# Uncovering the True Patient Burden of Illness Using Artificial Intelligence (AI)


**Presented By:**

Chris Berg, RHIA, CCs, CCDS-O, *3M Consulting Services* – **3M M*Modal**

Kathy Harkness, RN, BSN, CCDS, *Client Engagement Manager* – **3M M*Modal**


RISE

THE RISE ASSOCIATION

We are a network of health care professionals addressing the challenges posed by the emerging landscape of value-based care and government health care reform.

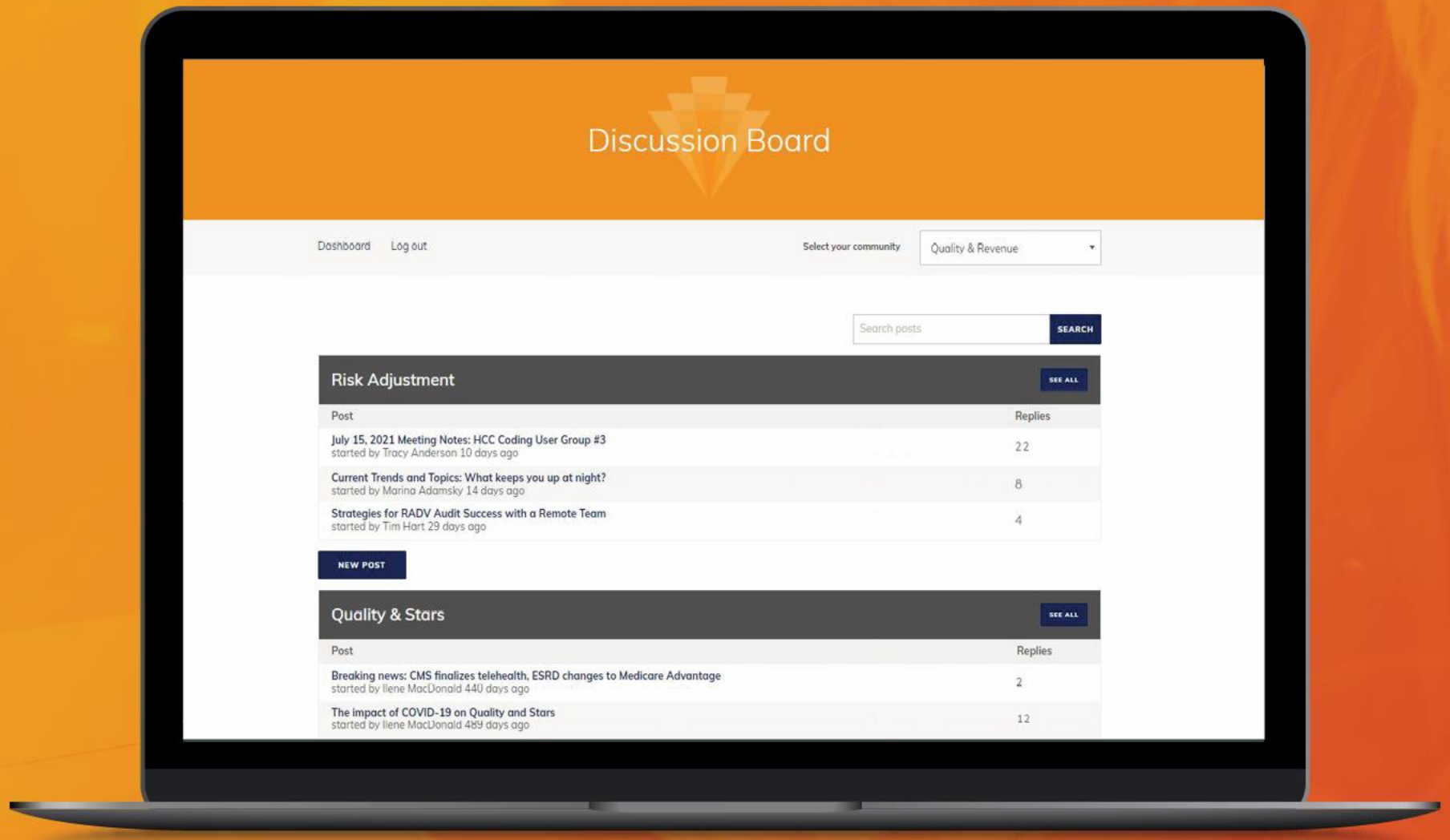
## OUR MISSION

Our mission is to provide a community for like-minded professionals to come together for networking, education, and industry collaboration to stay ahead and advance their careers.

# ONE ASSOCIATION

# THREE COMMUNITIES

## LEARN MORE AT THE RISEHEALTH.ORG/MEMBERSHIP




# ASK YOUR QUESTIONS IN OUR DISCUSSION BOARD

# Today’s speakers

Chris Berg

Chris Berg, RHIA, CCS, CCDS-O is an Outpatient Consultant with 3M HIS Consulting Services and has over 30 years of experience in Health Information Management, including outpatient coding, documentation integrity, and healthcare compliance. Her background includes positions as Emergency Department coder, Ambulatory Surgery coder and quality auditor, Clinical Information manager, and Outpatient Clinical Documentation Integrity manager. Chris also held a position as Adjunct Faculty member in the HIM program at Cuyahoga Community College in Cleveland, Ohio. As an Outpatient Consultant, she provides advisory services for outpatient CDI, clinical coding, and revenue cycle management to 3M clients.

# Today’s speakers

Kathy Harkness

Kathy Harkness is a graduate of Walden University with a Bachelor of Science in Nursing. Ms. Harkness has over 30+ years of professional experience in critical care, emergency medicine, cardiac surgery, nursing management, as well as CDI and Revenue Integrity. Currently she is working as a CDI technology subject matter expert with the 3M sales team providing operational insights around HCCs, CDI workflow and query management. Prior to starting with 3M M*Modal as a CDI Client Engagement Executive, she was a Clinical Director with The Advisory Board Company’s Revenue Cycle Solutions Consulting and Management division. In this capacity, Ms. Harkness provided clinical documentation improvement expertise to the physician documentation data analysis process, as well as, leading over 200 one-on-one physician engagement meetings. She served as a subject matter expert for CDI assessments, education, and implementation of new programs across the country.

# Polling questions

1. For what type of organization do you work?

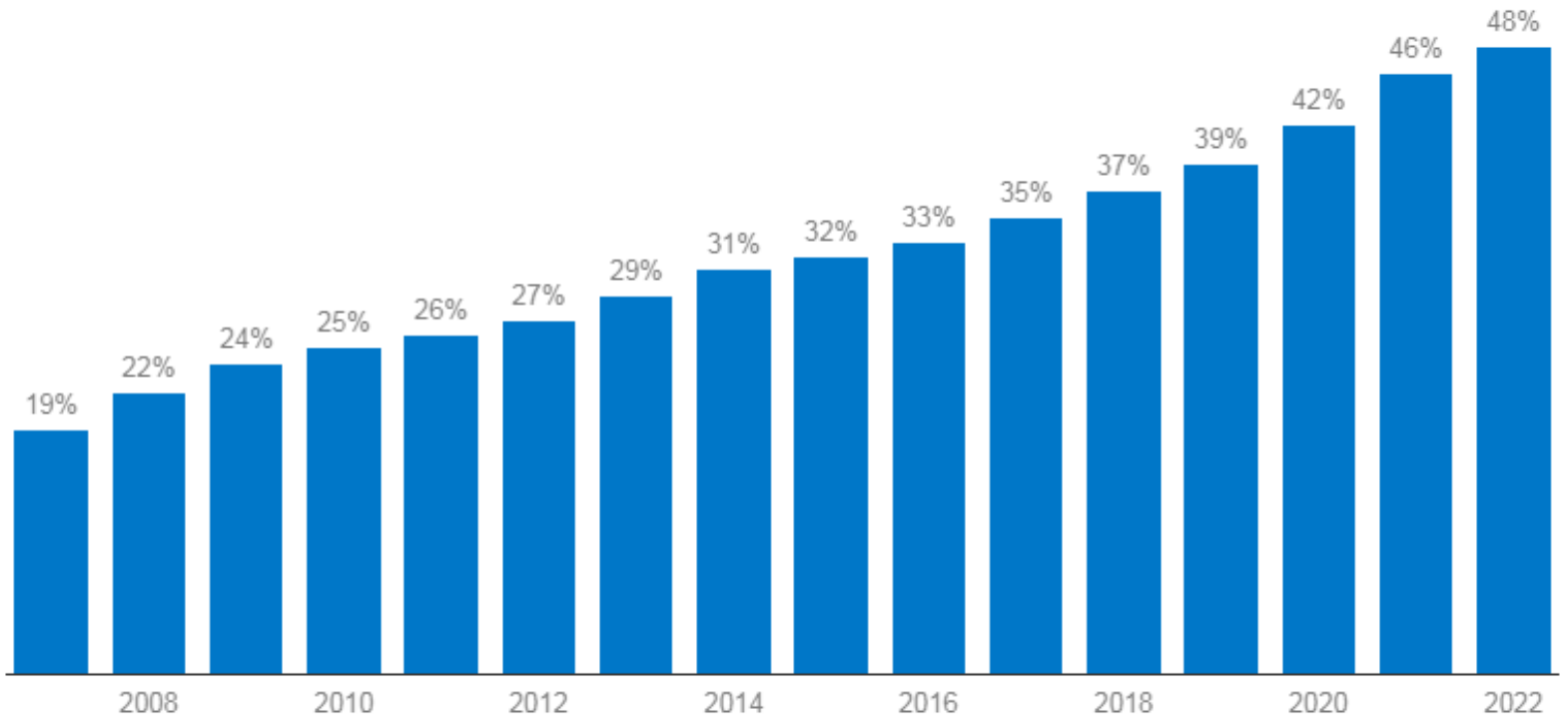
- Provider
- Payer
- Payvider (an organization combining providers with a payer, for example Geisinger Health System)
- Healthcare organization
- Consulting Firm
- Healthcare IT vendor
- Other

- 2. How are you currently tracking your HCCs?
- EHR workflow
- Post-review audit
- Artificial Intelligence software
- Outsourced consulting services
- Other

# Presentation objectives:

1. Capturing of patient burden of illness is essential for value-based care
2. Having accurate documentation is challenging and requires physician buy-in
3. Technology using natural language understanding (NLU) facilitates accurate documentation at scale
4. Use of technology and pro-active processes can deliver improved HCC capture

