Quality Improvement

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Quality Improvement: Background

- Changing healthcare landscape has placed a greater emphasis on patient-centered care
- Need for care coordination and integration
- Health care delivery models need to deliver “high value” care: optimizing the patient experience while pursuing cost savings
- Changes to healthcare have incentivized:
  - Reporting of quality metrics
  - Controlling costs
  - Improving care coordination

Quality Improvement: Background

Donabedian's Conceptual Framework

Structure

- Physical and organizational characteristics where health is delivered

Process

- Focus on the care delivered to patients

Outcomes

- Effect of health care on the status of patients and populations

Example: Improving care for patients with cirrhosis

Number of specialists in a health care system	Number of patients receiving antibiotics in setting of GI Bleeding	Mortality rate among cirrhotic patients

Outline

- Quality Improvement Collaboratives
  - Hepatology
  - IBD
- Highlighting of additional work presented at DDW
  - Quality Improvement: Posters of Distinction reviewed
  - Preliminary results of a randomized controlled trial to improve HCC surveillance rates
- What lies ahead in health care reform

Quality Improvement

- Cirrhosis Quality Care Collaborative
  - Dr. Michael Volk at Loma Linda University Medical Center
- IBD Quality Collaborative
  - Dr. Corey Siegel at Dartmouth-Hitchcock Medical Center

Cirrhosis Quality Collaborative (CQC)

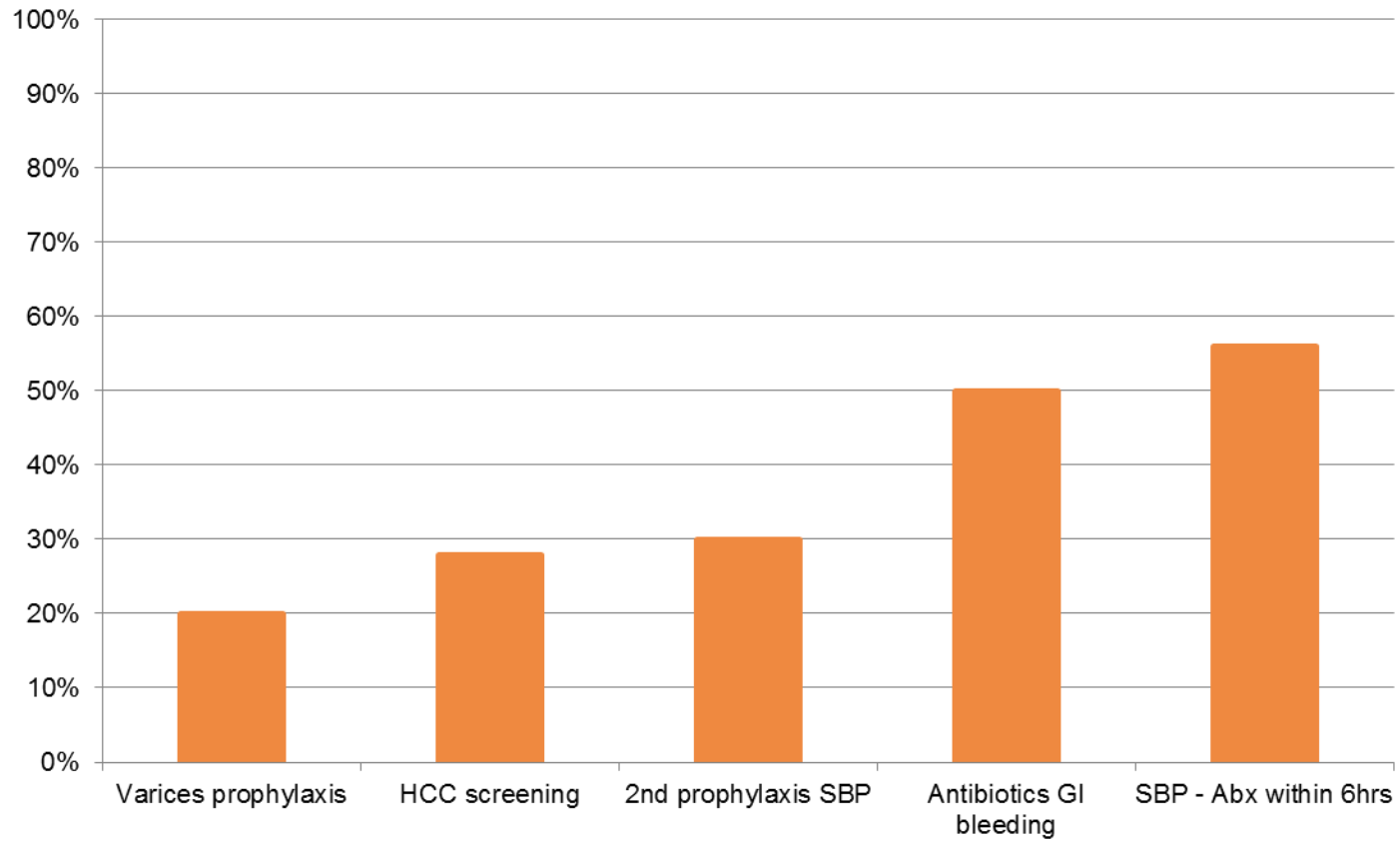
- Founded in 2014
  - Jay Talkwalkar, Fasiha Kanwal, Amit Singal, Michael Volk
- Goal is to improve quality of care for cirrhosis nationwide through collaborative effort
  - Sharing best practices

