AAHKS 2019 BUSINESS COURSE: Practical DIGITAL Solutions to Practical ANALOG Problems

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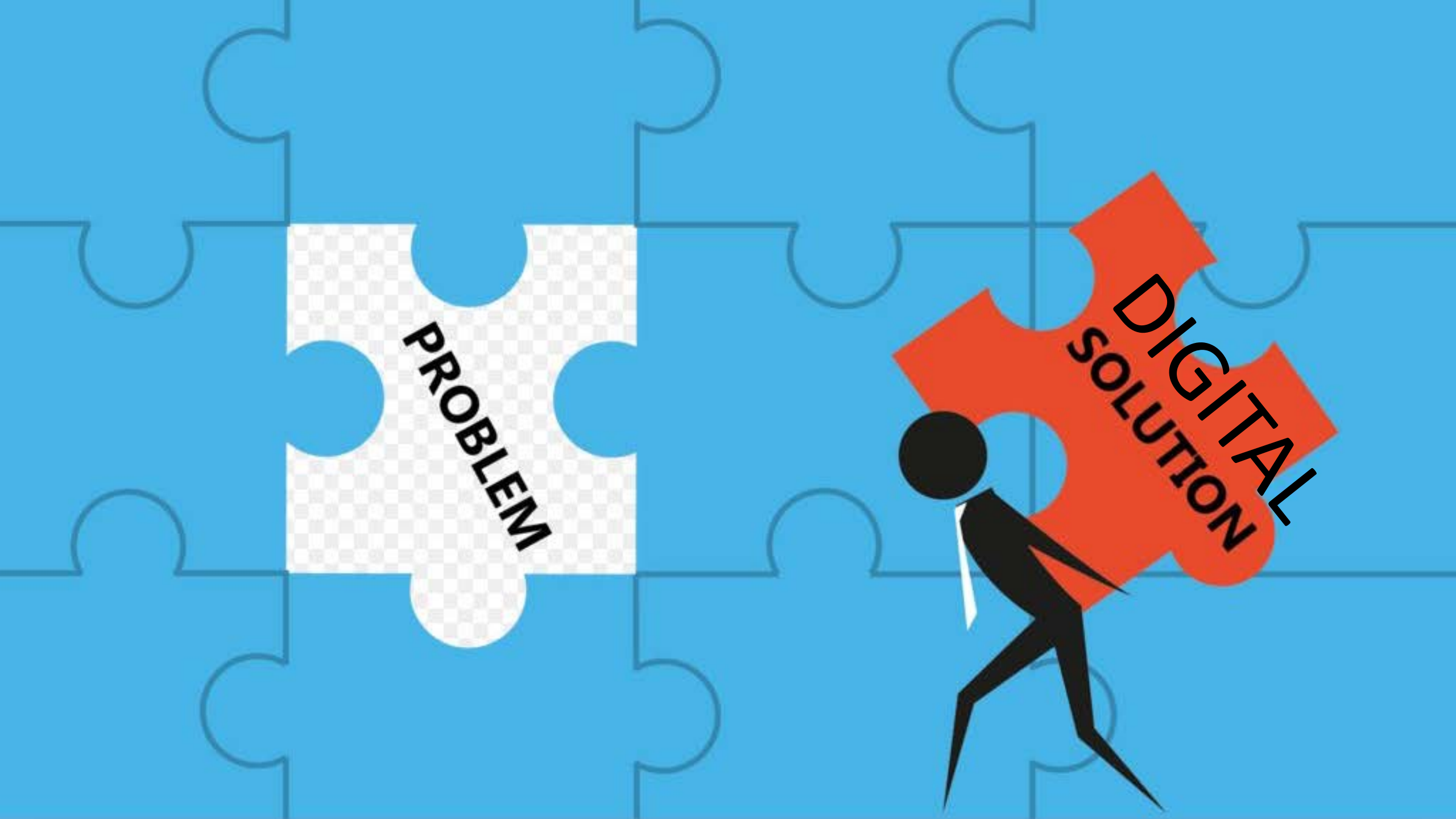
AIR DIGITAL HEALTH AND SOCIAL MEDIA COMMITTEE AAHKS
UNDER AND CHAIR DIGITAL ORTHOPAEDICS CONFERENCE (DOCSF)

Conflicts of Interest

- Cloudmedx.com
- InSilicoTrials.com
- Stryker

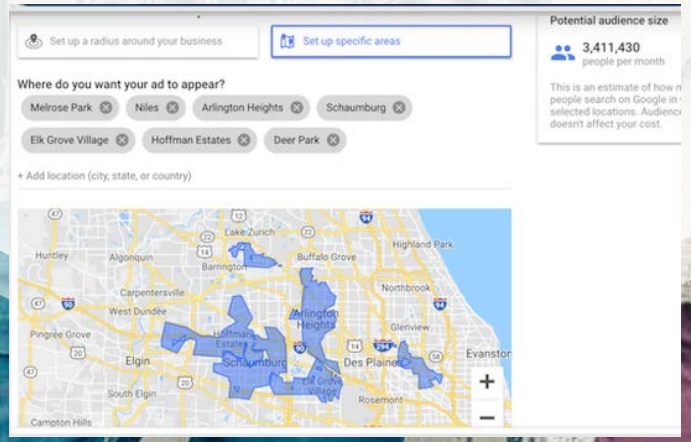

PROBLEM
DIGITAL SOLUTION

Pain Points

- Marketing and outreach
- Referral Management
- Space Utilization
- EMR data entry
- Surgical Scheduling
- Patient Communication
- Bundles and Virtual PT
- PROM capture
- OR Block Optimization
- Billing
- Managing Risk in a bundle
- Robotic Surgery
- Continuing Education

Going into a new market? Want to optimize your patient pool? Leverage Social Media

- SocialClimb.com
- 90% of searches for a doctor start on Google
- Increase reviews 10x on Google rankings
- Targeted advertising by neighborhood