# Total Medicare Advantage Enrollment, 2007-2022



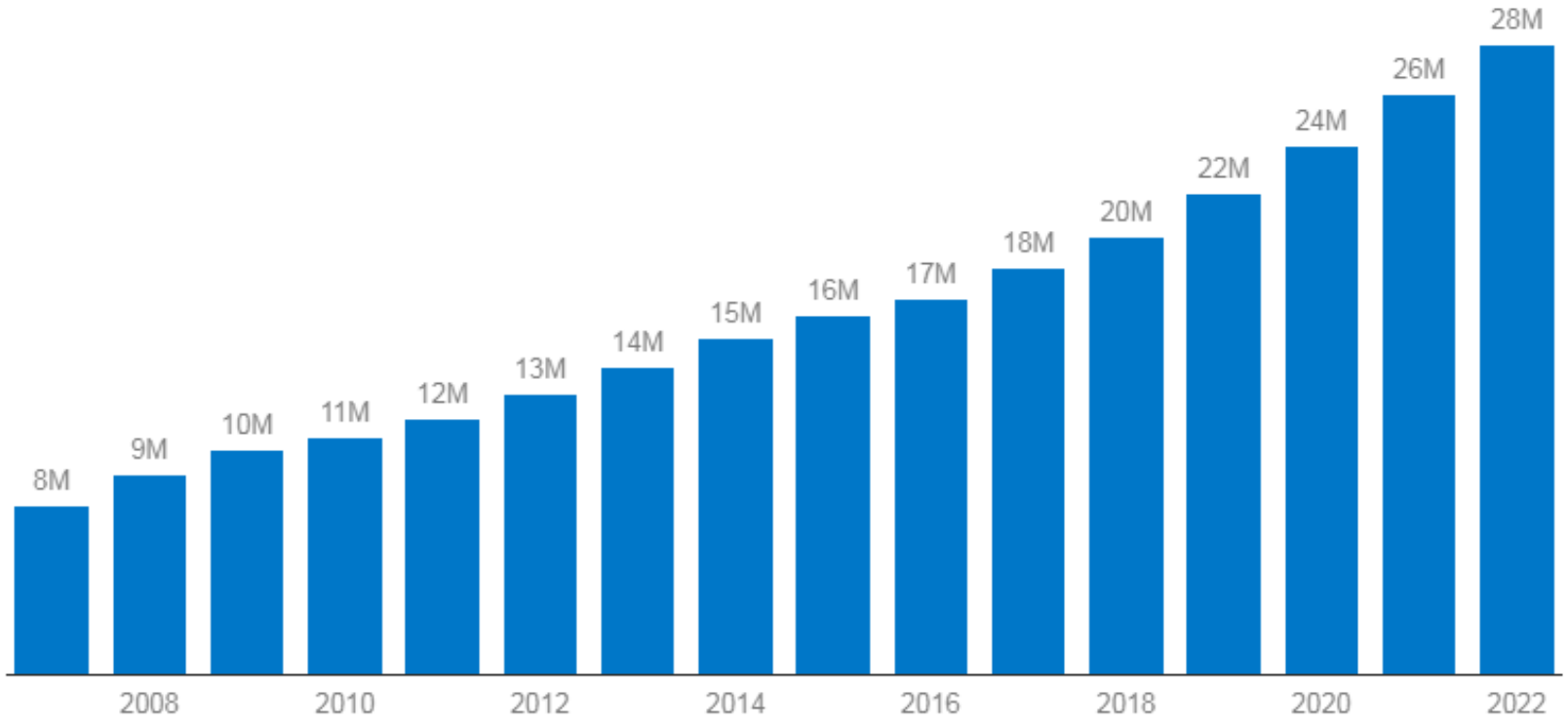

NOTE: Includes Medicare Advantage plans: HMOs, PPOs (local and regional), PFFS, and MSAs. About 58.6 million people are enrolled in Medicare Parts A and B in 2022.
SOURCE: KFF analysis of CMS Medicare Advantage Enrollment Files, 2010-2022; Medicare Chronic Conditions (CCW) Data Warehouse from 5 percent of beneficiaries, 2010-2017; CCW data from 20 percent of beneficiaries, 2018-2020; and Medicare Enrollment Dashboard 2021-2022. • PNG

KFF

Medicare Advantage makes up 48% of the Medicare population

Projected to rise to 61% by 2032

# MA will be bigger than FFS next year!

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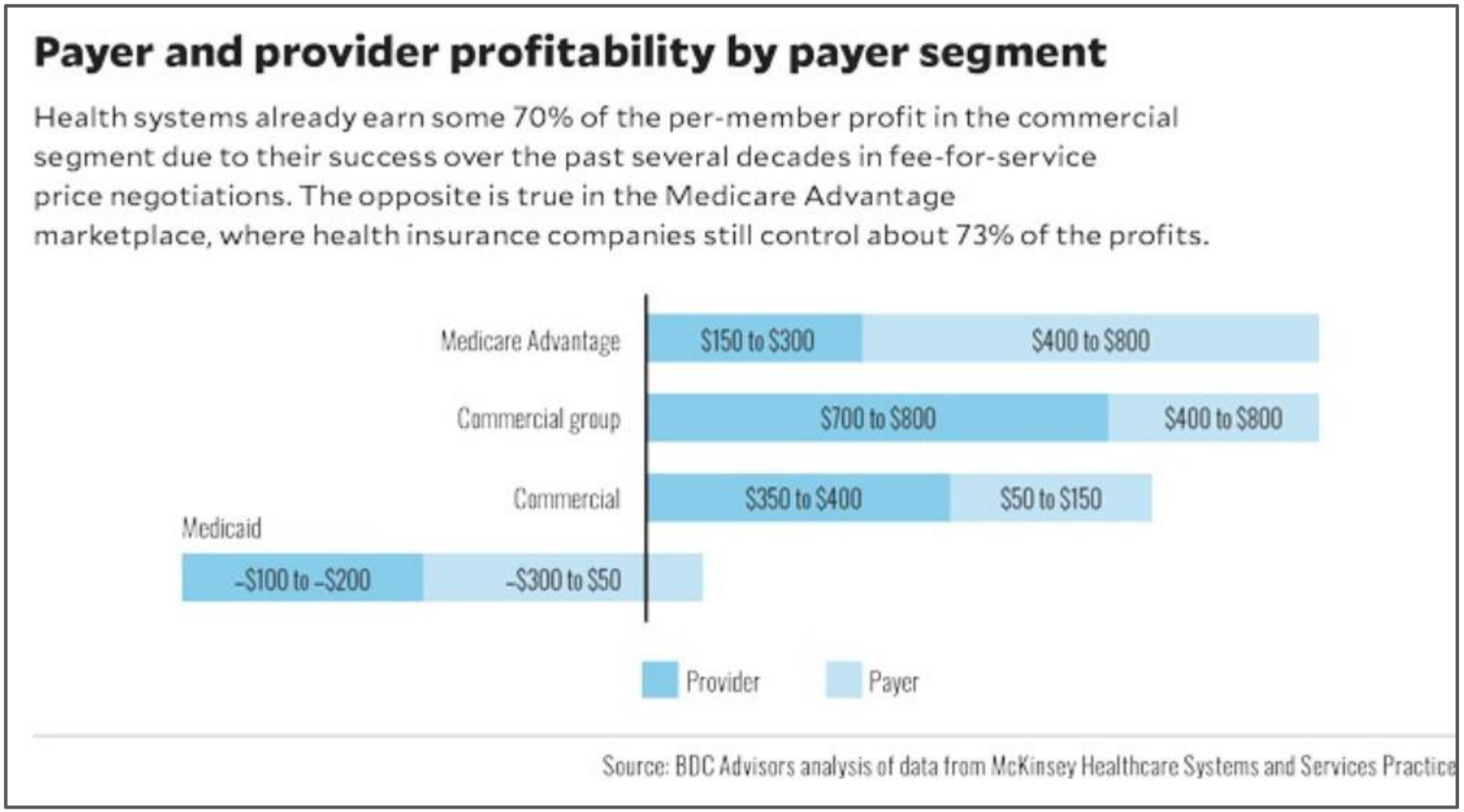
KFF

Medicare Advantage (MA) is rapidly taking over fee for service

This shift will drive the need for greater awareness and partnerships

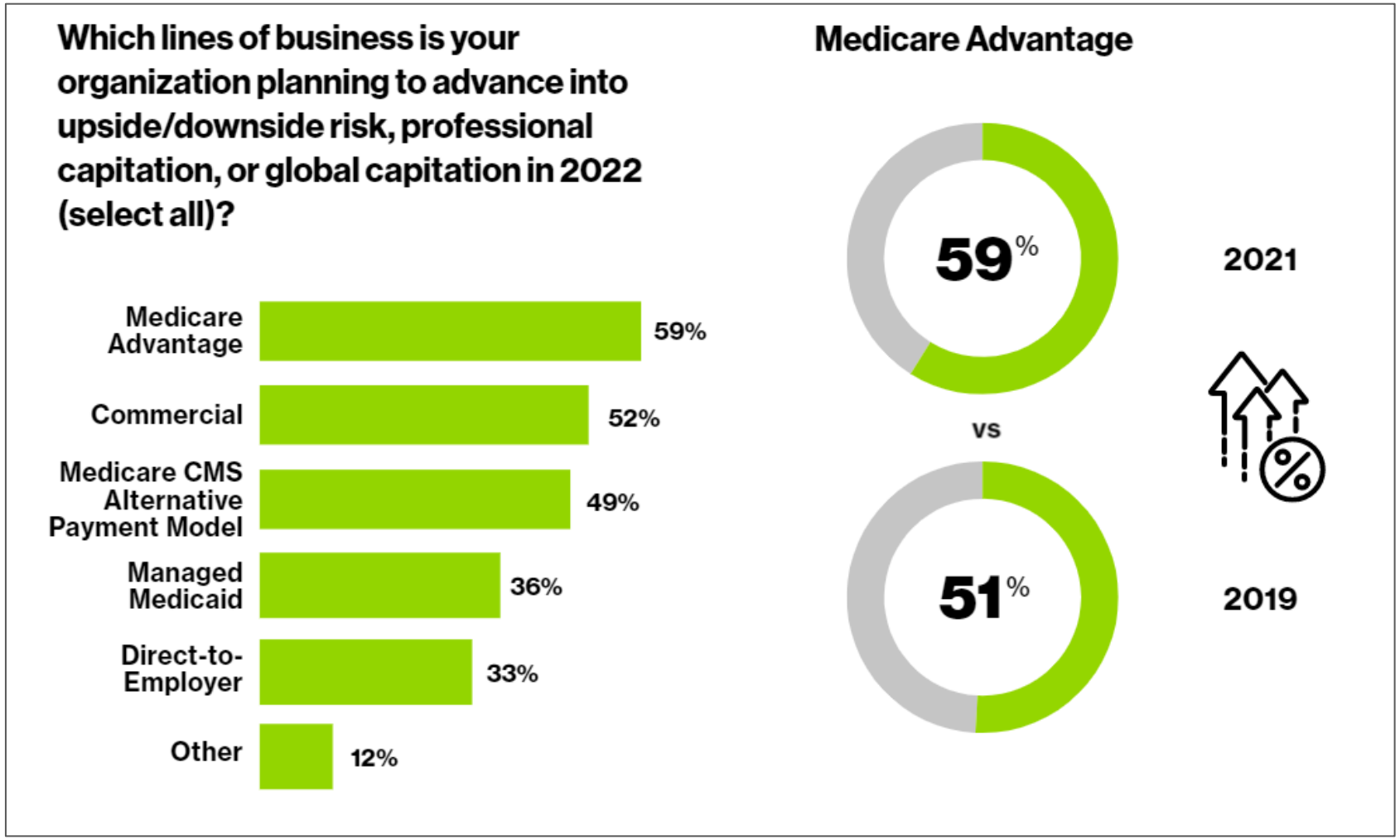
This will create a change for both Medicare and professional medical groups in the future