Hepatology Metrics

Cirrhosis care category	Recommendation
Ascites	If patients have clinically apparent moderate to severe ascites, they should be managed with a combination of sodium-restricted diet and diuretics (including a combination of both spironolactone and loop diuretics)
	If hospitalized patients with ascites have ascitic fluid PMN count ≥250 cells/mm^3, they should receive empiric antibiotics within 6 hours of their test result
	If ambulatory patients with ascites have an ascites fluid PMN count ≥250 cells/mm^3, they should receive empiric antibiotics within 24 hours of their test result
	If patients have ascites fluid total protein <1.1 g/dL and serum bilirubin >2.5 mg/dL, they should receive prophylactic antibiotics
	Patients who have survived an episode of spontaneous bacterial peritonitis should receive long-term outpatient prophylaxis with daily norfloxacin (or trimethoprim/sulfamethoxazole)
Hepatic encephalopathy	Patients with cirrhosis who have persistent hepatic encephalopathy should receive oral disaccharides or rifaximin
Hepatocellular carcinoma	If patients have cirrhosis, they should receive surveillance for HCC by using imaging with or without α-fetoprotein every 6–12 mo

Mellinger, CGH 2015

Percent Completion of Quality Metrics



Volk et al. Clinical and Translational Gastroenterology, 2016.

Examples of Tools to Improve Care

- System redesign
  - Registries
  - Alternative delivery approaches
- EMR tools

System Redesign

- Registries
  - Simple approach: manual enrollment
    - Improvement in HCC screening rates from 74% to 94%
  - More sophisticated: ICD algorithm
- Alternative delivery approaches
  - Italian study: Patients randomized to a “care management check-up” group and followed as outpatients for at least 12 months. If due, ultrasounds and EGDs were done on the same day.
  - There was a “day hospital” for outpatients who needed procedures (LVP, EGD w/banding)

Aberra, Volk, *Dig Dis Sci* 2013
Fortune et al, *CGH* 2015;13:1391
Morando et al, *J Hep* 2013;59:257

EMR tools

- Best practice alerts
- Order sets
- Checklist
  - http://alfchecklist.com/
  - Use of a daily rounding checklist
- Mandatory hepatology consultation
  - 40% decrease in 30-day readmission
  - Improvement in process measures

Tapper et al, *CGH 2015*
Ghaoui et al, *J Hosp Med* 2015

Cirrhosis Quality Collaborative

- To collect all of these tools in one location
- Next steps:
  - To develop HIPAA-compliant centralized data registry for QI (e.g. ImproveCareNow)
- Create website for assembling best practice and resources
  - AASLD Public Health/Healthcare Delivery SIG

AASLD SIG

Public Health/Health Care Delivery

Also in this Section

+ Join or Pay Dues
Member Benefits & Categories
My Profile
Member Directory
− Special Interest Groups
Join a SIG
Acute on Chronic Liver Failure
Alcoholic Liver Disease
Cholestatic and Biliary Diseases
Clinical Practice
Hepatitis B
Hepatitis C

The Public Health / Health Care Delivery SIG was formed to improve the collaboration of scientists and health care professionals from a range of disciplines who share common specialized interests.

Mission statement: To bring together AASLD members with shared interests in health services research and practice, including: disease prevention and public health, access to care, population-based disease management, improving quality of health care delivery, health economics and health policy.

Goals and Objectives

- Cultivate professional relationships between members with shared interests in the above topics.
- Maintain a program for education of fellows and members on clinical aspects of population management and quality improvement, as well as health services research methods.
- Establish a point of contact within the AASLD for partnerships with other organizations on health services topics of mutual interest. *Examples include collaboration with the Centers for Disease Control on public health initiatives in liver disease, or partnership with the American Gastroenterology Association to promote liver disease quality measures via CMS/PQRS.*