REFERRAL MANAGEMENT TECHNOLOGY

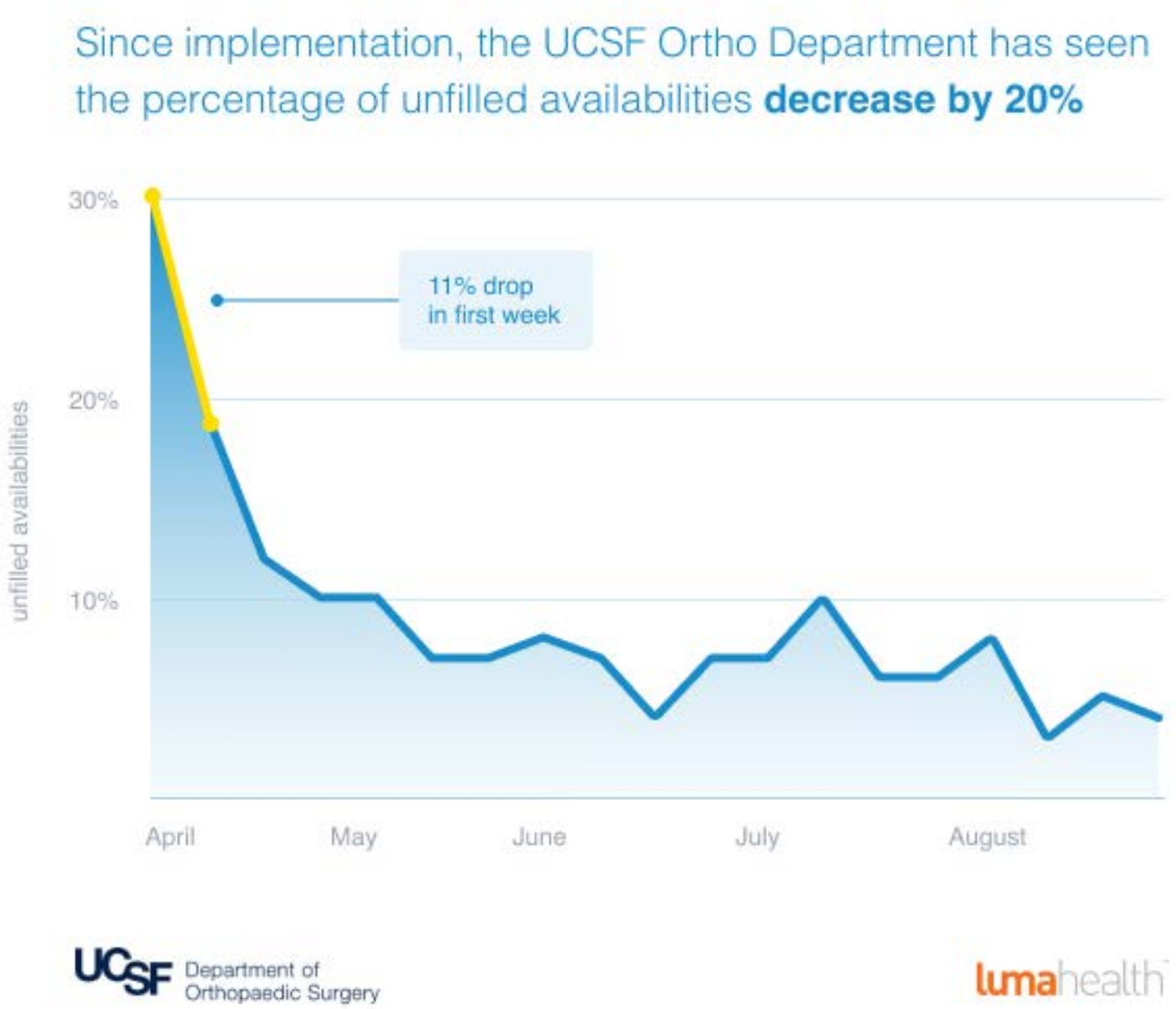
Invented in 1865

popularized 1980s

COMMUNICATION TECHNOLOGY invented in the 1849

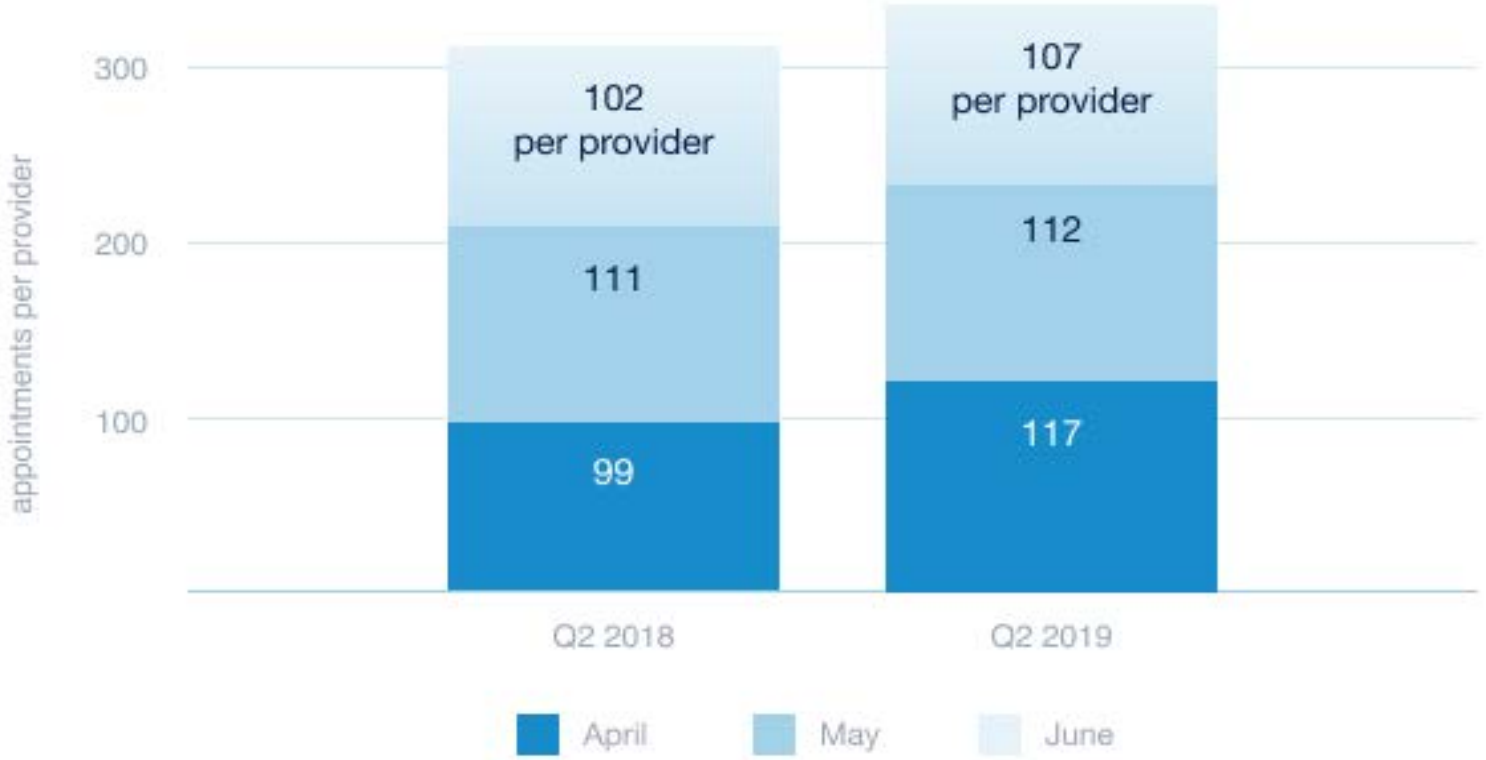
Referral Management

- LUMA Health
- 90% of referrals are faxed
- 35% are booked
- Call center outreach
  - A ton of work!
- Automate it!