# Health Systems Looking to Capture More Value




As Medicare Advantage continues to be adopted, health care organizations and providers will need to ensure they are receiving appropriate reimbursement for the care they are providing, especially for the more chronic patient population

# Medicare Advantage is top of mind for Health Systems




An HFMA 2020 -2021 survey indicates the importance and growth of Medicare Advantage to a health care system

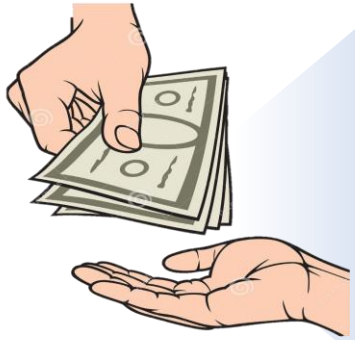
- Nearly 60% are advancing into Medicare Advantage
- This has increased by 14% since the previous June 2019 survey

# The goal in capturing HCCs: Ensure billed diagnoses represent full patient burden of illness

**Risk Adjustment Factor (RAF)** score is the patient burden of illness in order to predict costs to treat the patient for a year.

| Demographic risk score | + | Disease risk score | = | Patient Risk Adjustment Factor (RAF) |
|---|---|---|---|---|
| • Age<br>• Residence (community versus SNF or institution)<br>• Medicaid disability, and interaction with age/gender | | • Reported HCC diagnoses<br>• Diagnosis interaction factor (related to specific comorbid categories) | | • Reflects underlying health status and expected costs for managing total patient burden of illness |

# HCCs in multiple value-based payment programs



Fee-for-Service

**Annual Capitated Payment**
(Medicare Advantage, HIX)

Direct- RAF scores are payment multipliers for capitated payment

**Bundled Payment**
(CMS CJR)

Indirect- HCCs adjust bundled payments to account for more complex patients

**Pay-for-Performance**
(MACRA, commercial contracts)

Indirect- HCCs risk adjust VBP performance metrics (mortality, spending, safety)

**ACO Shared Savings/Risk**
(MSSP, commercial ACOs)

Indirect- HCCs risk adjust financial benchmarks and impacts savings/risk targets

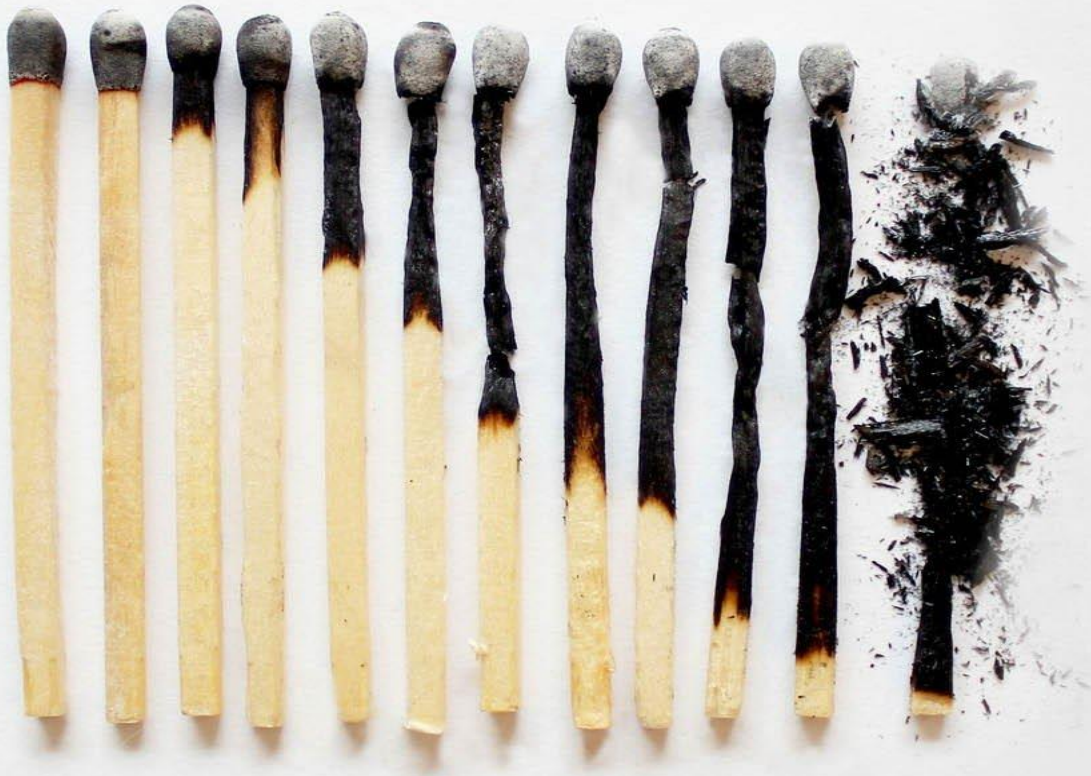
**Physician payment**
( MACRA payment)

Indirect- HCCs risk adjust MIPS and APM measures, set CPC+ care management fees

# Challenges to capturing accurate patient burden of illness

# Time is the most precious resource we have

Delivering
**high-quality care**



EHR and
anything that
distracts from
**Interaction with
the Patient**

# Key steps in capturing HCCs (and common challenges)

## Face-to-face patient visit

**Visit Types**
- Hospital inpatient and outpatient
- Physician / NPP (NP, PA, NW, CRNA)

**Exclusions:**
- Hospice, SNF
- Home health
- Free-standing ASC

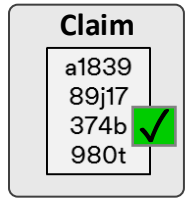
- Patients missing HCCs do not have visits scheduled
- No way to identify patients
- No easy process to schedule at-risk patient for a visit

## Physician addresses and diagnoses condition(s)

**Providers**
- Physicians
- NP, CRNA
- Psychologist/Psychiatrist

**Services Excluded:**
- DME
- Laboratory
- Diagnostic radiology

- Physician doesn't know what patient information is contained in disconnected EMRs
- Not all HCC-diagnoses are captured/documented




## Dx coded and itemized in claim

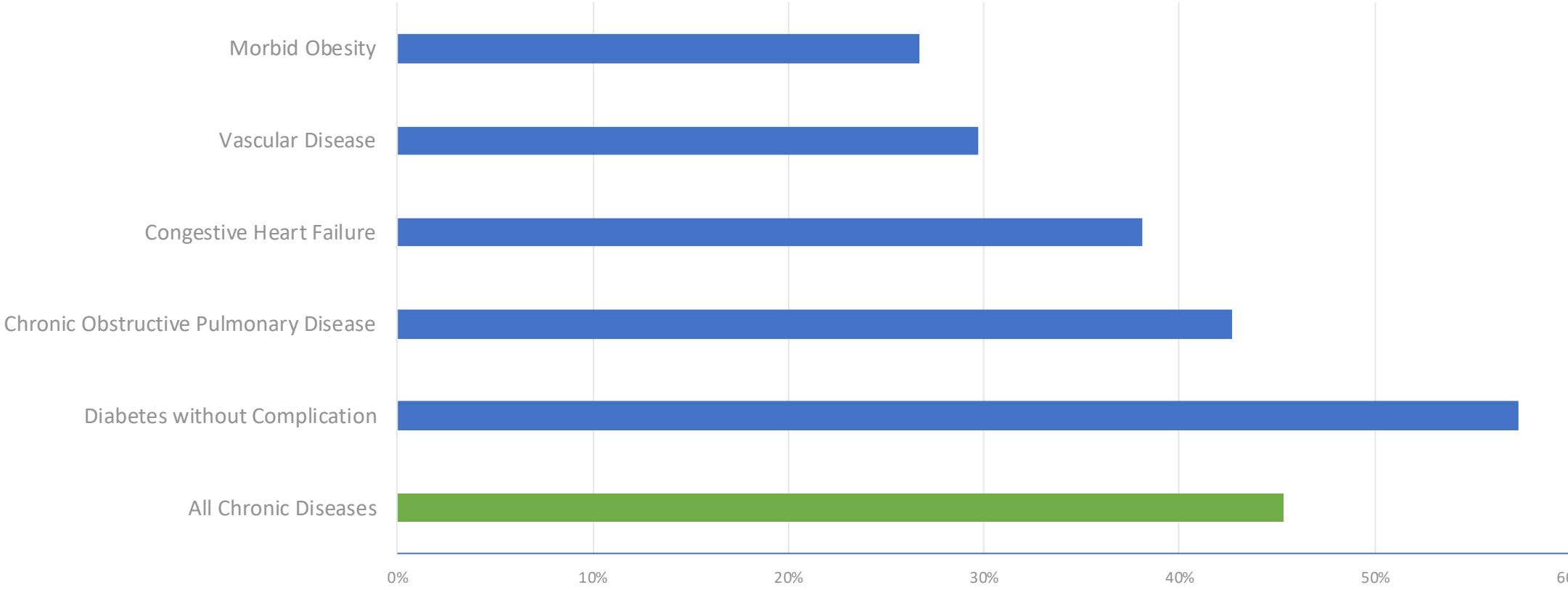
**Requirements**
- Each HCC diagnosis submitted in a claim once per calendar year
- Must be supported by documentation in visit note

- Physician documents an HCC-diagnosis but does not code for it
- Providers trained to code diagnoses for pro-fee billing, not HCC capture
- 80-90% of office visits coded by providers with no coder review