Q&A with the Public Health/Health Care Delivery Steering Committee

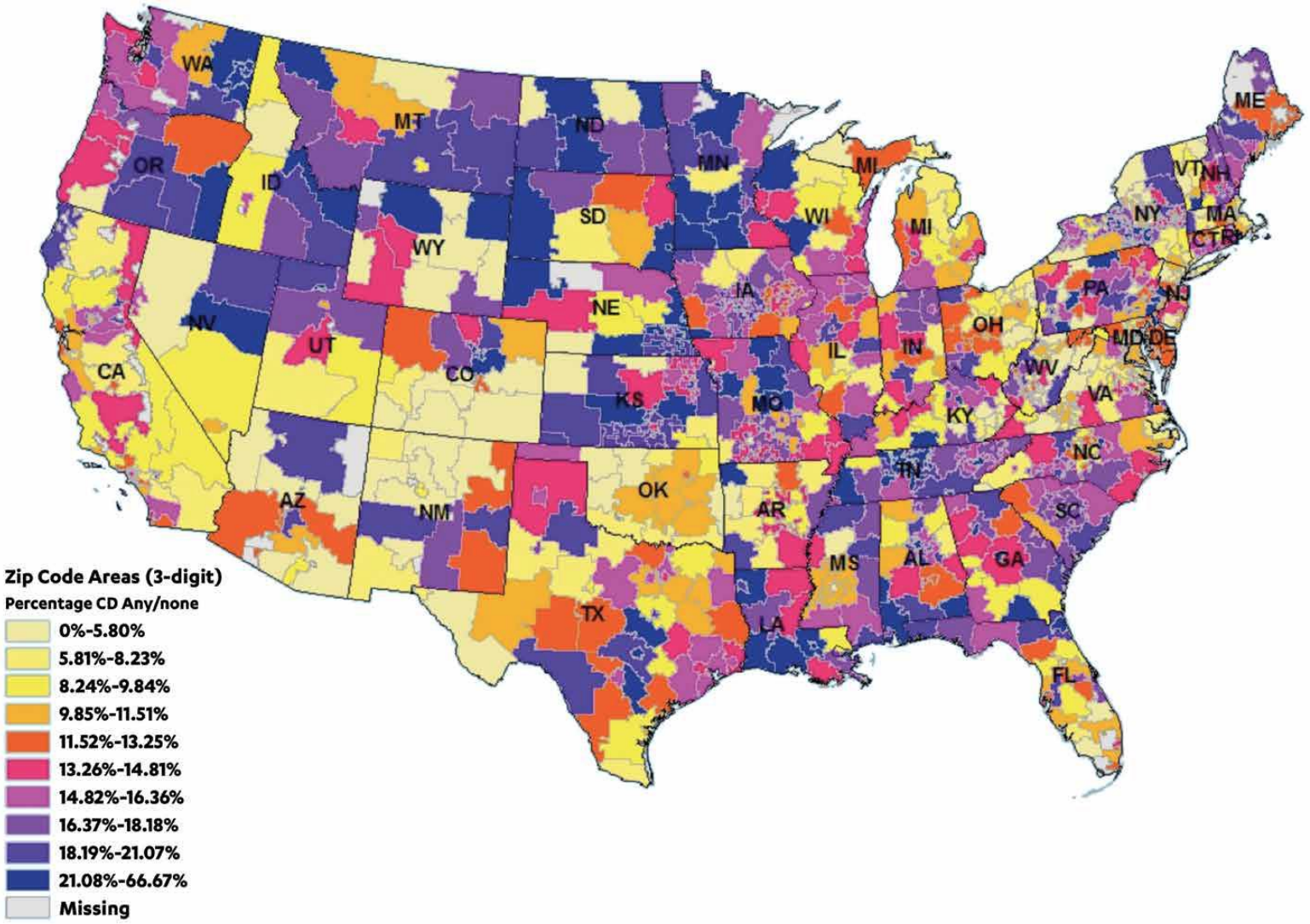
Join a SIG

SIG Leadership

- Jayant A Talwalkar, MD, MPH
  Chair
- Fasiha Kanwal, MD, MSHS
  Vice-Chair
- Amit Singal, MD
  Steering Committee
- Michael Volk, MD
  Steering Committee
- Bette Anne Preston
  Staff Liaison

IBD Collaboratives

Variation of IBD Care in the US



Courtesy of Corey Siegel, MD

IBD Quality Collaboratives

- Wide variation in IBD care across the US
- Examples of successful IBD Quality Collaboratives
  - Improve Care Now
  - Project Sonar
  - Qorus

ImproveCareNow

- Started in 2004 with American Board of Pediatrics funding. Started as a “research and improvement network”
- Has now grown into the largest network of IBD physicians
- Focused on pediatric patients with IBD
- 87 pediatric GI centers

ImproveCareNow

- High remission rates
- Largest pediatric IBD registry
- 24,600 patients with IBD
- 765 pediatric gastroenterologists

Project SONAR

- Started by a 45 physician GI group in Illinois
- Headed by Lawrence Kosinski, MD, created in partnership with BCBS of Illinois
- Care pathway for IBD patients
- Utilizes RN care managers and MD directors to care coordinate, engage patients and clinical decision support
- Using the EHR
  - Implement AGAs care pathway
  - Report CMS PQRS and AGA disease registry IBD measures
  - Capture of clinical data fields, labs, and imaging results

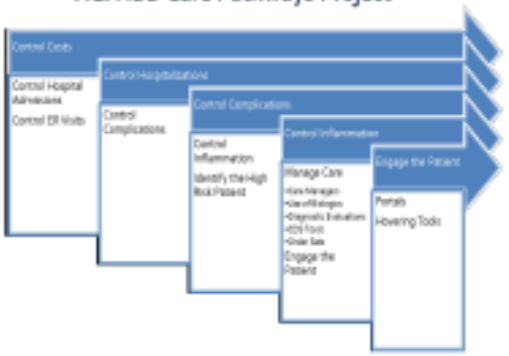
Project SONAR

- Patient engagement
  - Patient reported outcomes recorded via questionnaire sent to patient's smartphone
  - "Sonar system" pings the patient

Project Sonar

Develop the Algorithm

AGA IBD Care Pathways Project



Project Sonar

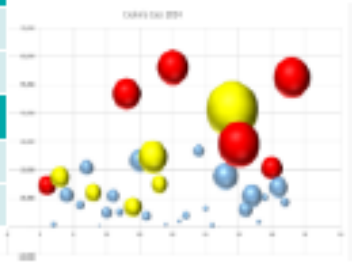
Assess the Risks

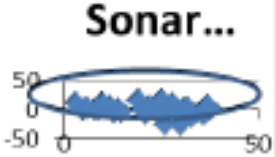
Engage the Patient

Develop Predictive Analytics

CDCP Risk Factor	Odds Ratio	95% Confidence Limits	
Inflammation risk:			
Albumin	19.4	3.9	97.8
Joint pain	5.7	2.2	14.5
Comorbidity risk:			
Inflammation	11.5	1.5	87.8
Stricturing	5.4	2.2	13.4

Analyze the Data



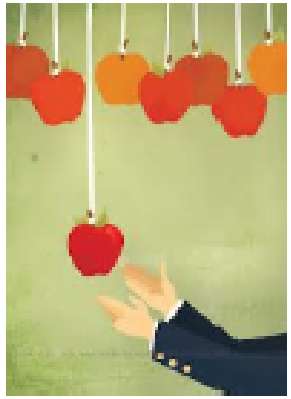


Manage the Care

Courtesy of Corey Siegel, MD

CCFA: Defining Standards of Care

CCFA Process Measures



- ❑ Test for TB before anti-TNFα therapy
- ❑ Test for *C. difficile* in flares
- ❑ Flex sig. for CMV in steroid-refractory hospitalized UC
- ❑ Check TPMT before starting thiopurines
- ❑ Recommend steroid-sparing agents if >4m steroids
- ❑ Recommend colectomy or close surveillance for low-grade dysplasia in colitis
- ❑ Recommend smoking cessation if smoker with CD
- ❑ Educate patients regarding vaccinations