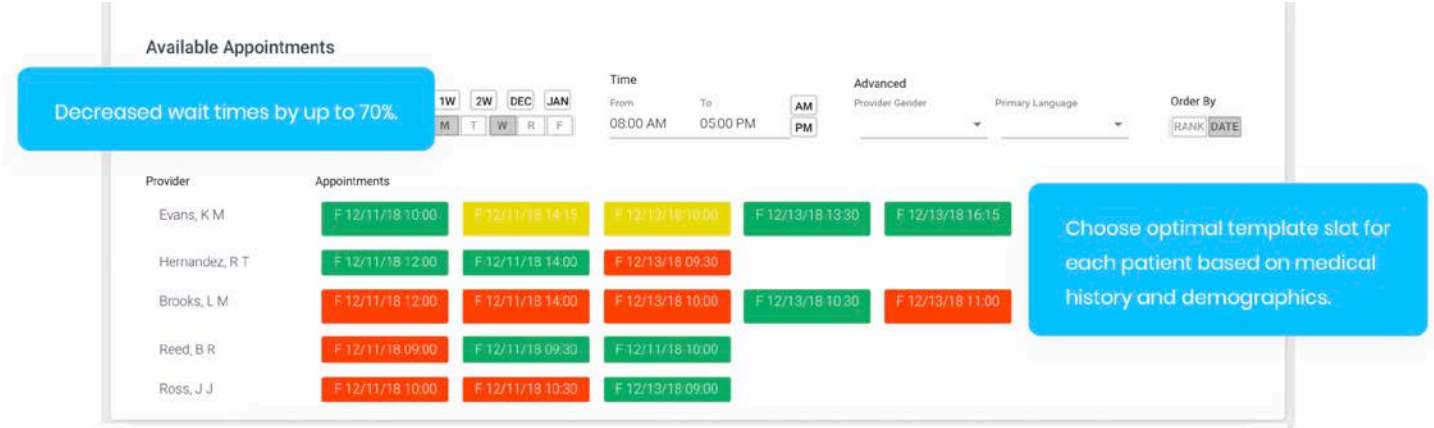
Increased clinical volume

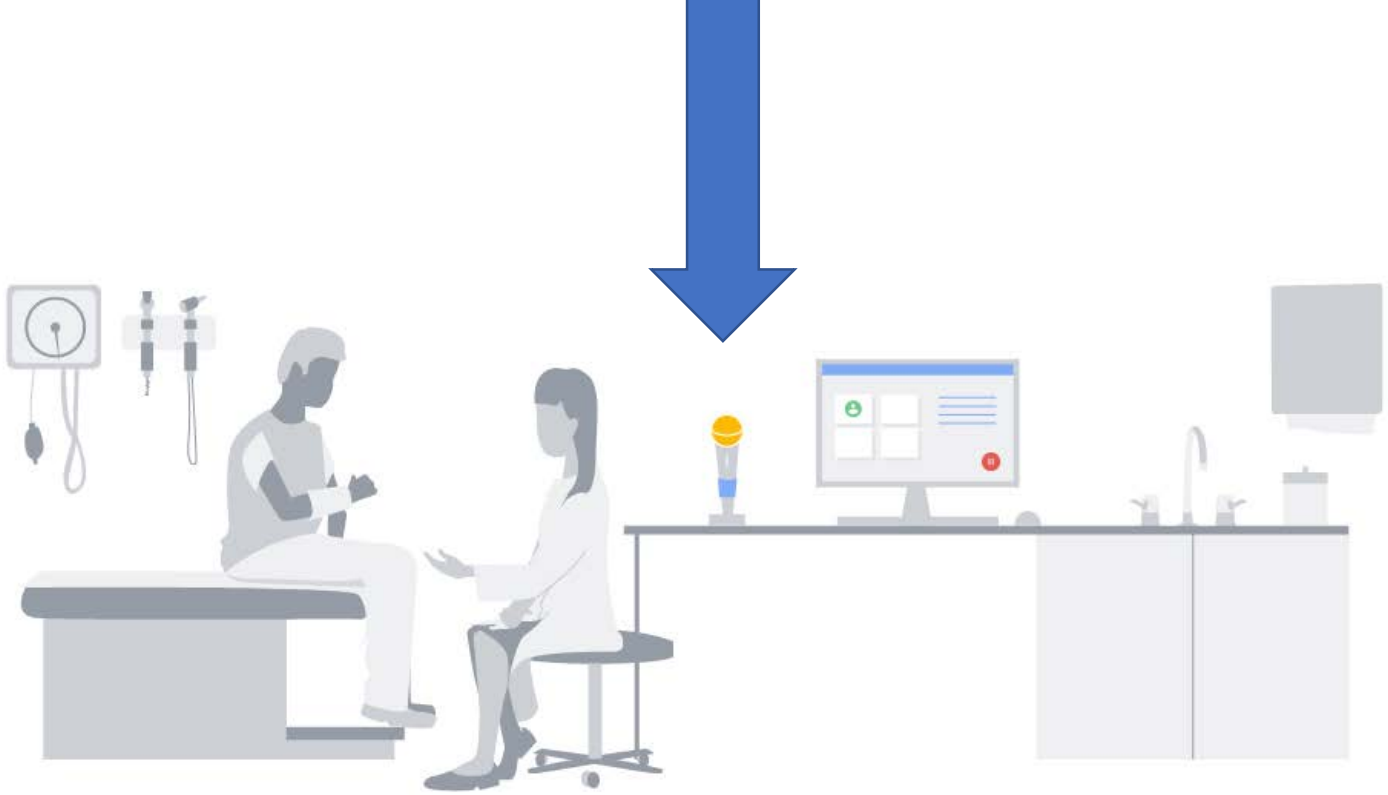
Compared to Q2 2018, the UCSF Ortho Department confirmed 840 more appointments in Q2 2019, a **16% increase** from baseline



Growing too fast? Need more space? Long wait times? Use AI and RFIDs to track use.

- **ApprenticeHealth.com**
- RFID tags on everyone and receivers in every room
- Track patterns of use
- Let AI identify the best options
- Decrease wait times 70%, increase throughput 10-30%





Physician Burnout? Here come the Digital Scribes

ROBIN.com

- Voice recognition and Machine learning
  - 65% automated transcription
- Decrease clinical documentation load
- Cheaper and more accessible than a scribe

- < documentation time by 90’

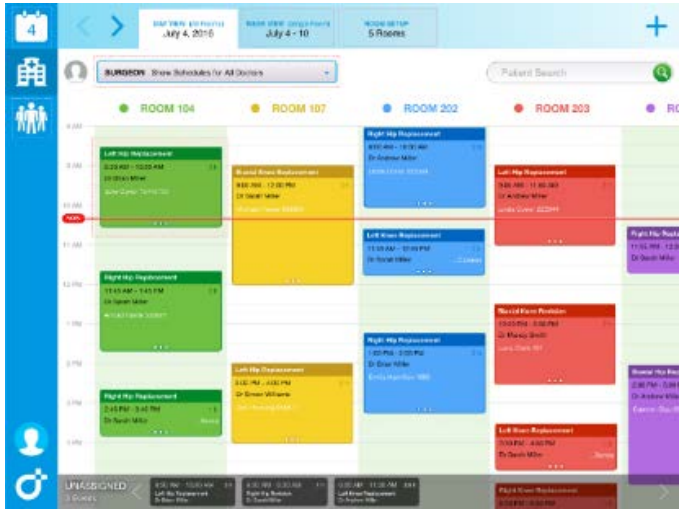

robin
TM

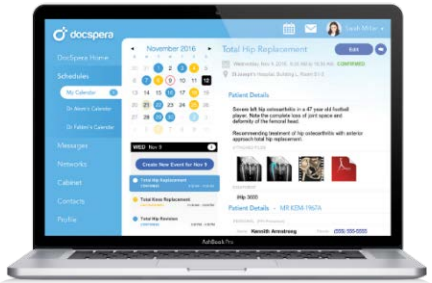
Surgical Scheduling

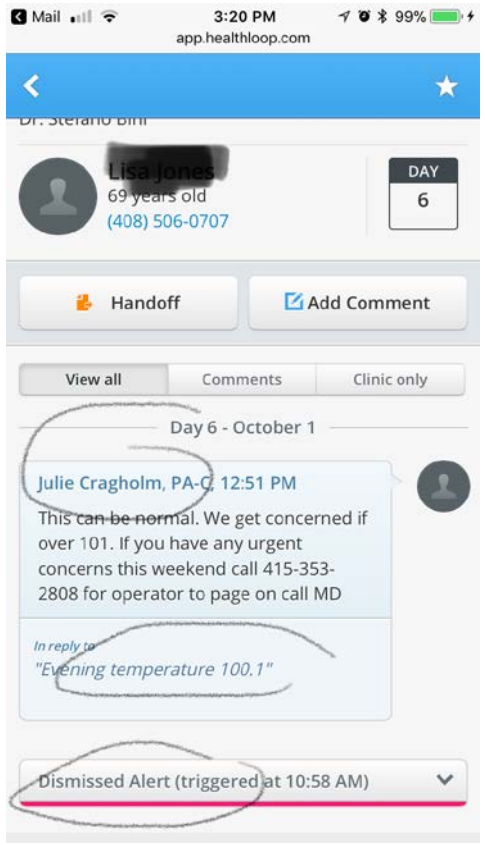
Cant search this
Cant access it from your smart phone
It does not talk to your EMR
It cant be seen by anyone else
It does not communicate with vendors
Does not do block utilization reports

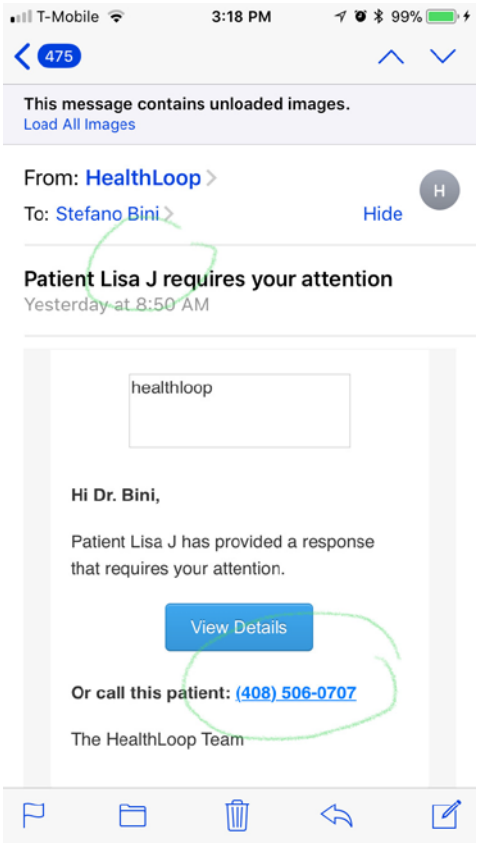
Surgical Scheduling platforms: DOCSPERA

- Surgical Scheduling
  - Search for *open time* slots
  - Automates and customizes *case scheduling*
  - Track *patient preparedness* with smart checklists
  - Quantify *backlogs*, volumes, block utilization
  - Cross scheduler *access*
  - Communication with *vendors*
- Cancellation management
  - NLP to *search* for patients who are ready, available, right case length, right surgeon
- Surgeon App
  - Links to Google *Calendar*, Outlook, etc
  - Access to Imaging
  - Billing









Patient Communication:
Patient Engagement Platforms:

Impact of a patient engagement platform on clinical practice workflow in an academic arthroplasty practice

Background

- Higher levels of patient engagement lead to more efficient and effective healthcare[1]
- Patients with higher levels of engagement are more likely to report a positive care experience[2]
- Online patient engagement platforms **(PEP) provide asynchronous digital communication** between surgeons and patients using mobile applications
  - PEP are web-based mobile communication platforms
  - Can be accessed via computer or mobile device (phone or tablet)
- PEPs support care management and can collect patient-reported outcomes (PROs)
  - They have also been shown to facilitate smoking cessation, improve diabetes management, increase appointment attendance, reduce postoperative ED visits[3]
- **Little is known about the impact PEPs have on clinic workflows**

- **Purpose: to describe the impact of patient care of a PEP at an academic arthroplasty practice**