**HCCs must be treated, documented, coded, and billed at some point across care settings**

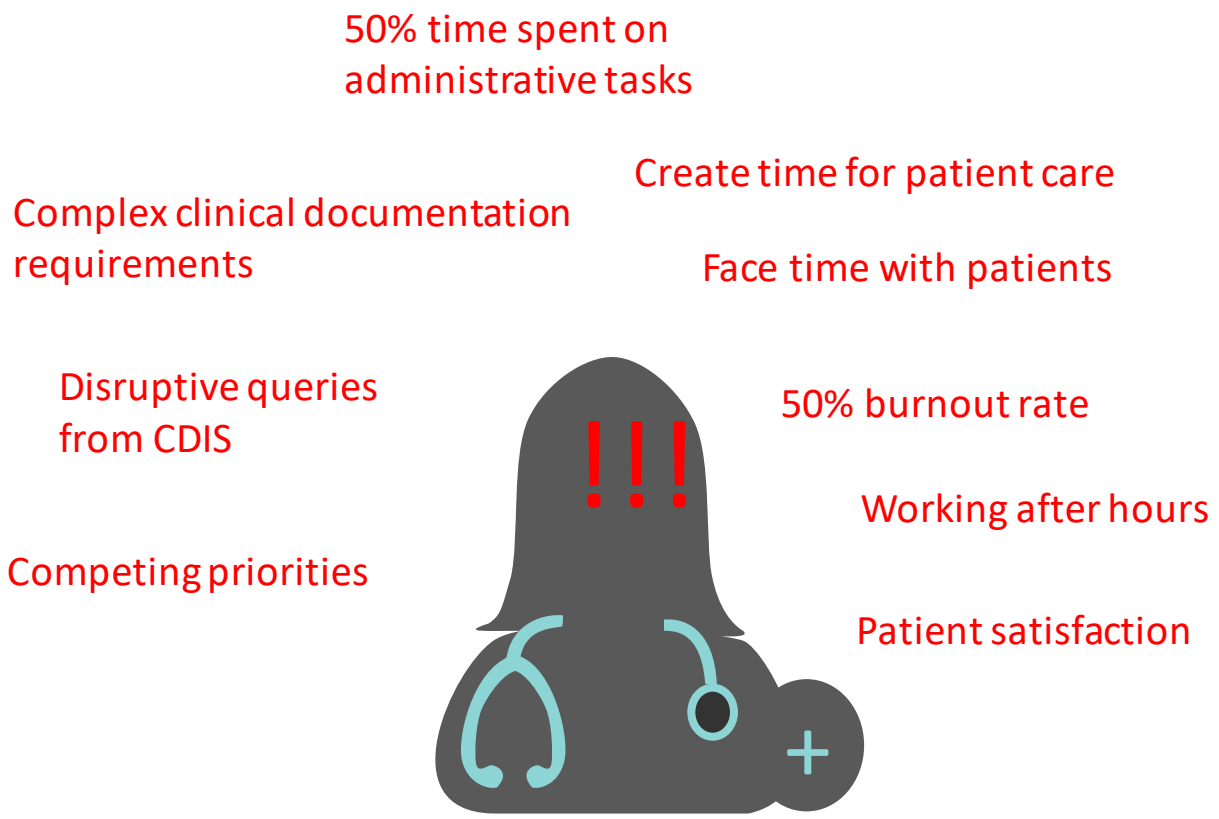
# ICD-10 coding is challenging and time consuming

Chronic disease is reconfirmed only **45%** of the time



# Physician engagement – the key to success

- Engaging physicians in cost and quality improvements has the greatest opportunity to improve performance
- Nearly 90% of hospital and health system executives reported an interest in physician engagement
- Physician engagement has consistently been a strategic priority for progressive provider organizations




-- Advisory Board survey of hospital CEOs

By Ming Tai-Seale, Ellis C. Dillon, Yan Yang, Robert Nordgren, Ruth L. Steinberg, Teresa Nauenberg, Tim C. Lee, Amy Meehan, Jinnan Li, Albert Solomon Chan, and Dominick L. Frosch

# Physicians' Well-Being Linked To In-Basket Messages Generated By Algorithms In Electronic Health Records

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NO. 7 (2019): 1073–1078
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The People-to-People Health
Foundation, Inc.

ABSTRACT **Despite concerns about physicians' workload associated with electronic health records (EHRs), little attention has been paid to the relationship between physicians' well-being and the in-basket messages physicians receive—specifically, their volume and sources. Analyses of EHR work performed by physicians in a multispecialty practice found that in-basket messages generated by the EHR system accounted for almost half (114) of the 243 weekly in-basket messages received per physician, on average—far exceeding the numbers received from their colleagues (53) and patients (30). In a survey, 36 percent of the physicians reported burnout symptoms, and 29 percent intended to reduce their clinical work time in the upcoming year. Receiving more than the average number of system-generated in-basket messages was associated with 40 percent higher probability of burnout and 38 percent higher probability of intending to reduce clinical work time. Physicians' perceptions of a positive work environment were associated with lower odds of burnout and intention to reduce clinical work time and with greater satisfaction with life. Female physicians had a higher risk of burnout and lower satisfaction with life, compared to males. Meaningful redesign of EHR in-basket workflow and a wellness-enhancing work environment are necessary to effectively improve physicians' well-being.**

**Ming Tai-Seale** (mtaiseale@ucsd.edu) is a professor in the Department of Family Medicine and Public Health, University of California San Diego; director of outcomes analysis and scholarship at UC San Diego Health; and director of research at UCSD Health Sciences International, in La Jolla.

**Ellis C. Dillon** is an assistant scientist in the Research Institute, Palo Alto Medical Foundation, in California.

**Yan Yang** is a research economist in the Research Institute, Palo Alto Medical Foundation.

**Robert Nordgren** is CEO of the Palo Alto Foundation Medical Group.

**Ruth L. Steinberg** is chair of the Physician Wellbeing Committee, Palo Alto Medical Foundation.

"

*Receiving more than the average number of system-generated in-basket messages was associated with* ***40 percent higher*** *probability of burnout*

"

Date of Service
*CKD under assessment and plan section*

Date of Service
*DM under assessment, plan and PHI section*

Date of Service
*Chronic kidney disease Stage 2 under assessment and plan sections*

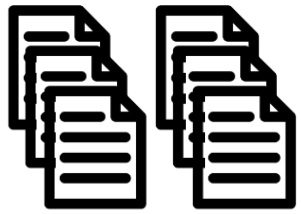
Date of Service
*Diabetes type II w/o complication under assessment and plan section*

Date of Service
*CKD III under HPI, assessment and plan section*

Date of Service
*CKD 3 under PMH section*

Date of Service
*CKD under PMH section*

Al
l Associated
Claims Files



# All annual encounters

## If evidence of Kidney Disease and Diabetes Mellitus in separate encounters; complication not coded

| SINGLE ENCOUNTER | | ALL ENCOUNTERS |
|---|---|---|
| ICD-10-CM E11.9 \| Diabetes mellitus w/out complications | → | ICD-10-CM E11.22 \| Diabetes mellitus with diabetic chronic CKD |
| HCC 19 \| Diabetes without complications documented with evidence of treatment and follow up | → | HCC 18 \| Diabetes Type II with chronic complications |

Date of Service
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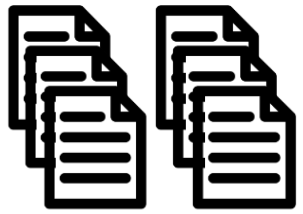


# All population data

Payment and quality models identify incidence, severity and financial benchmarks to determine performance across a population.

% of ICD-10-CM E11.9
% of ICD-10-CM E11.22

% of HCC 18
% of HCC 19

# The right information, at the right time, in the right format, for the right patient.

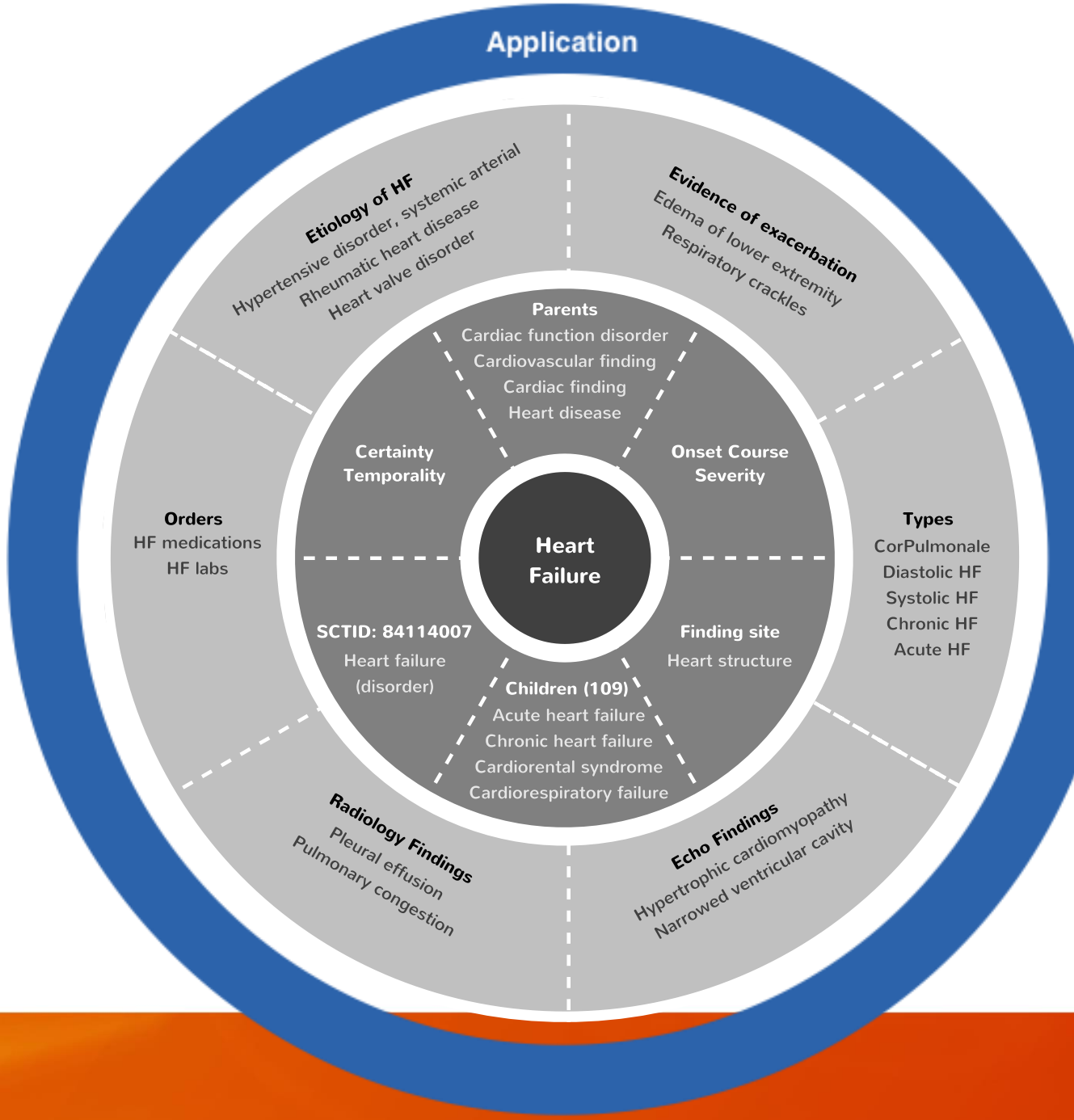
Using technology to operationalize your process.