Melmed, et al. Inflamm Bowel Dis 2013

Courtesy of Corey Siegel, MD

CCFA: Defining Standards of Care

CCFA Patient Outcome Measures

- ❑ Steroid-free clinical remission
- ❑ Days lost from work/school
- ❑ Days hospitalized
- ❑ ED visits
- ❑ Malnutrition
- ❑ Anemia
- ❑ Narcotic use
- ❑ Incontinence
- ❑ Normal health-related QoL
- ❑ Nighttime BMs or leakage

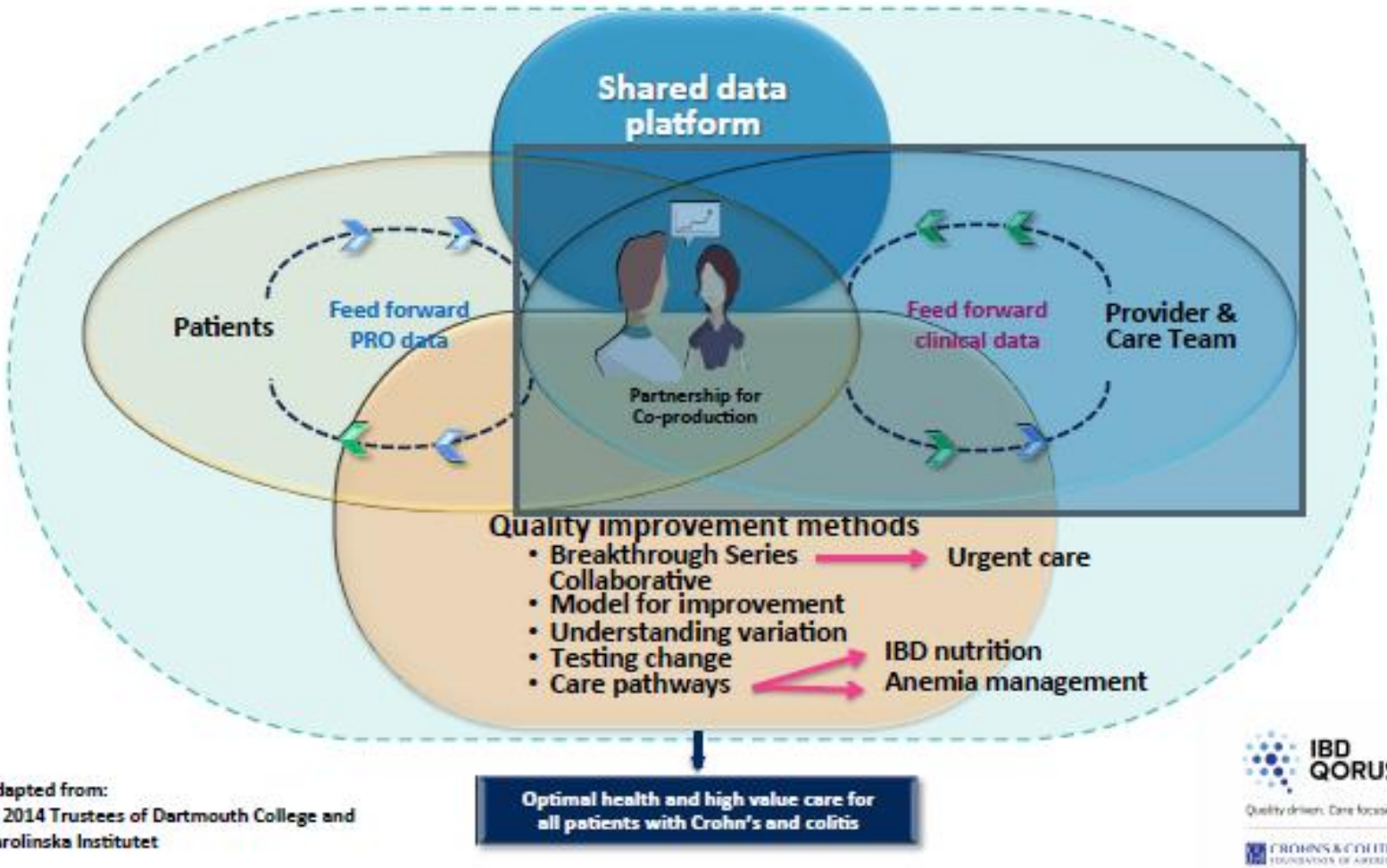
Courtesy of Corey Siegel, MD

IBD Qorus

- CCFA initiative
- 20-30 GI practices following 40,000 IBD patients
  - Community based and large academic referral centers
  - Each practice with its own quality improvement team (MD, RN, coordinator, patient leads)
  - Real world laboratory