Methods

- Data prospectively collected for all consecutive **arthroplasty patients** at a single academic institution from January 1, 2016 through December 31, 2016
- January 2016: UCSF division of arthroplasty introduced a PEP called HealthLoop (Mountain View, CA)
  - HIPAA-compliant, secure platform which can be accessed via mobile and desktop devices
  - **Guides patients through standardized perioperative pathways with daily messages, check-ins and two-way communication**
- PEP were also used to collect patient-reported outcomes (PROs)
- Variables examined for the purpose of this study include:
  - Check-ins sent by PEP
  - Number of patient logins
  - Patient messages generated
  - Timing of patient messages
  - Mean staff response time
  - Number of staff and surgeon logins

Results

- 561 patients: enrolled in the PEP (HealthLoop)
  - Average age: 62.4
  - Female: 329 (58%)
  - THA: 305 (54.4%)
- 502 patients (89.5%) activated their PEP account
  - Similar activation rates for THA (90.2%) and TKA (88.7%) (p = 0.56)
  - Similar activations rates based on gender (p = 0.91)
- 13,903 check-ins generated (throughout study period)
- 18,916 logins (time avg: 11 minutes)
- 5,319 messages generated
  - 1,343 (25.4%) generated in the first postoperative week
  - Messaging peak: Monday, tapering to Friday/Weekend.
- Average staff response time: 1.9 business hours (SD = 3.1)
- 4,975 team logins
  - 6% of all logins were by surgeons
  - The rest were by nurse navigators and Pas
  - Response rates varied by surgical team (A: 23%,B: 54%,C: 64%) but “Very Satisfied” rates did not vary (A: 69%, B: 63%, c: 64%)
- 366/502 (72.9%) of all patients completed PEP evaluations
  - 92.3% were very or somewhat satisfied

	Total	Average ± SD (per patient)
Check-ins	13093	26.1 ± 4.3
Patient logins	18916	38.8 ± 23.4
Messages generated	5319	14.2 ± 12.4
Team logins	4975	415 (per month)

	Total
Preoperative	
1 week postop	25%
1 week – 3 month postop	
3 month – 6 month postop	

	Surgeon	PA	Nurse navigator	Total
% Logins	6%	40%	54%	100%

Discussion

- **High patient participation rate using this PEP**
- Each patient averaged 39 PEP logins & 14 messages sent
  - >30% messaging rate than similar study on spine patients with a different app (Force)[5], suggesting that variations in how PEPs are designed or implemented may impact patient utilization rates.
- **Surgeons accounted for 6% of staff logins and there was variation in response rates between surgical teams.**
- Satisfaction rate were vary high but had no relationship with surgeon app utilization, possibly because patients could reach surgeon through other channels.

Conclusions

- Nearly 90% of patients chose to participate in the PEP and remained active throughout postop period with a very high satisfaction rate.
- The workload generated is not insignificant
- The PEP allowed for rapid response time and high patient satisfaction
- Bulk of the work falls on support staff and needs to be accounted for (limiting patient access to other communication platforms (Phone, email) may mitigate impact

References

1. Greene, J. et al. When patient activation levels change, health outcomes and costs change, too. *Health Aff (Millwood)*. 34, 431–437 (2015).
2. Mosen, D. M. et al. Is patient activation associated with outcomes of care for adults with chronic conditions? J. Ambul. *Care Manage* 30, 21–29 (2007).
3. Perez, F. et al. Evaluation of a mobile health system for supporting postoperative patients following day surgery. *J Telemed Telecare* 12 Suppl 1, 41–43 (2006).
4. Davidovitch, R. et al. Home health services are not required following total hip arthroplasty. *J Arthroplasty*. In press.
5. Bell, K., et al. "Patient Adoption and Utilization of a Web-Based and Mobile-Based Portal for Collecting Outcomes After Elective Orthopedic Surgery." *American journal of medical quality: the official journal of the American College of Medical Quality* (2018)

Overloaded call center: Chat Bots

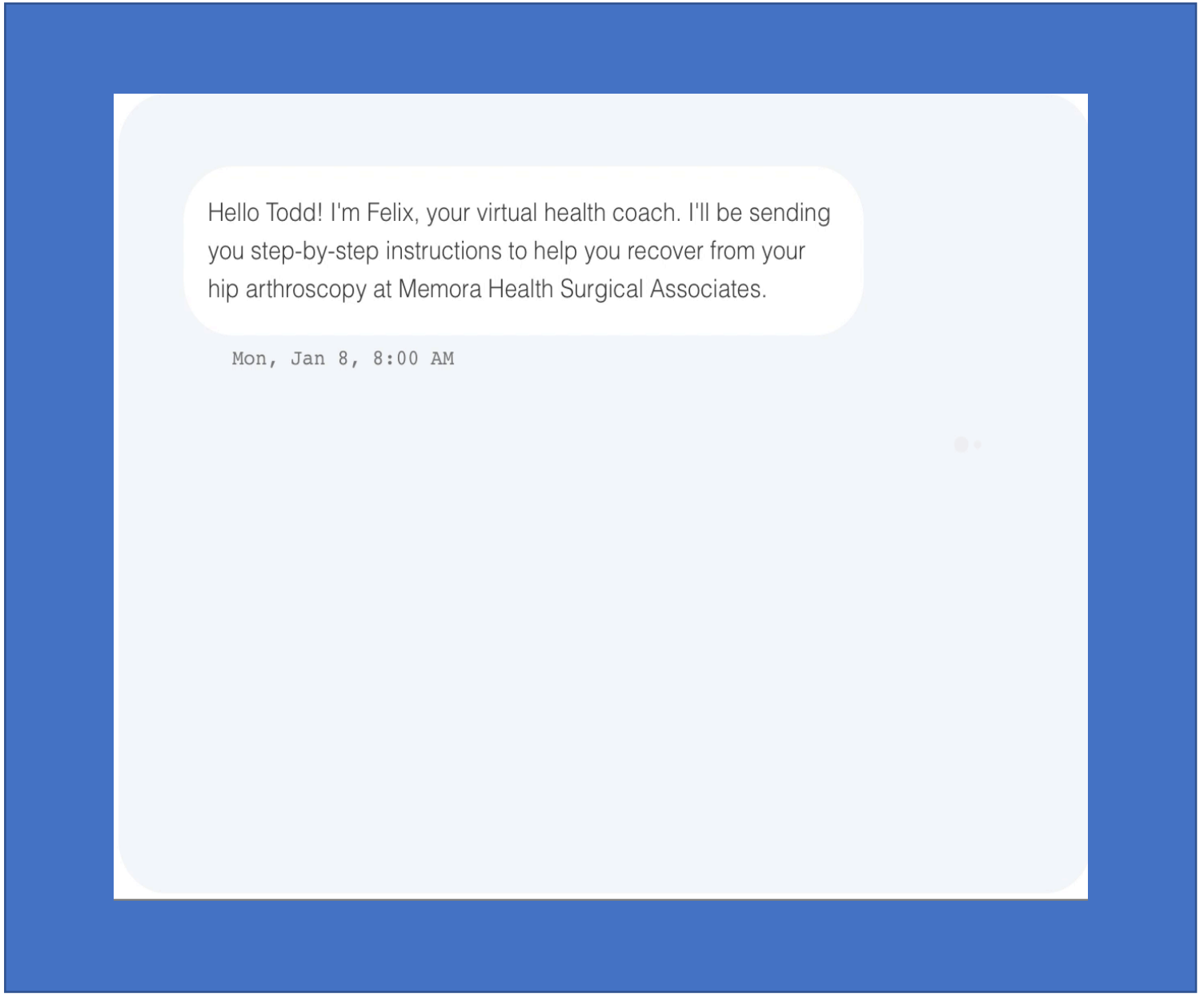
MEMORA HEALTH
SMS + AI

97% find SMS easy to understand

98% of SMS messages are read

Results:

