPLACEMENT

Fri Jun 18, 2021 4:15 PM

New Access Code

Renee Jameson

Change Status

Age: 45

DOB: 06/15/76

Gender: Female

email: rjameson@gmail.com

Phone: 555.555.1234

131 Dover Street Marion, IN 46991

Return to List View

Patient App Communications

Pre-Op Visit

Pre-Surgery Checklist

Pre-hab

Post-Surgery Instructions

Rehab & PT Instructions

Review Audio/Instructions

Admin

Alerts

Messages

Rehab/PT

Incision Care

Home PT

Post-Operative
Mobility

Uploaded Patient
Videos / Images

Important to
Remember

Rehab/PT Training & Education

Send Reminder

Videos

0 of 2 Completed

Item	Viewed	Opened On
Video 1	50% Completed	06/04/2021
Video 2	25% Completed	06/01/2021

Images / Documents

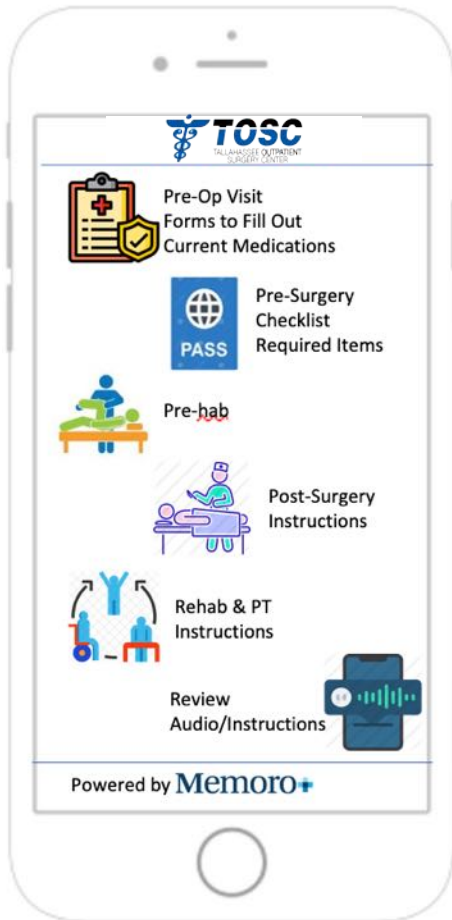
1 of 3 Completed

Item	Viewed	Opened On
Image 1	Yes	06/01/2021
Image 2	No	
Document 1	No	

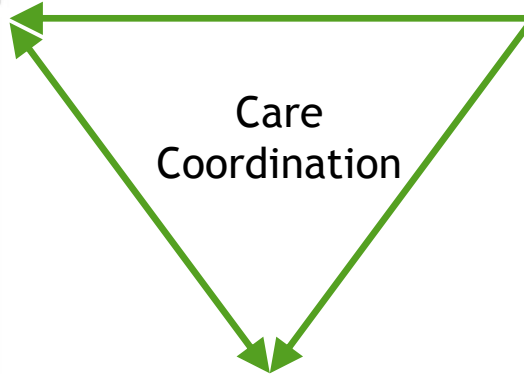
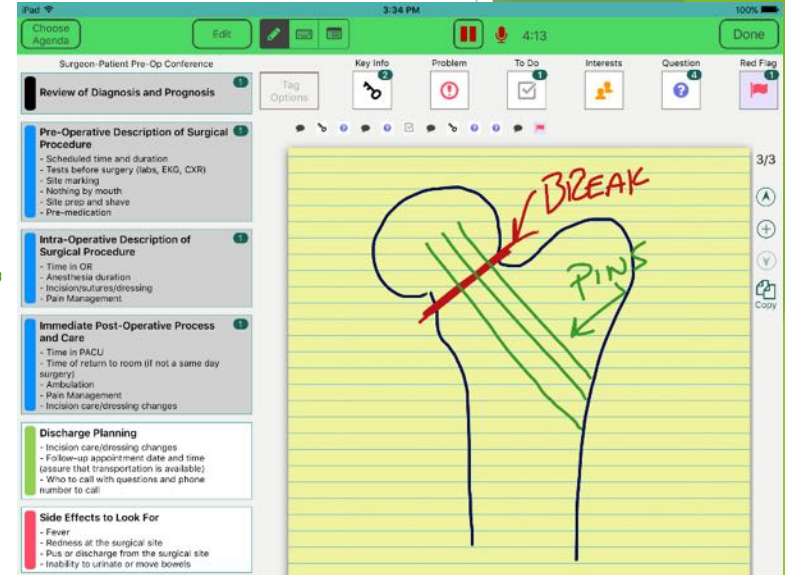
Memoro Patient-Phone App