Courtesy of Corey Siegel, MD

IBD Qorus



Courtesy of Corey Siegel, MD

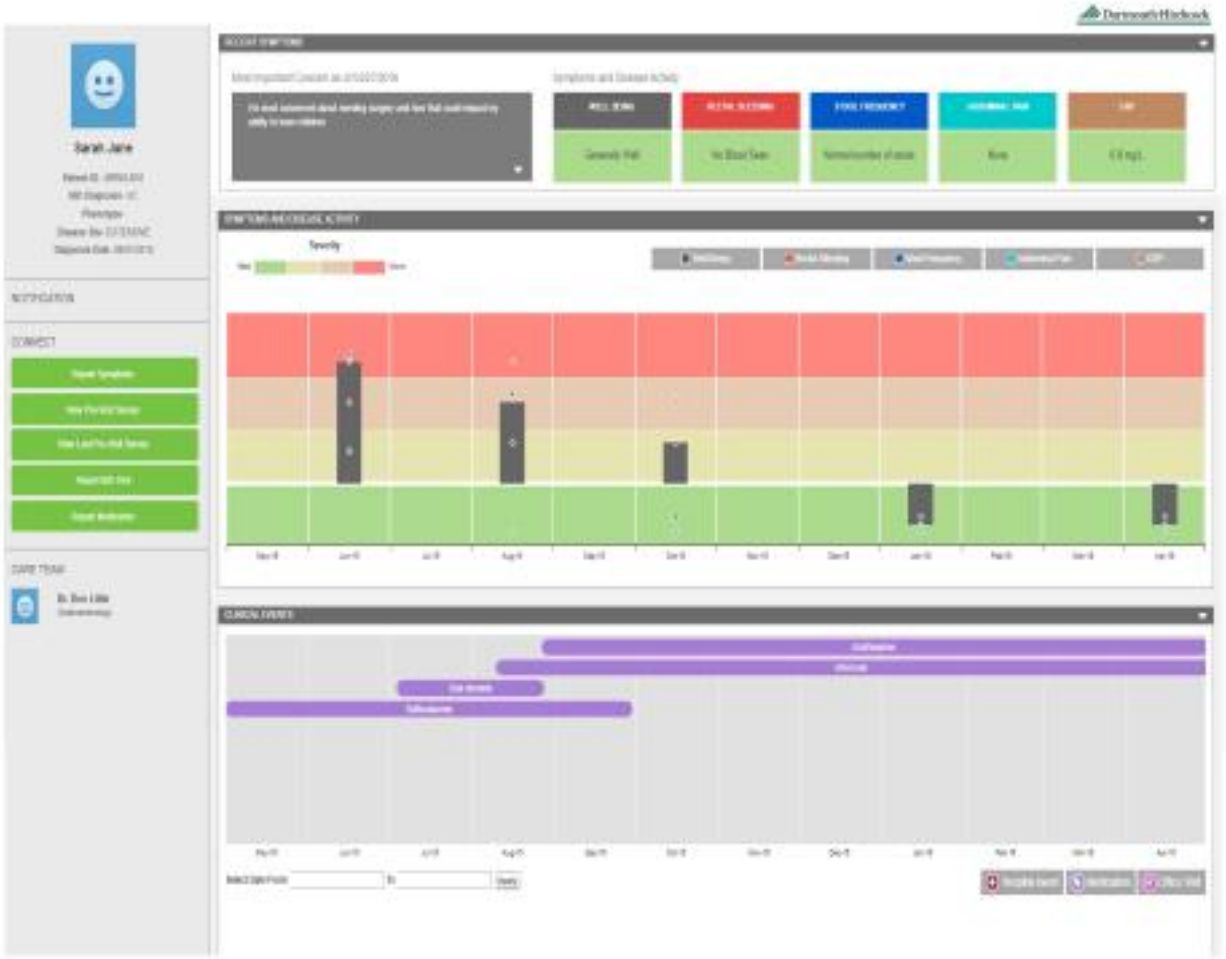
Patient Reporting

Deloitte.

IBD QORUS
Quality driven. Care focused.
CROHN'S & COLITIS FOUNDATION OF AMERICA

Courtesy of Corey Siegel, MD

IBD Qorus Dashboard



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Courtesy of Corey Siegel, MD

IBD Qorus

Qorus Population Management Tools

- Sort patients in practice by:
  - Disease activity
  - Recent ED visits or hospitalizations
  - Long-term prednisone exposure
  - Narcotic use
  - Specific medications
  - Vaccination status
- Interventions for specific high-risk patient groups

IBD QORUS
Quality driven. Care focused.
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Courtesy of Corey Siegel, MD

Distinguished Posters in IBD Quality Care

- Integrated care pathways for Inflammatory Bowel Disease Surgery: Design and first analysis (UCLA-Ho et al)
- Time-driven activity based costing: Measuring the Costs of Implementing Quality Measures in Inflammatory Bowel Disease (IBD) (UCLA-Jacobs et al)
- The value of tertiary referral Crohn's disease care: Targeting "Superutilizer" patients for reduction of healthcare utilization (Pittsburgh-Dudekula et el)

Integrated care pathways for Inflammatory Bowel Disease Surgery: Design and first analysis

- UCLA value based care program for IBD has 9 coordinated care pathways. One is a surgical pathway
- A 4-week post-surgery pathway included continuous tele-monitoring of pain, weight, temperature, nutrition, bowel function, pain medication, quality of life and productivity, as well as tele-wound monitoring
- The surgical pathway was completed after a week 4 clinic visit and patients were assigned to their subsequent medical pathway