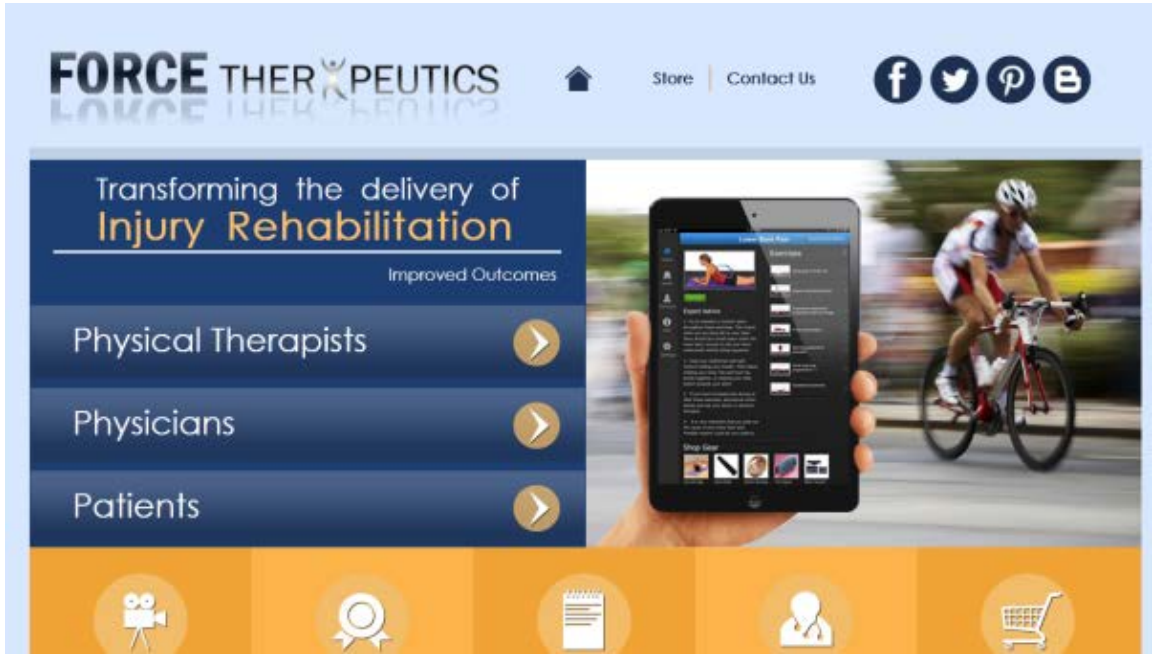
- 21,000 patients
- 35 hospitals
- **79% of all patient questions and concerns answered automatically by the system**

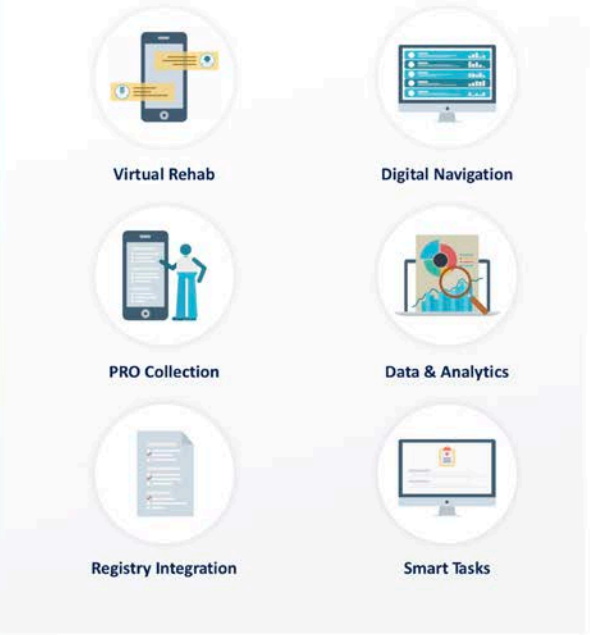


HIPAA Compliant Virtual Digital Assistants

- Amazon Alexa
  - 6 healthcare organizations
- “Hey Alexa”can :
  - Contact your physician
  - Schedule an appointment
  - Read and interpret your lab results
  - Reorder medication
  - Access your hospital discharge instructions