Care Management - Care Coordination - Patient Engagement

Patient App



Interactive iPad Capture



Care Coordination

Admin Web-Interface

M+ Memoro Admin

View Details

TOTAL KNEE REPLACEMENT Fri Jun 18, 2021 4:15 PM

Resnee Jameson
Age: 45
DOB: 06/15/76 Gender: Female email: tjameson@gmail.com Phone: 555.555.1234 131 Dove Street Marion, IN 46991

[New Access Code](#)
[Change Status](#)

[Return to List View](#)

Patient App Communications

Pre-Op Visit Rehab/PT Incision Care Home PT Post-Operative Mobility Uploaded Patient Videos / Images Important to Remember

Pre-Surgery Checklist

Pre-hab

Post-Surgery Instructions

Rehab & PT Instructions

Review Audio/Instructions

[Send Reminder](#)

Admin

Alerts

Messages

Rehab/PT Training & Education

Videos 0 of 2 Completed

Item	Viewed	Opened On
Video 1	50% Completed	06/04/2021
Video 2	25% Completed	06/01/2021

Images / Documents 1 of 3 Completed

Item	Viewed	Opened On
Image 1	Yes	06/01/2021
Image 2	No	
Document 1	No	

The Solution...



- ✓ Novel Software Platform
- ✓ Recognized Healthcare-system “need”
- ✓ Multiple Healthcare applications

Improve Patient
Engagement,
Education &
Compliance

Enhance &
Optimize Patient,
Caregiver
Communication

Reduce
Avoidable
Hospital
Readmissions

Improve
Patient-Hospital
Experience

Enhance Internal
Quality Initiative
Programs

Risk
Reduction
Initiatives

Improve
Quality of Care

Re-think
Care
Management

*Address an
unmet need*

Executive Team



Beecher Lewis, CEO- Founder

Beecher served as the President and Chief Operating Officer for CorMatrix Cardiovascular between 2005 to 2015, and a member of the Company's Board of Directors from 2001 to 2017. He has more than 25 years experience in the healthcare industry, including extensive experience in healthcare sales and marketing, clinical and regulatory oversight, operations, and building distribution networks for novel medical surgical products, including Harbor Medical Devices (vascular access), Smith & Nephew Richards (orthopaedic total joint replacement, spinal instrumentation, and trauma systems), Implex Corporation (orthopaedic total joints, acquired by Zimmer Biomet), Orthopaedic BioSystems Ltd. (sports medicine, acquired by Smith & Nephew), Regeneration Technologies, Inc. (RTIX-NASDAQ) and The Alabama Tissue Center (cardiac division of RTIX). He is highly specialized in corporate management and operations, FDA regulations, sales and marketing, with an extensive network of healthcare relationships that span the U.S. Beecher is responsible for the operations of Memoro.

John Thomas, CFO

John has more than 40 years of experience in a variety of financial and accounting positions. From 2001 to 2018, John served as Chief Financial Officer and Secretary of CorMatrix Cardiovascular, a privately held medical device company, and a Director from 2001 to 2016. From 2012 until 2019, John has served as a Director of Novelion Therapeutics, Inc., formerly QLT, Inc., a public biotechnology company, as well as the Chairman of the Audit Committee and a member of the Compensation Committee and Special Committee. From 2014 to 2021, John served as a Director of NantKwest, Inc., as well as the Chairman of the Audit Committee and a member of the Compensation Committee and Special Committee. During the past 15 years, John served as acting Chief Financial Officer for DemeRx, Inc., MRI Interventions, Inc., MiMedx Group, Inc. and DARA BioSciences, Petty Good Privacy, and as a Director of MRI Interventions, Inc. and DARA BioSciences. From 1999 to 2012, John served as a Trustee and subsequently the Chairman of the Finance Committee of The Walker School, a private Pre-K through 12th grade school in Atlanta. John is a Certified Public Accountant and graduated from the University of Virginia, McIntire School of Commerce.



Rand Lennox, Chief Technology Officer

Rand is a technology executive with 31 years of experience in managing teams to solve complex business and technical problems. He brings extensive industry experience in life sciences, finance and banking, customer relationship management, and state and local government. As Chief Technology Officer, Rand has led teams to define and develop new SaaS technology offerings that merged audio and voice technology with data and workflows to enable voice conversations to become a secure, shareable, and manageable institutional memory asset. Rand was a co-owner at Entara Management Services, Vice President for Electronic Delivery Channels at KeyCorp, and Project Executive and Chief Architect at IBM Global Services. At IBM, Rand focused on building enterprise-scale international systems, including leading the architecture and design of a large-scale international CRM and fulfillment system developed by teams in 9 countries on 5 continents.