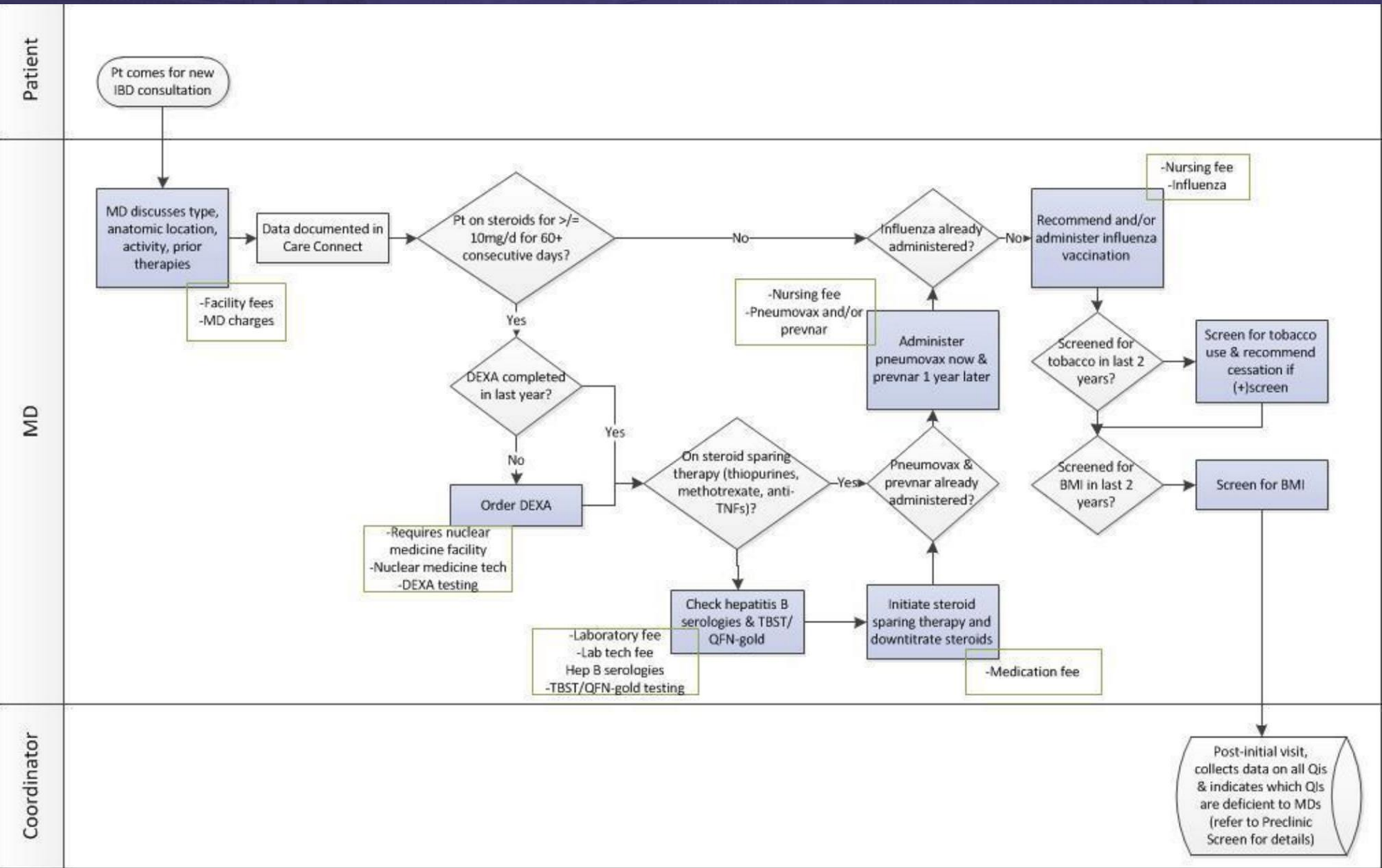
Integrated care pathways for Inflammatory Bowel Disease Surgery: Design and first analysis

- 1163 enrolled in value-based care program
- 46 surgical care pathway patients compared to 41 controls
- A 27% reduction in post-operative complications was observed-most common were ileus and infection
- In the controls 27% of patients had no GI clinic follow up and 49% had no surgical follow up after discharge.
- Emergency department (ED) visits (<30 days after surgery) were reduced by 7.5%
- On average, 2-3 phone calls/patient and 10-15 eConsults/patient were observed, as a result of which 9 ED visits/readmissions were likely prevented.
- Monitoring of post-surgery parameters and tele-wound monitoring was feasible and demonstrated meaningful provider decision support.

Time-driven activity based costing: Measuring the Costs of Implementing Quality Measures in Inflammatory Bowel Disease (IBD)

- AGA has developed 8 quality measures for IBD
- Implementing QI metrics could be a significant cost driver
- Process map was developed
- Costs calculated time spent x cost per unit time
- Concluded that financial burdens appear limited
- Should not deter providers from implementing QI metrics in their practice

Time-driven activity based costing: Measuring the Costs of Implementing Quality Measures in Inflammatory Bowel Disease (IBD)



Time-driven activity based costing: Measuring the Costs of Implementing Quality Measures in Inflammatory Bowel Disease (IBD)

QI Measure	% Compliance
Documented disease activity	100%
Tobacco use: Screening and Counseling	100%
Influenza vaccination documented	49%
Pneumococcal vaccination documented	23%
Steroid sparing therapy	100%
Bones loss assessment (DEXA)	30%
Tuberculosis status screened	96%
Hepatitis B status screened	99%
Total patients in IBD QI program	369 patien

Table 1. QI adherence after implementation of the process

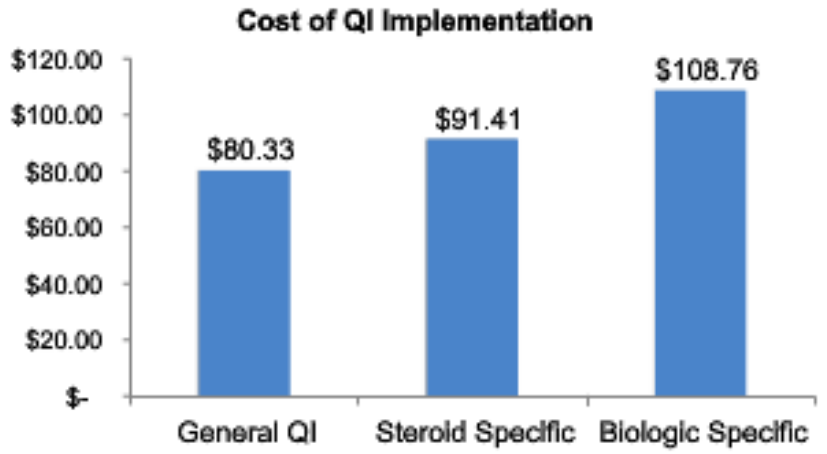


Figure 2. General IBD measures, included documenting disease activity, steroid-sparing therapies, vaccinations, and tobacco use. The steroid scenario added a DEXA scan. The biologic scenario added hepatitis B and tuberculosis status.