Cost of PT in a bundle environment? (P)Rehabilitation Platform

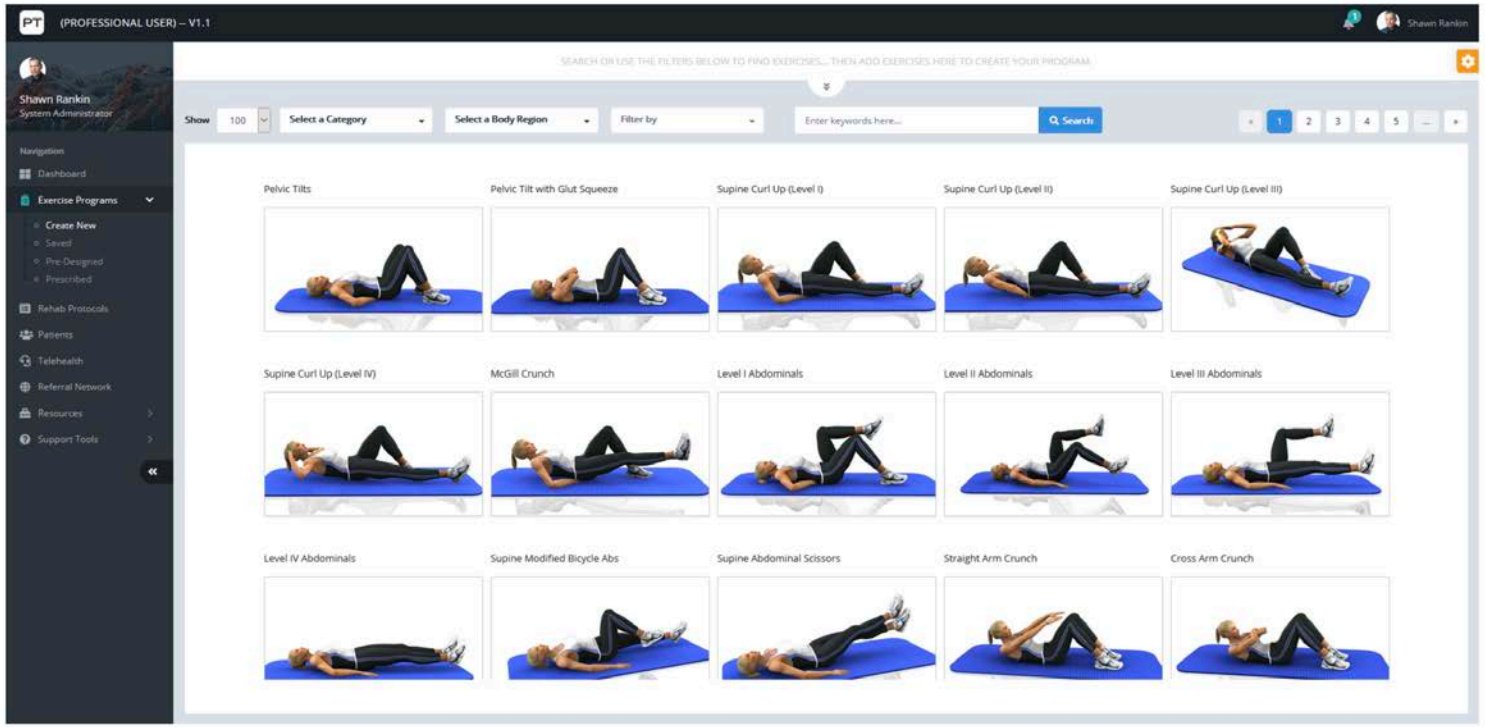


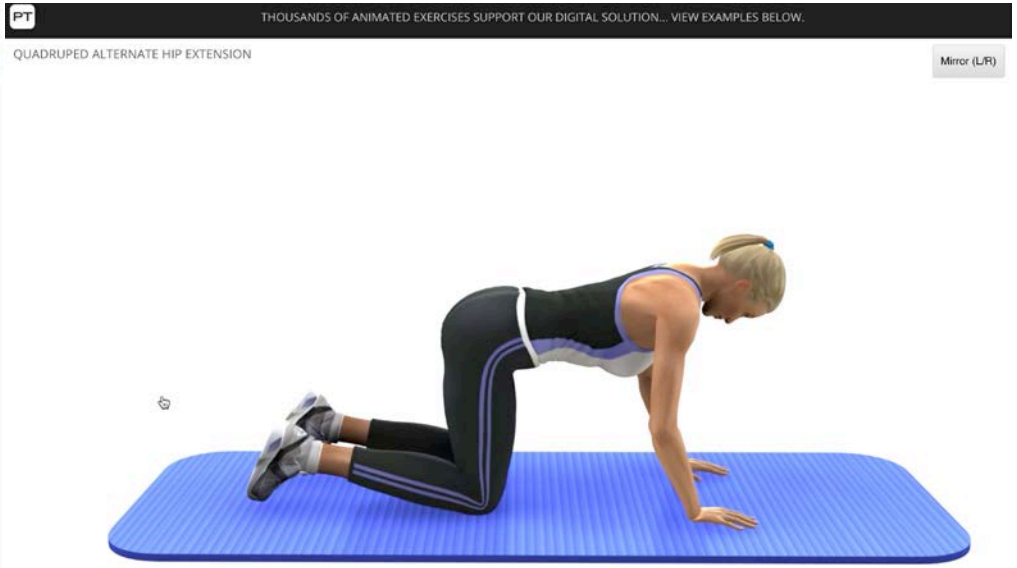


REHAB and PREHAB

PT LINKED™

HOME ABOUT PROVIDERS EMPLOYERS CONTACT SIGN IN





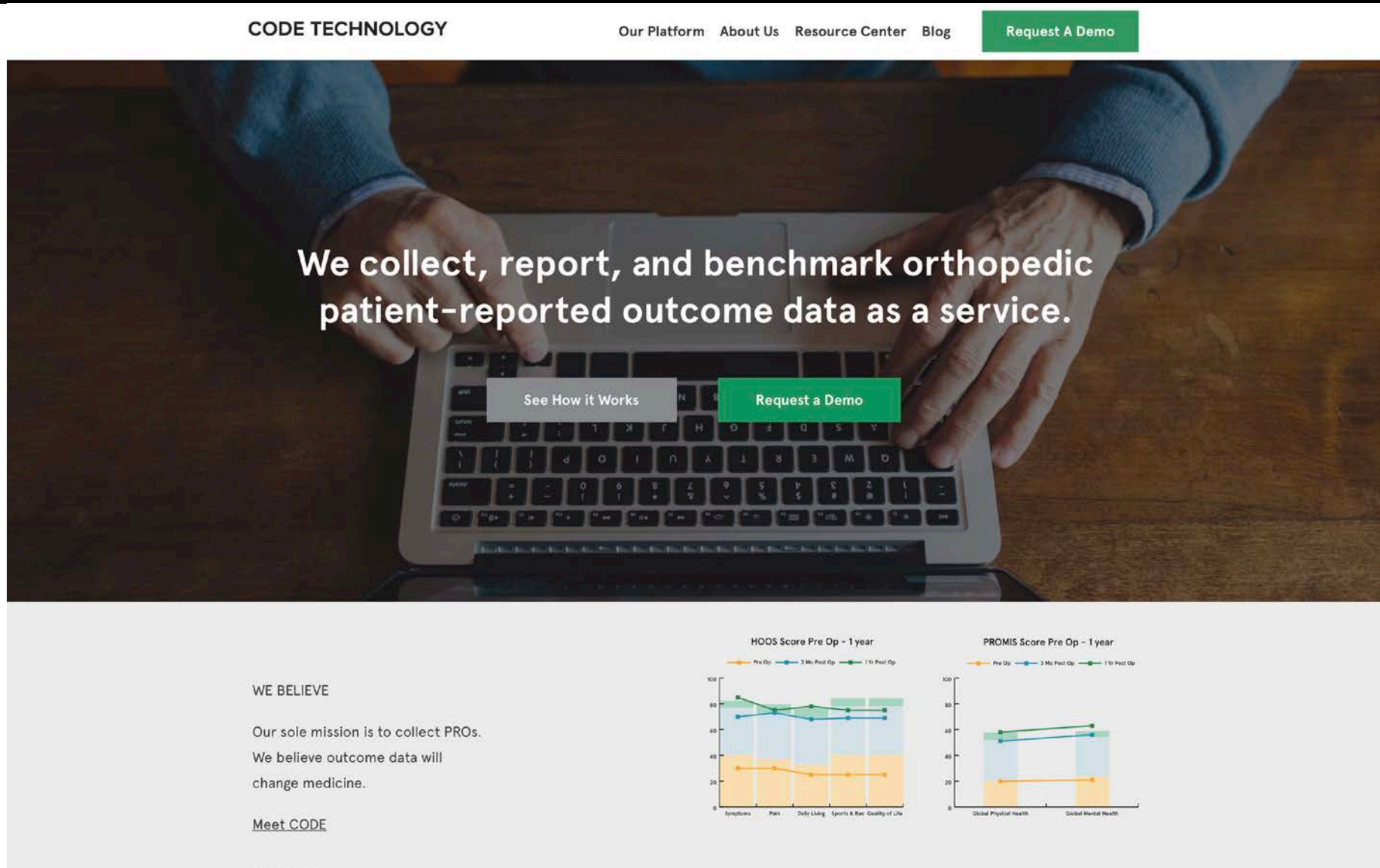
PRO CAPTURE and REPORTING WOES? Automate it.

UCSF:

75% collection rate
at 3 months

Expanding across all 5 UC Campuses

Virtual registry



NEED TO INCREASE YOUR REVENUE? Try an ML application

Transforming Healthcare Operations with **Data Science** and **Machine Learning**

iQueue
For Operating Rooms

80+ Leading Hospitals Rely on iQueue for Operating Rooms to Improve OR Utilization

- UCHealth increased OR utilization by 4%, adding over $10M in revenue
- MultiCare increased available OR **minutes by 300%.**
- OhioHealth repurposes 12 blocks per month using *Collect*.
- NewYork-Presbyterian Brooklyn Methodist Hospital increased their cases per day by 13%

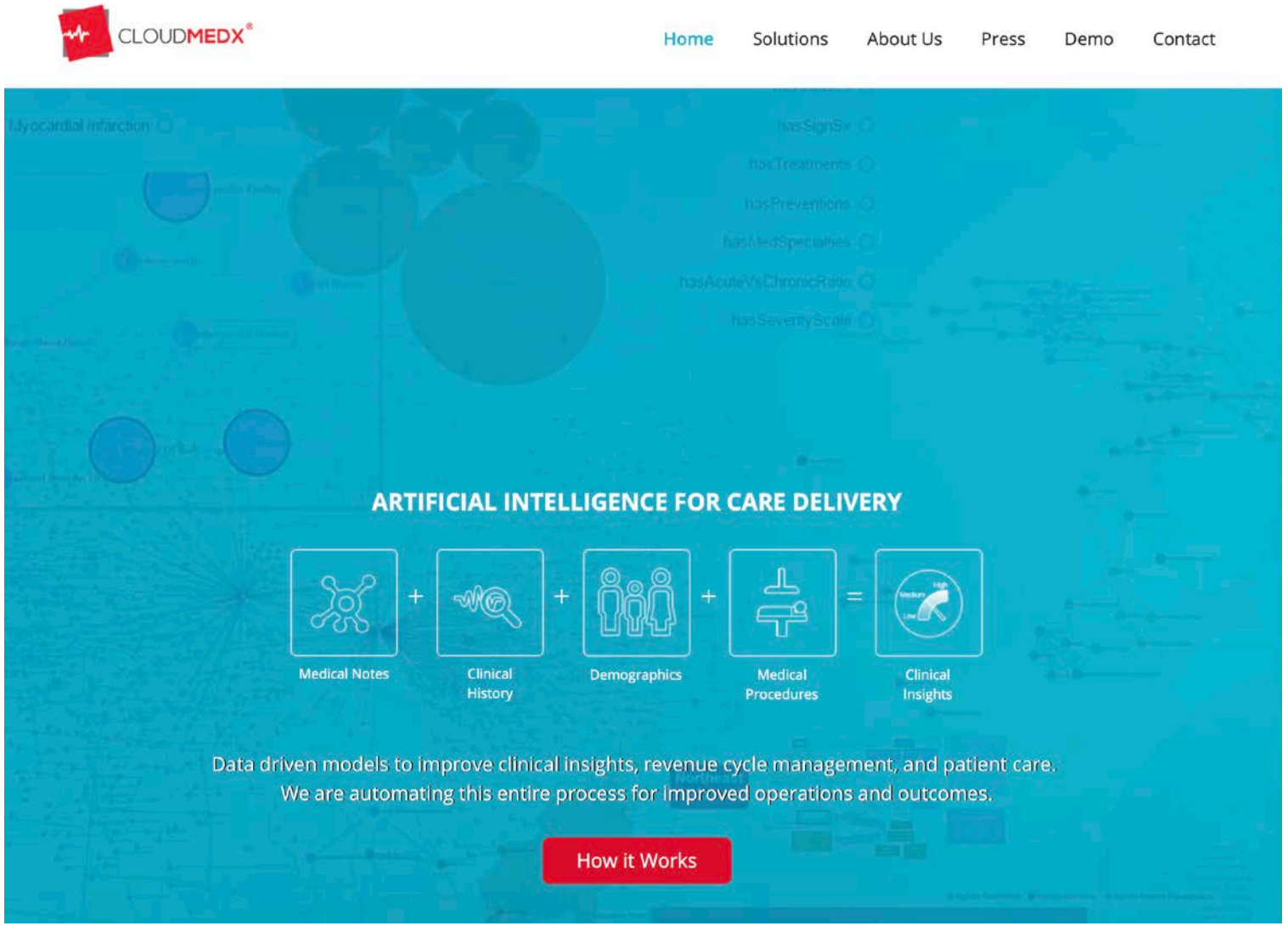
Learn More

iQueue
For Infusion Centers

140+ Cancer Centers Rely on iQue
Infusion Centers to Improve Opera

CODING AND BILLING? use AI and NLP

Using NLP to ”read” charts
Check documentation for optimal coding
Decrease workload on coders