# **Natural Language Understanding**: Clinical Information Models

- Start by modeling the medical conditions and disease states that a patient may have
- Decompose model into concepts to be found in clinical documentation
- Identify concepts across structured and unstructured data sources

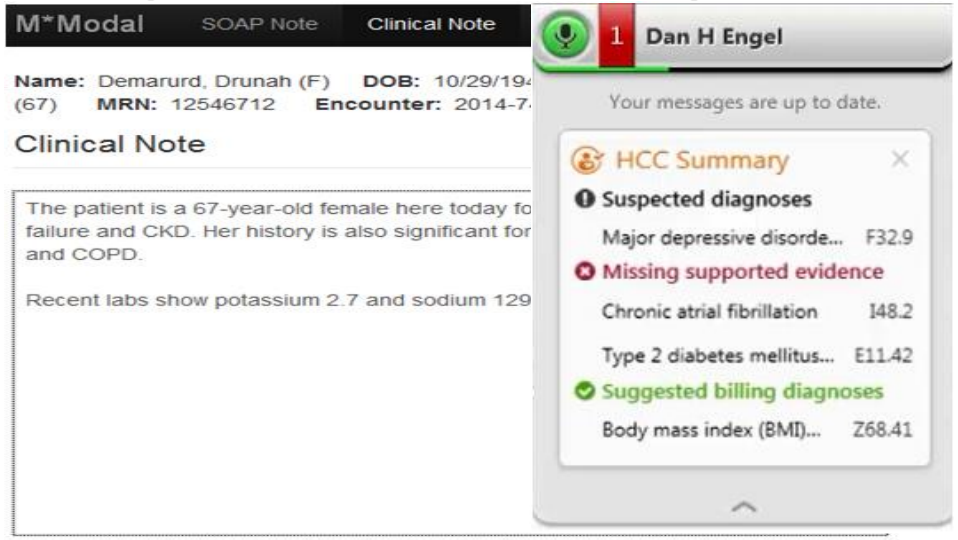
# Natural Language Understanding

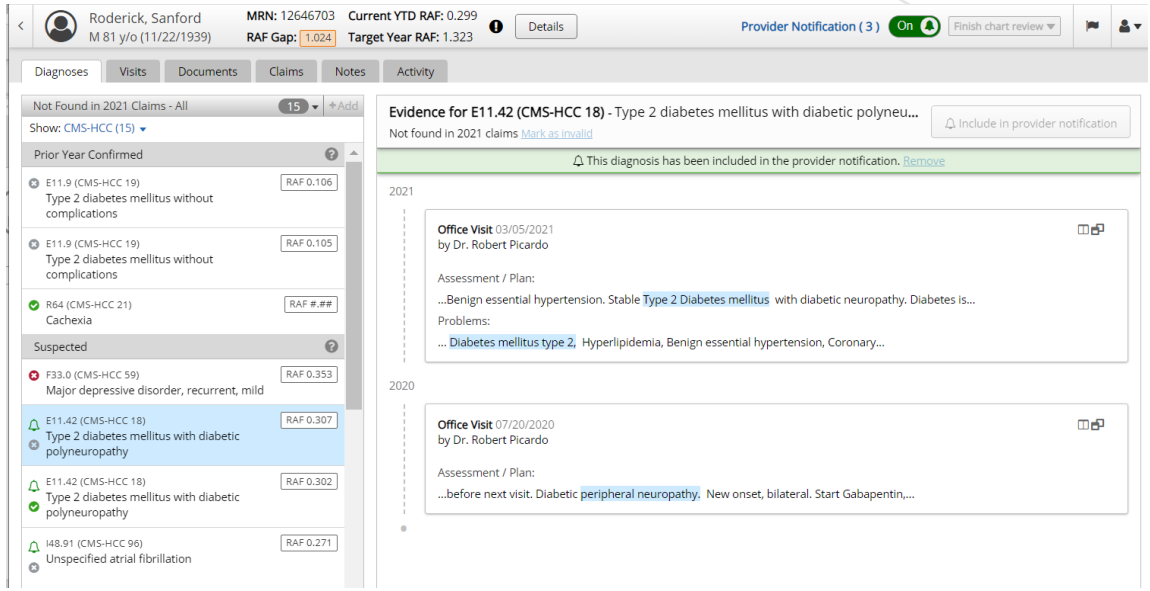
- Start by modeling the medical conditions and disease states that a patient may have
- Decompose model into concepts to be found in clinical documentation
- Identify concepts across structured and unstructured data sources
- “Fill in” the information model with the concepts identified in the clinical record
- Reason over modeled patient for application-specific purposes (CDI, HCC, quality, COVID-19…)



# HCC Management: A Comprehensive Solution

*Comprehensive solution for improving risk-adjusted documentation and coding, patient care, and reimbursement across the care continuum*