The value of tertiary referral Crohn's disease care: Targeting "Superutilizer" patients for reduction of healthcare utilization

- "Superutilizer" CD patients contribute disproportionately to health care costs, largely through repeated hospitalizations
- Aim: To characterize the role of tertiary referral/expert centers in the care of these individuals.
- An administrative dataset (de-identified) was used
- ICD-9 codes identified primary CD admissions
- Superutilizer CD patients were defined as having >2 admissions in a calendar year.
- Additional prospective data from the tertiary referral consented IBD registry in 2010 and 2012 was used to characterize patient specific data including outcomes and charges.

The value of tertiary referral Crohn's disease care: Targeting "Superutilizer" patients for reduction of healthcare utilization

- Superutilizers accounted for 84 admissions (39.1%) totaling $10.3 million in healthcare expenditures in 2010 compared to $10.6 million for care of the remaining 527 pts who amassed 131 admissions.
- Interventions employed by the tertiary referral center to treat the CD superutilizers between 2010-2012 included surgery (69.8%), change in biologic therapy (39.5%), initiation of psychiatric care (11.6%), initiation of antidepressants (23.3%).
- Biochemical markers of inflammation improved in the CD superutilizers between 2010 - 2012(68.9% to 38.7%; $p<0.02$).
- Quality of life improved in 55.8% and disease activity scores decreased in 51.2%.
- From 2010 to 2012 there was a significant decrease in charges for superutilizers from $10.3 million to $3.4 million ($p<0.00001$) while expenditures in the remaining cohort did not significantly change ($14.3 million, $p=0.22$). Nearly half (48.8%) of superutilizers did not have a hospitalization in 2012.

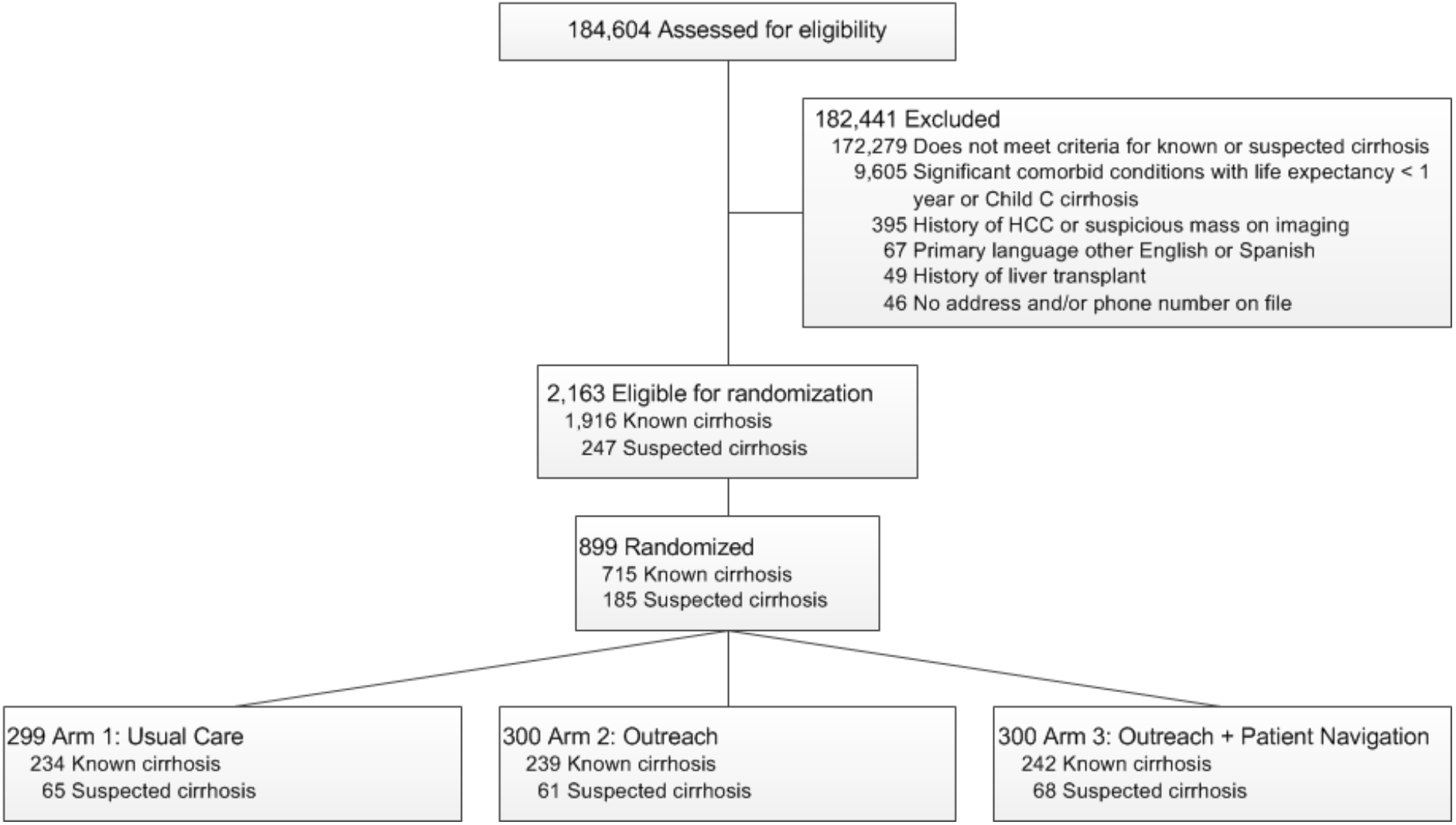
Outreach Invitations Improve HCC Surveillance Rates: Results Of A Randomized Controlled Trial