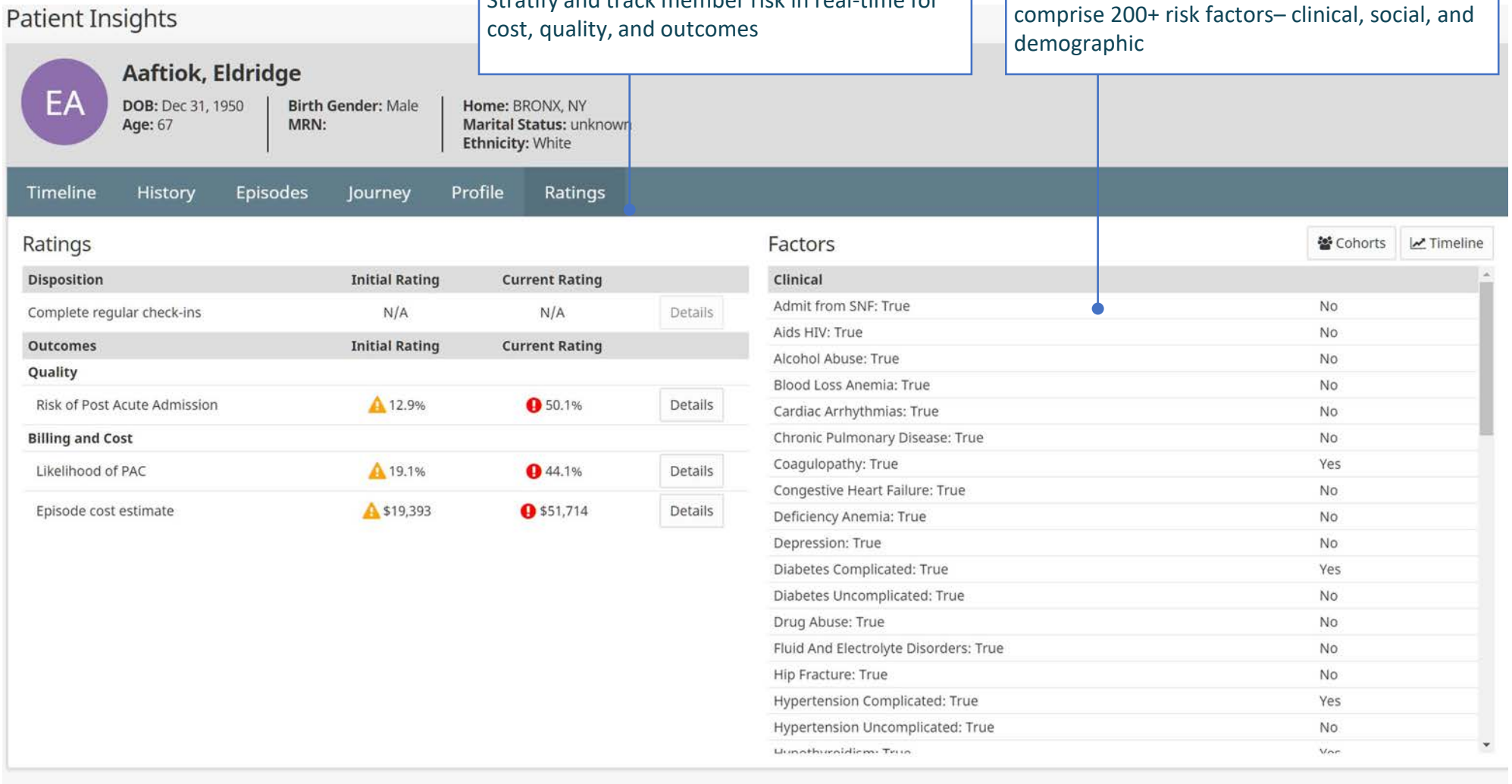


Need to manage risk? Use Big Data and Analytics

Clarify Health: Patient profiles with 200+ risk factors, including social determinants

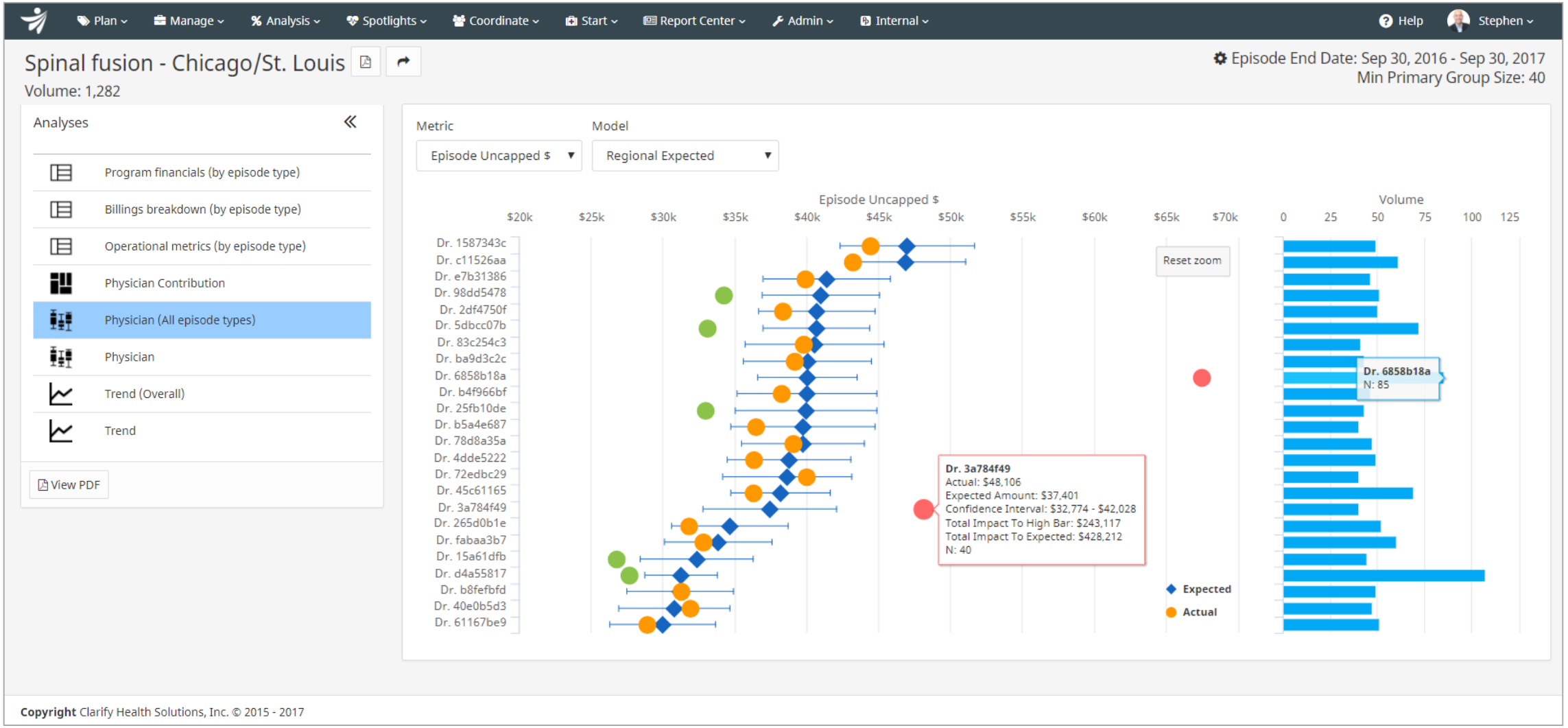
Stratify and track member risk in real-time for cost, quality, and outcomes

Comprehensive personal member profiles comprise 200+ risk factors– clinical, social, and demographic



VARIATION IN COST OF CARE FOR SAME PROCEDURE?

Identify variations in care, episode cost, case-mix, etc.

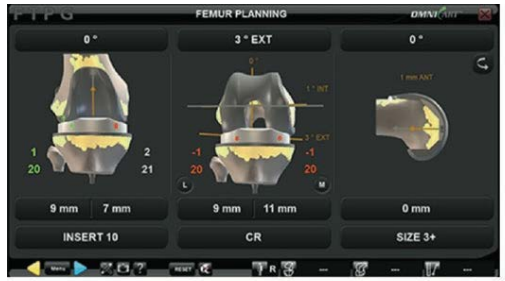


“Danger, Danger Will Robinson!”