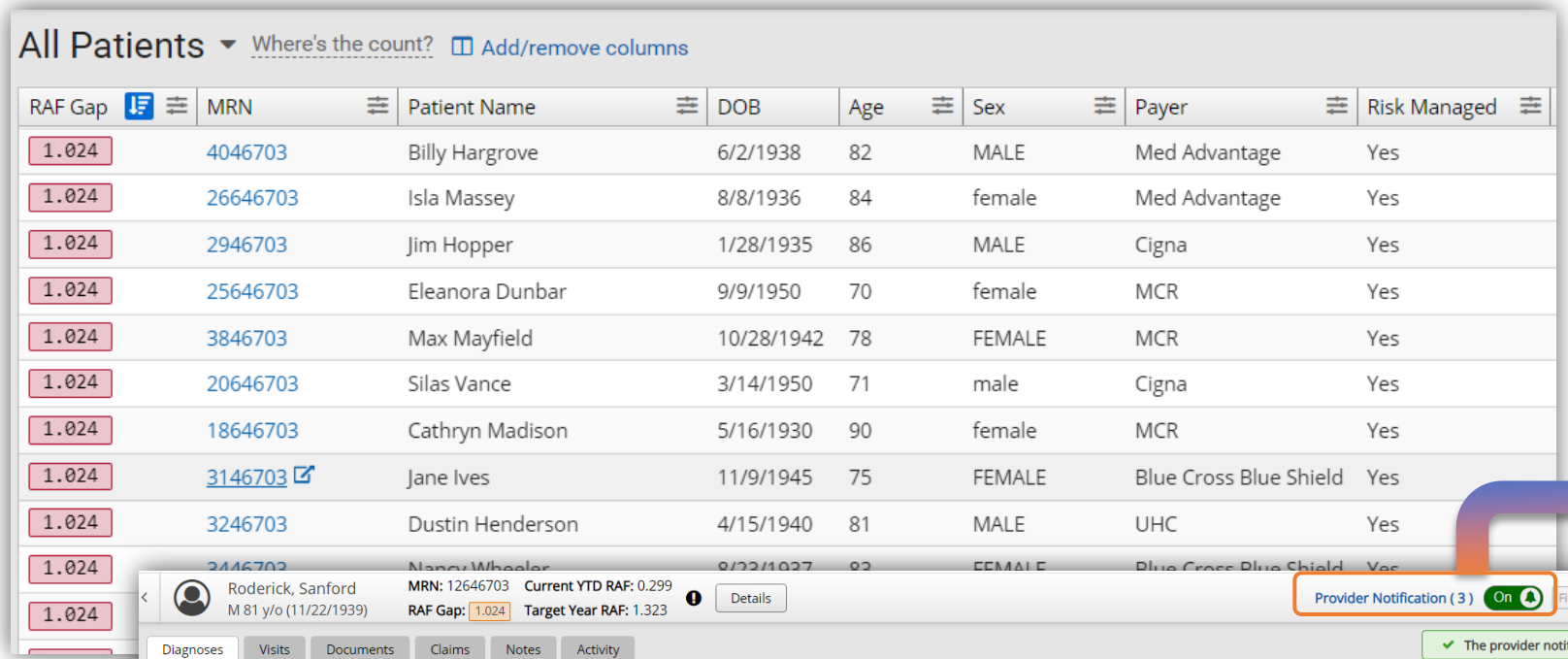



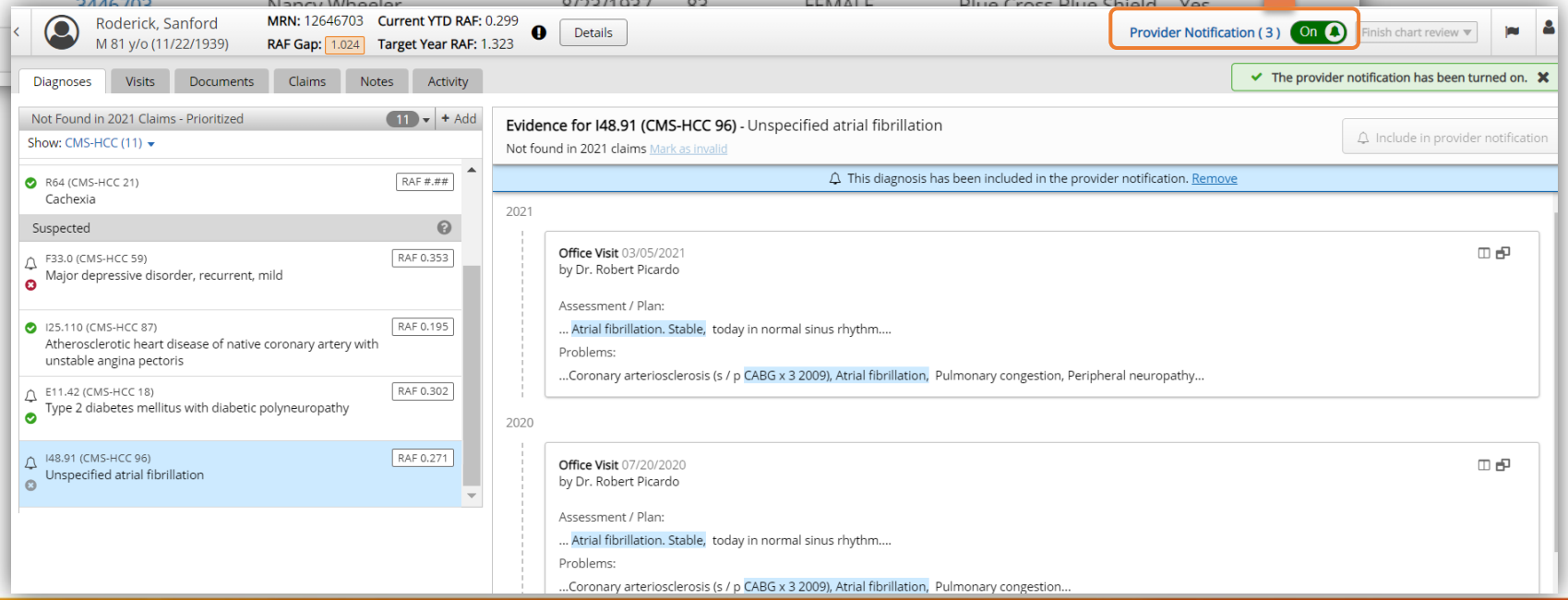

Engage

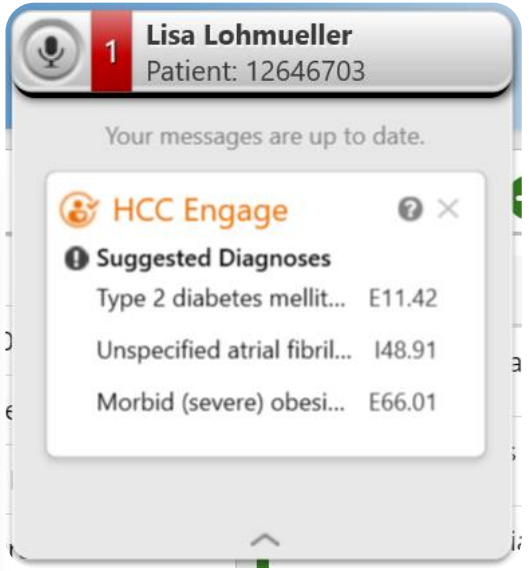
Collaborate

RISE

# Pro-active patient prioritization

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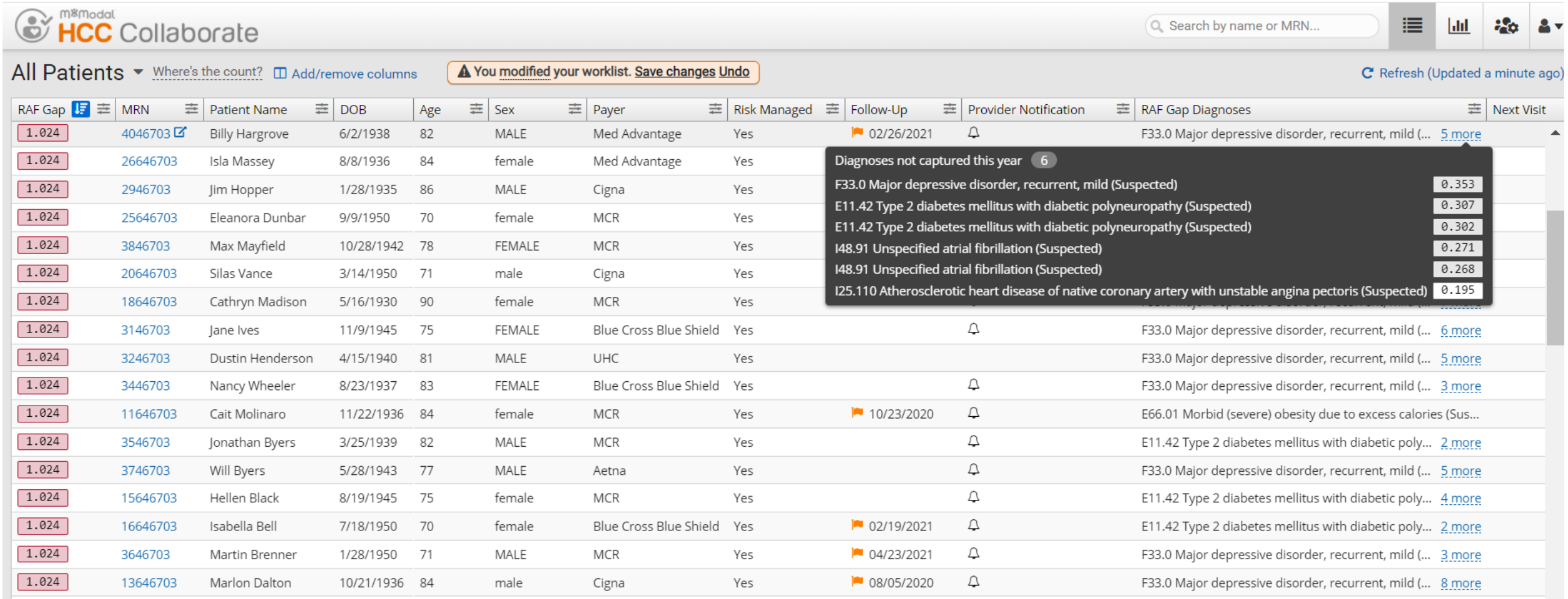
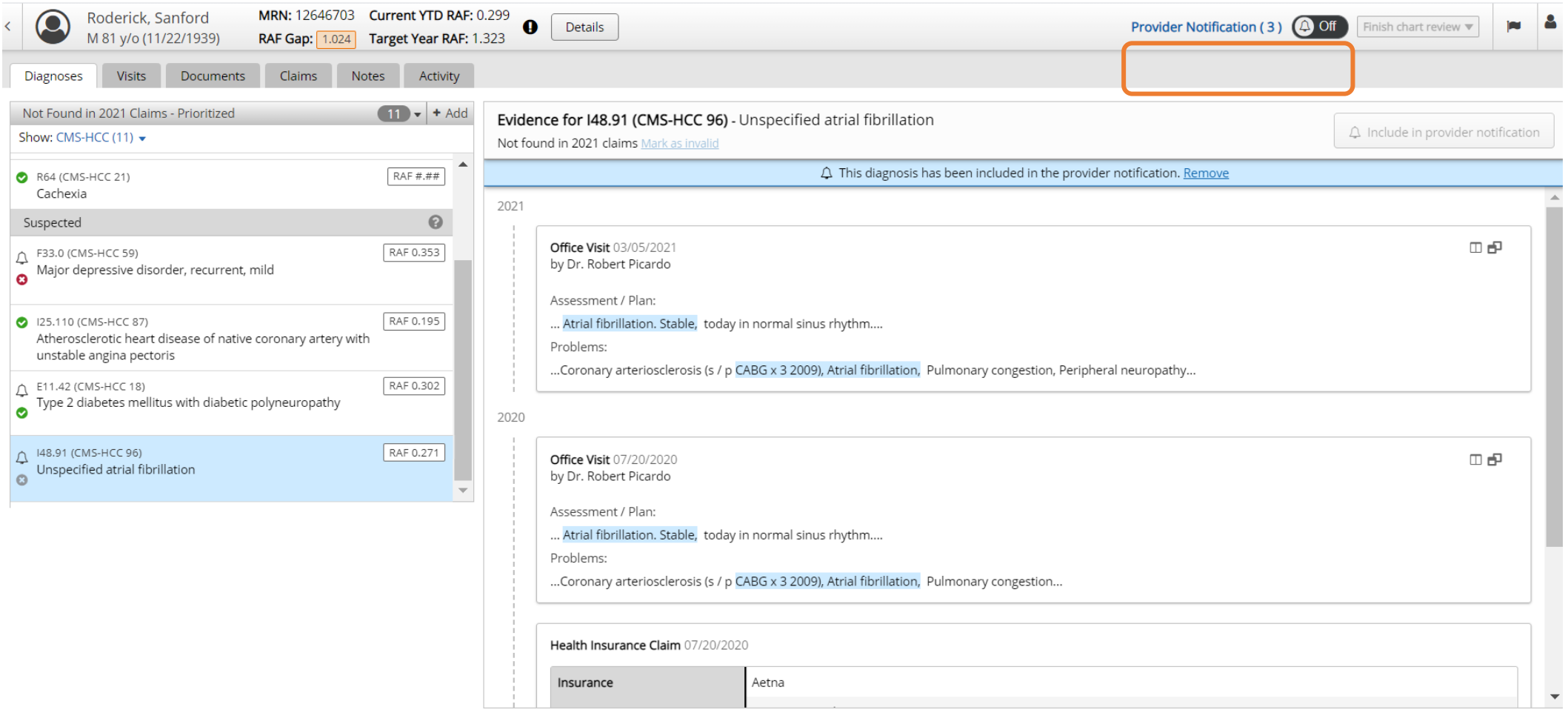
# Prioritize patients in worklist