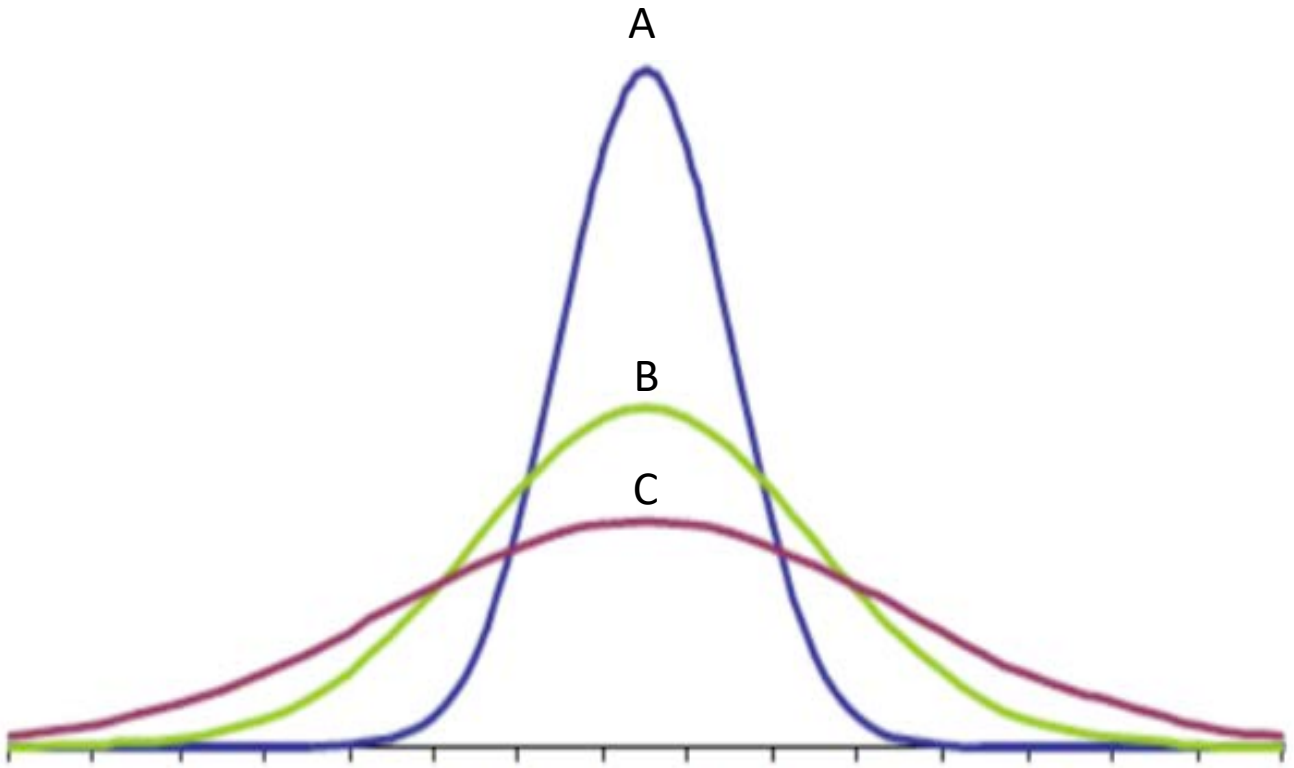
- Lost in Space

Arthroplasty Robots

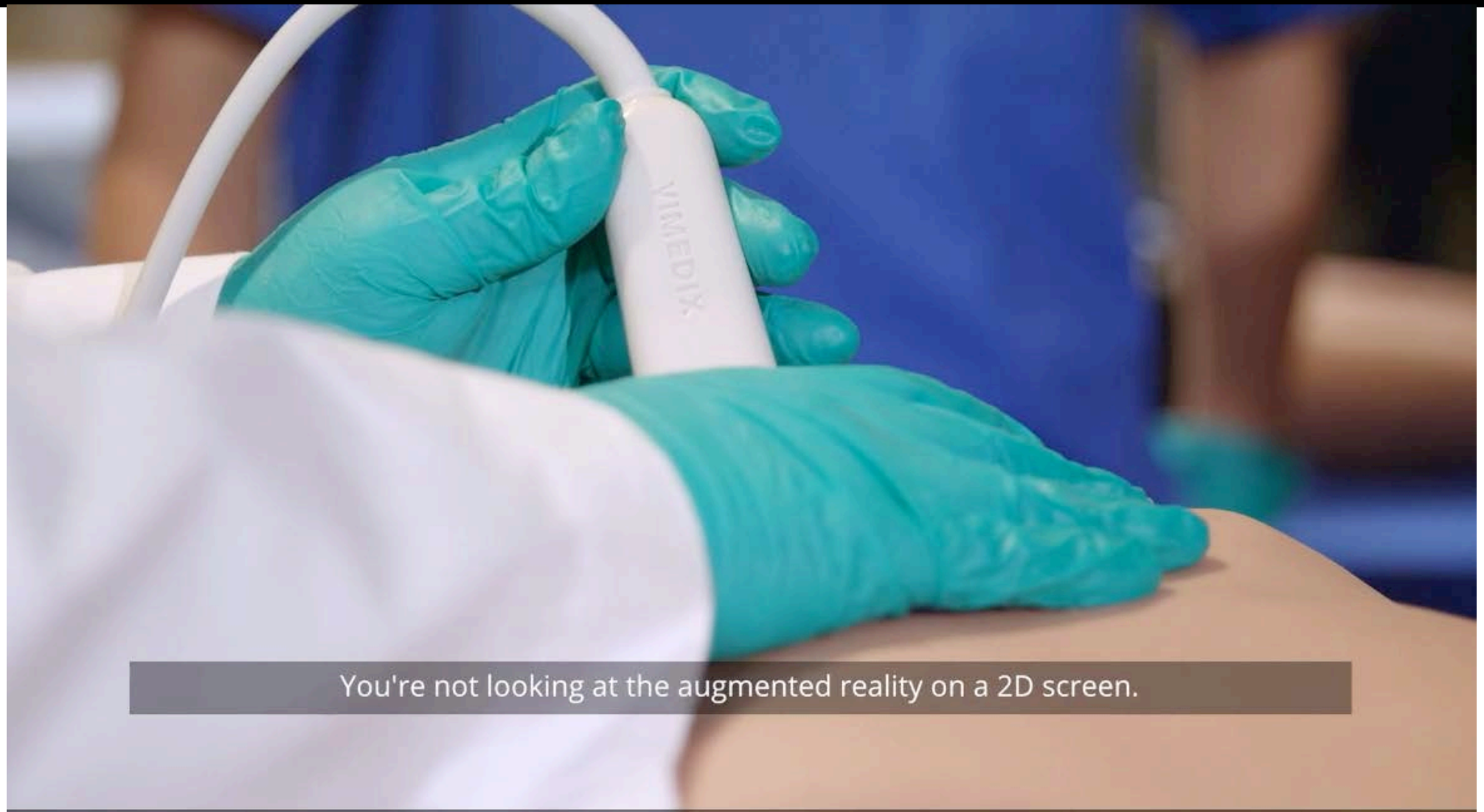
- Omni (Corin)
- Navio (S&N)
- Mako (Stryker)
- Rosa (Z/B)
- OrthoTaxi (Depuy/Synthes)



Why Robots?



Continuing Education?
Augmented and Virtual Reality:



TEACHING TOOLS: OSSO VR, FUNDAMENTAL SURGERY

Pain Points: Solved!

- ✓ Marketing and outreach (social climb)
- ✓ Referral Management (Luma Health)
- ✓ Space Utilization (Getwell loop)
- ✓ EMR data entry (Robin)
- ✓ Surgical Scheduling (Docspera)
- ✓ Patient Communication (Memora)
- ✓ Bundles and Virtual PT (Force)
- ✓ PROM capture (CODE Technologies)
- ✓ OR Block Optimization (LeenTaas)
- ✓ Billing (Cloudmedx)
- ✓ Managing Risk in a bundle (CalrifyHealth)
- ✓ Robotic Surgery
- ✓ Continuing Education (Osso VR)

CTO
Dept of Orthopedics

- Role of the CTO
  - Help identify digital technology tools that will help THE GROUP enable it’s growth strategy

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STRATEGY

Digital Doesn't Have to Be *Disruptive*

The best results can come from adaptation rather than reinvention.

PHOTOGRAPHER

CHRISTOPH MORLINGHAUS

MYTH
Digital is about technology.

REALITY
It's about the customer.

MYTH
Digital requires radical disruption of the value proposition.

REALITY
It usually means using digital tools to better serve the known customer need.

MYTH
Digital will replace physical.

REALITY
It's a "both/and."

MYTH
Digital requires overhauling legacy systems.

REALITY
It's more often about incremental bridging.


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TEAM pricing
UCSF Department of Orthopaedic Surgery

Take the leap!