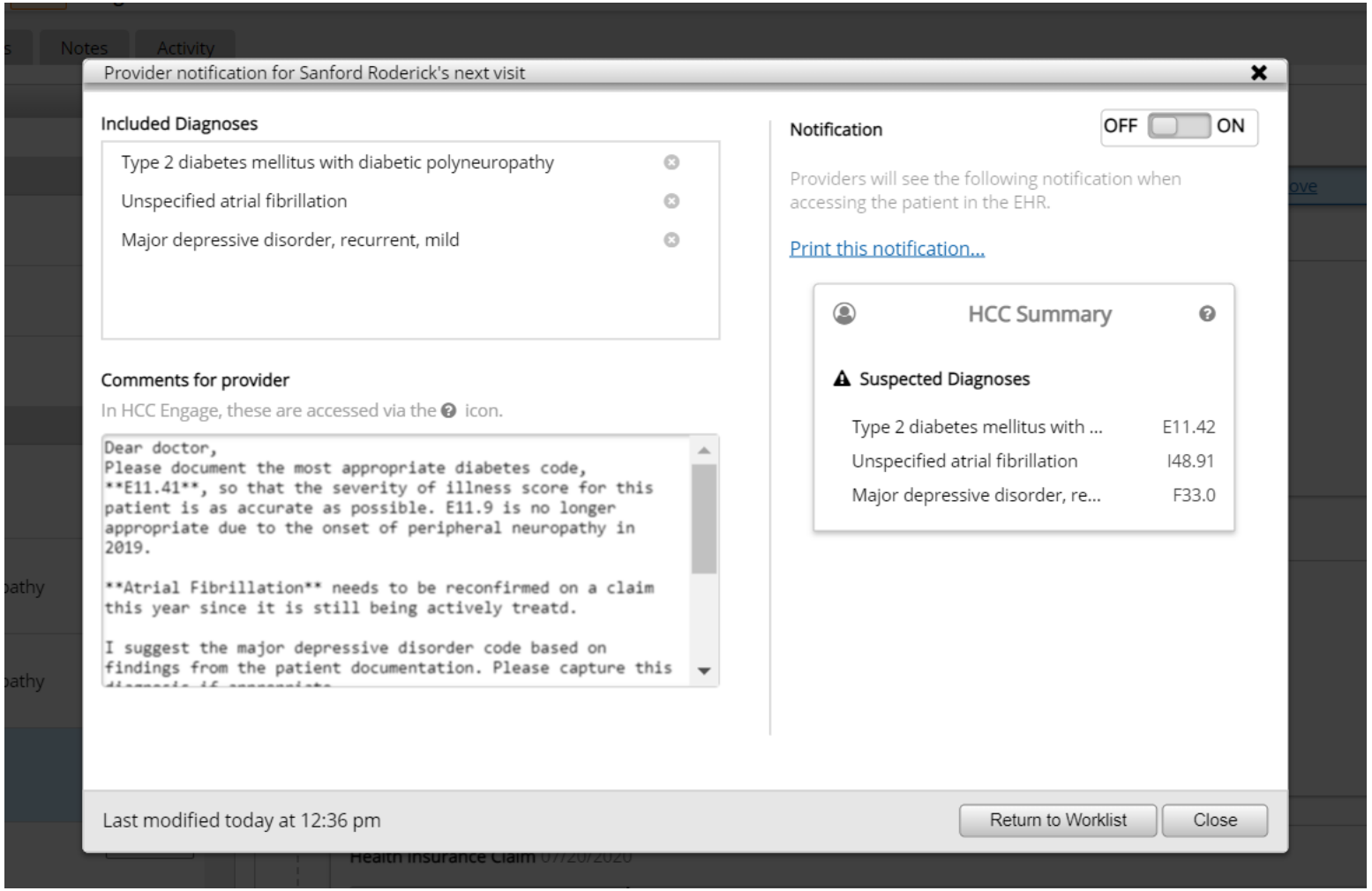



| RAF Gap | MRN | Patient Name | DOB | Age | Sex | Payer | Risk Managed | Follow-Up | Provider Notification | RAF Gap Diagnoses | Next Visit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.024 | 4046703 | Billy Hargrove | 6/2/1938 | 82 | MALE | Med Advantage | Yes | 02/26/2021 | | F33.0 Major depressive disorder, recurrent, mild (... | 5 more |
| 1.024 | 26646703 | Isla Massey | 8/8/1936 | 84 | female | Med Advantage | Yes | | | | |
| 1.024 | 2946703 | Jim Hopper | 1/28/1935 | 86 | MALE | Cigna | Yes | | | | |
| 1.024 | 25646703 | Eleanora Dunbar | 9/9/1950 | 70 | female | MCR | Yes | | | | |
| 1.024 | 3846703 | Max Mayfield | 10/28/1942 | 78 | FEMALE | MCR | Yes | | | | |
| 1.024 | 20646703 | Silas Vance | 3/14/1950 | 71 | male | Cigna | Yes | | | | |
| 1.024 | 18646703 | Cathryn Madison | 5/16/1930 | 90 | female | MCR | Yes | | | | |
| 1.024 | 3146703 | Jane Ives | 11/9/1945 | 75 | FEMALE | Blue Cross Blue Shield | Yes | | | F33.0 Major depressive disorder, recurrent, mild (... | 6 more |
| 1.024 | 3246703 | Dustin Henderson | 4/15/1940 | 81 | MALE | UHC | Yes | | | F33.0 Major depressive disorder, recurrent, mild (... | 5 more |
| 1.024 | 3446703 | Nancy Wheeler | 8/23/1937 | 83 | FEMALE | Blue Cross Blue Shield | Yes | | | F33.0 Major depressive disorder, recurrent, mild (... | 3 more |
| 1.024 | 11646703 | Cait Molinaro | 11/22/1936 | 84 | female | MCR | Yes | 10/23/2020 | | E66.01 Morbid (severe) obesity due to excess calories (Sus... | |
| 1.024 | 3546703 | Jonathan Byers | 3/25/1939 | 82 | MALE | MCR | Yes | | | E11.42 Type 2 diabetes mellitus with diabetic poly... | 2 more |
| 1.024 | 3746703 | Will Byers | 5/28/1943 | 77 | MALE | Aetna | Yes | | | F33.0 Major depressive disorder, recurrent, mild (... | 5 more |
| 1.024 | 15646703 | Hellen Black | 8/19/1945 | 75 | female | MCR | Yes | | | E11.42 Type 2 diabetes mellitus with diabetic poly... | 4 more |
| 1.024 | 16646703 | Isabella Bell | 7/18/1950 | 70 | female | Blue Cross Blue Shield | Yes | 02/19/2021 | | E11.42 Type 2 diabetes mellitus with diabetic poly... | 2 more |
| 1.024 | 3646703 | Martin Brenner | 1/28/1950 | 71 | MALE | MCR | Yes | 04/23/2021 | | F33.0 Major depressive disorder, recurrent, mild (... | 3 more |
| 1.024 | 13646703 | Marlon Dalton | 10/21/1936 | 84 | male | Cigna | Yes | 08/05/2020 | | F33.0 Major depressive disorder, recurrent, mild (... | 8 more |

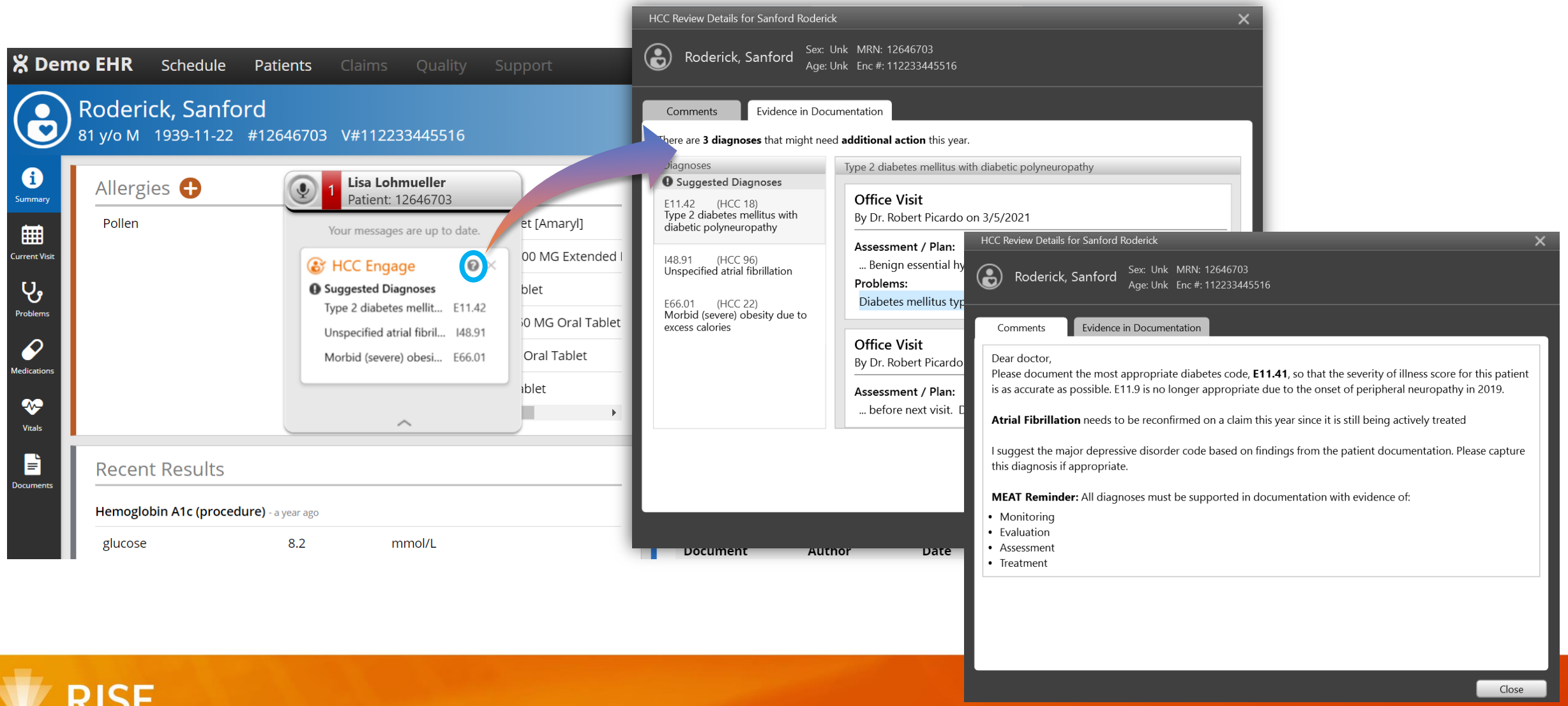
# Review diagnoses from whole patient record



# Create provider notification



# Open patient chart, receive proactive nudge



# Example

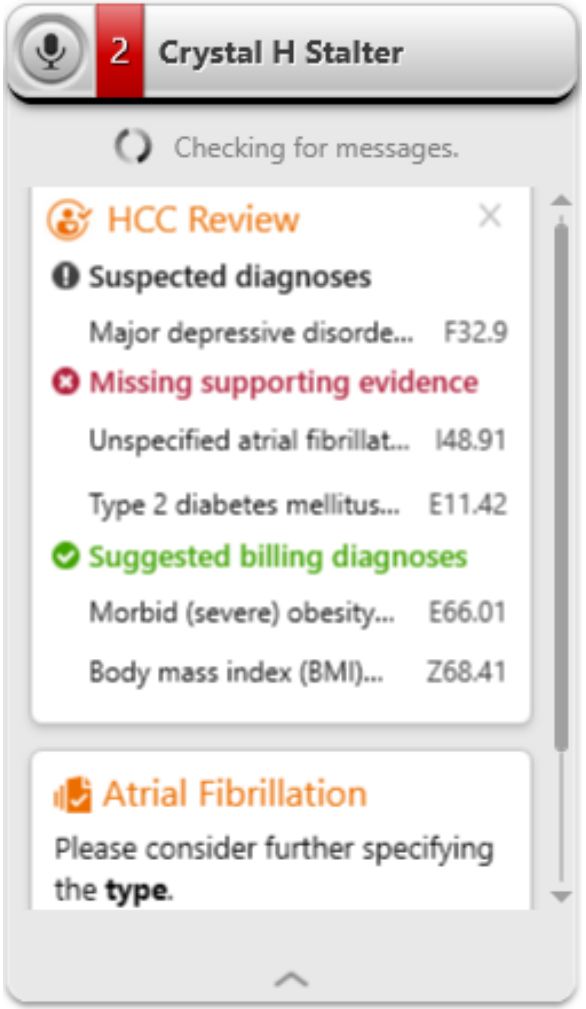
- Document annual wellness visit note, HCC Engage updates

- HPI: The patient is an 81-year-old male here today for his annual evaluation. He is healthy appearing and well nourished. No acute distress currently but complains of waking at night with symptoms of night sweats and dizziness. The patient has type 2 diabetes, atrial fibrillation, and is a smoker. He smokes one pack per day and has been smoking for the past ten years. He checks sugars every 3 days. Last fasting was 130. Seeing an eye doctor regularly. Peripheral neuropathy improving since starting Gabapentin and he continues to check his feet regularly. He is living alone in his senior housing complex and is walking around the apartment and building with assistance. Mild insomnia, but no weight gain or loss; no dizziness; no sweats; no headaches; no confusion; no blurred vision; no calluses on feet. Decreased bilateral foot numbness since last visit.

- ROS: All systems normal, except as noted in HPI.

- Vitals: weight 224 lbs, height 62", BP 140/94 sitting L arm.

- Assessment and Plan:
- Morbid obesity.  Patient to see nutritionist next week to follow up on recent diet improvements.



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ROS: All systems normal, except as noted in HPI.

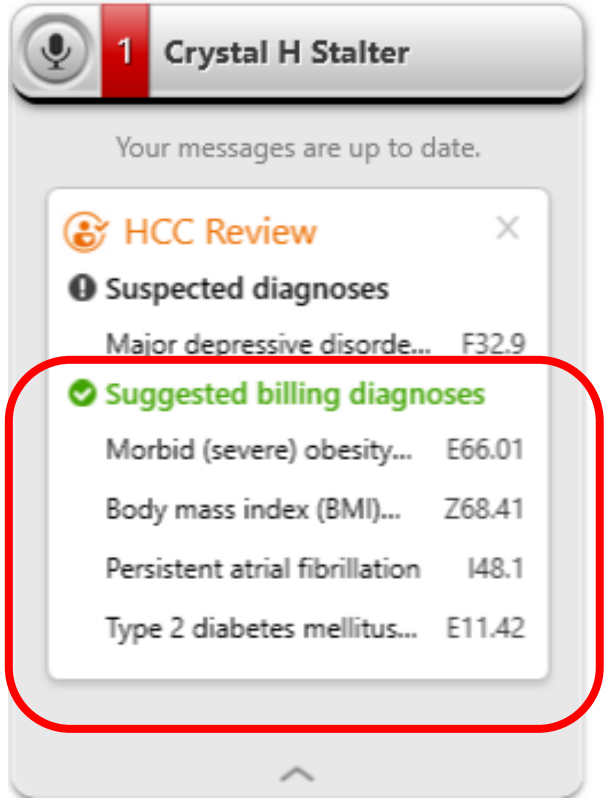
Vitals: weight 224 lbs, height 62", BP 140/94 sitting L arm.

Assessment and Plan:

Morbid obesity. Patient to see nutritionist next week to follow up on recent diet improvements.

Persistent atrial fibrillation. Continue Warfarin and repeat EKG in three weeks.

Type 2 diabetes mellitus with diabetic peripheral neuropathy, well controlled, A1c 6.8. Continue Metformin and repeat A1C in three weeks. Neuropathy, stable on Gabapentin. Continue current regimen.

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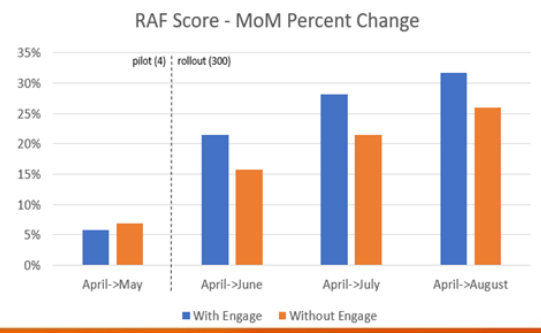
# 3M HCC Management Analytics

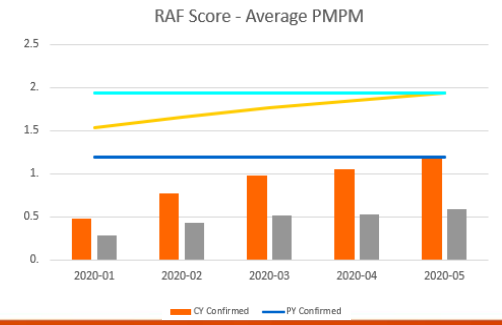
**Utilization Monitoring** — CDS scorecards, daily and weekly reports detailing activity in HCC Engage and HCC Collaborate

**Action Reports** — Detailed information focused on specific follow up opportunities to drive RAF capture, reconfirmation rate and audit risk mitigation

**Outcomes Analysis** — Monthly and year-over-year tracking of progress compared to baseline and trends in cohort groups (payer, provider)

| DOB | GENDER | HCC | HCC DESCRIPTION | ICD-10 | ICD-10 DESCRIPTION | RAF SCORE | DATA SOURCE |
|---|---|---|---|---|---|---|---|
| 11/22/1936 | F | 19 | Diabetes without chronic | E11.9 | Diabetes Type II, unspec | 0.121 | claim |
| 11/22/1936 | F | 96 | Specified Heart Arrhythmias | I48.91 | chronic atrial fibrillation | 0.224 | claim |
| 11/22/1936 | F | 18 | Diabetes with chronic complication | E11.42 | type II diabetes with peripheral | 0.441 | claim |
| 11/22/1936 | F | 58 | Major Depressive, Bipolar and | F32.0 | Major depressive disorder, single | 0.271 | documentation |
| 11/22/1936 | F | 96 | Specified Heart Arrhythmias | I48.91 | chronic atrial fibrillation | 0.224 | documentation |
| 11/22/1936 | F | 18 | Diabetes with chronic complications | E11.42 | type II diabetes with peripheral | 0.441 | claim |
| 11/22/1936 | F | 87 | Unstable angina and other Acute | I25.110 | Coronary atherosclerosis of | 0.497 | claim |
| 1/1/1944 | M | 85 | Congestive Heart Failure | I11.0 | Hypertensive heart disease with | 0.377 | documentation |
| 1/1/1944 | M | 11 | Colorectal, Bladder and Other CA | C18.0 | Malignant Neoplasm of Cecum | 0.301 | claim |
| 1/1/1944 | M | 85 | Congestive Heart Failure | I50.32 | chronic diastolic heart failure | 0.323 | claim |
| 1/1/1944 | M | 96 | Specified Heart Arrhythmias | I48.2 | chronic atrial fibrillation | 0.268 | claim |
| 1/1/1944 | M | 75 | Myesthenia Gravis | G62.82 | diation-induced polyneuorpathy | 0.369 | documentation |
| 1/1/1944 | M | 85 | Congestive Heart Failure | I50.32 | chronic diastolic heart failure | 0.191 | claim |
| 1/1/1944 | M | 11 | Colorectal, Bladder and Other CA | C18.0 | Malignant Neoplasm of Cecum | 0.293 | claim |
| 3/17/1955 | F | 77 | Multiple Sclerosis | G35 | Multiple Sclerosis | 0.441 | claim |
| 3/17/1955 | F | 135 | Acute Renal Failure | N18.4 | CKD Stage 4 | 0.422 | claim |



# Benefits of a closed loop CAPD system:

- Accurate and appropriate RAF score, representing true patient severity of illness
- Improved productivity and impact of outpatient (risk based) CDI program
- Complete and compliant documentation and coding, the first time
- Improved physician satisfaction with HCC documentation and billing requirements
- Improved patient outcomes as care shifts from acute response to chronic disease management
- Access to data needed to address education and follow-up training throughout the year
- Accurate risk adjusted reimbursement, improved performance in MSSP, Medicare MA, Medicaid, ACA and commercial payer risk contracts

# Developing a comprehensive HCC capture process

# Building the team – a multi-pronged process

- **Structured team approach**
  - Clinician leadership, Clinical Champions, HIM leadership, Technology team
  - Strong project management / oversight
- **Establish goals with metrics** for monitoring by steering committee
  - Real Time analytics MUST be involved in project management
  - Claims adjudication / metrics lag does NOT facilitate QI / PI and change management
- **Prioritization based on value** of chart review focus areas, needs
  - Historical learnings, data provided guidance
  - Optimization of EMR with performance plateau necessitated action
  - Strong alignment with regional PHO
- **Process for prospective and retrospective** CDI and coding reviews
  - Existing inpatient CDI team
  - Newly formed ambulatory coding team
  - Education / outreach – moved from paper to technology platform

# Where they started

## Initial process

- Optimize the workflow and data from the EHR as much as possible
- Educate key stakeholders
- Implement practice advisories and worked closely with clinicians
- Create and share reports based on reviewed claims and dropped opportunities
- On-going education

## Challenges with this process

- Claims adjudication and the associated timeline created a **lag of metrics** from 3 months or longer, depending on the payer.
- **Lack of real-time process metrics** made it difficult to measure the impact and effectiveness of the programs.

# Initial impact – results of a successful analysis

Across 11,000 patients and 13,000 encounters in 9 months:

| | |
|---|---|
| HCC Capture | Increased from 41% to 46% |
| Average Potential RAF Score | Increased by 0.2246 |
| Average Captured RAF Score | Increased by 0.0972 |
| Average RAF Gap | Increased by 0.0451 |

- Performance based, real-time outcomes with information that can be seen over time.
- Analytics pulled from EMR and 3M to incorporate information from both systems.

# Wrap-up

1. Capturing of patient burden of illness is essential for value-based care
2. Having accurate documentation is challenging and requires physician buy-in
3. Technology using natural language understanding (NLU) facilitates accurate documentation at scale
4. Use of technology and pro-active processes can deliver improved HCC capture

# THANK YOU