- Singal et al at UT Southwestern
- HCC is the 3rd leading cause of cancer-related death worldwide
- HCC surveillance → early detection and treatment, and improvement in survival.
- Fewer than 20% of patients with cirrhosis undergo HCC surveillance in clinical practice
  - Barriers include lack of knowledge, limited time and competing interests in clinic, and difficulty recognizing at-risk patients
- Study Aim: To compare the clinical effectiveness and patient acceptability of intervention strategies to increase one-time HCC screening rates

Study Design

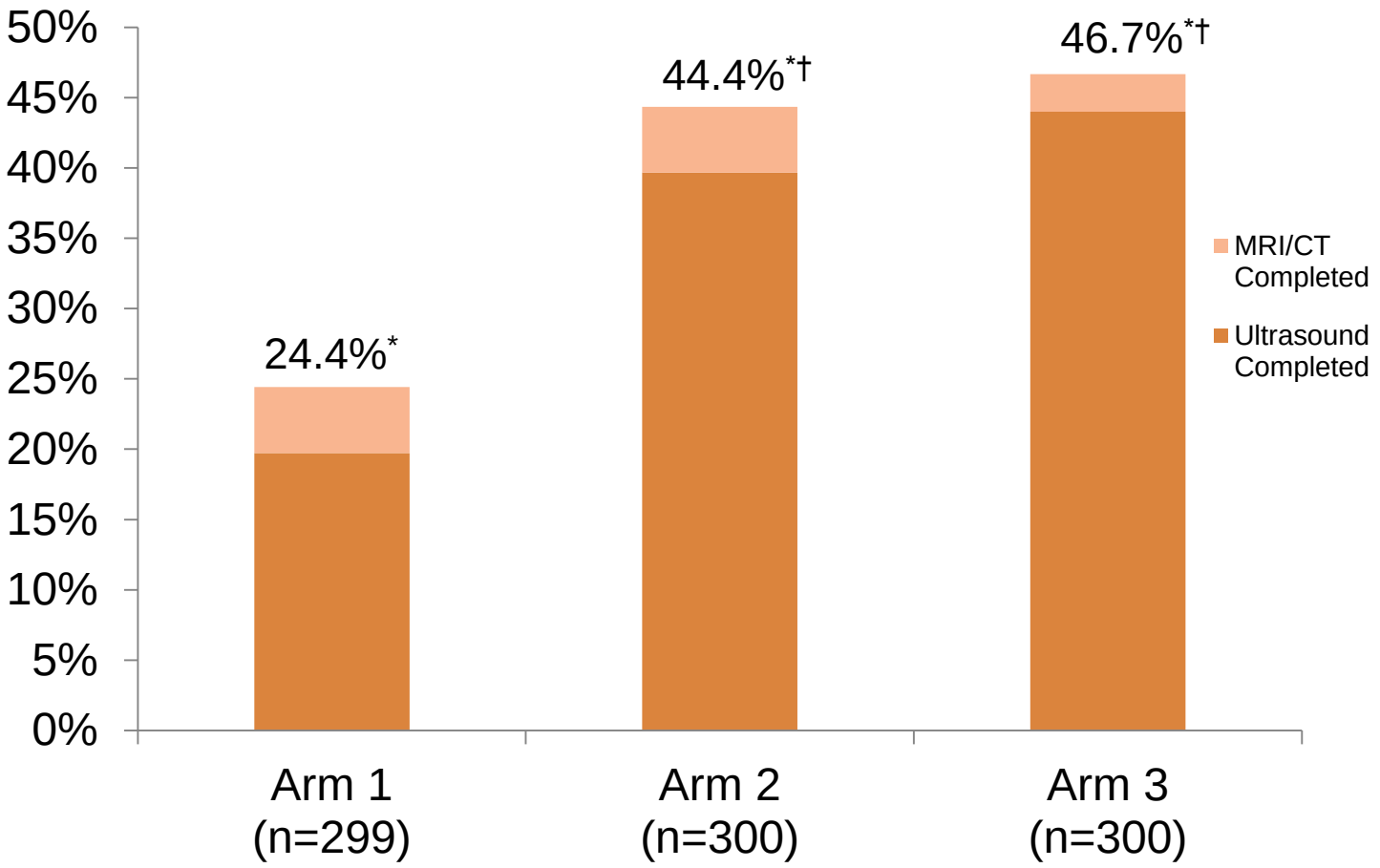
- Arm 1: Usual visit-based surveillance by clinic providers
- Arm 2: Mailed surveillance outreach
- Arm 3: Mailed surveillance outreach + patient navigation
- Patients in Arms 2 and 3 received a one-page letter
  - Basic information about HCC risk
  - Invitation with phone number to schedule ultrasound for HCC surveillance
  - Low-literacy letters in English and Spanish
- Telephone reminder calls for patients who did not respond within 2 weeks
- Patients in Arm 3 also received reminder telephone calls one week prior to ultrasound
  - Staff could help reschedule exams as needed

Study Population



Courtesy of Amit Singal , MD

One-time HCC screening rates



•Imaging-based HCC screening rates were significantly higher in the outreach alone (Arm 2) and outreach/patient navigation (Arm 3) arms than usual care (Arm 1) ($p<0.001$ for both comparisons)

† Imaging-based HCC screening rates did not significantly differ between the two outreach arms

Future implications

- There will be a greater focus on population health as we move away from fee-for-service models and towards value based care
- Medical Access and CHIP Reauthorization Act (MACRA) was signed in April 2015 and is supposed to take effect in 2019

MIPS: Merit-Based Incentive Payment System

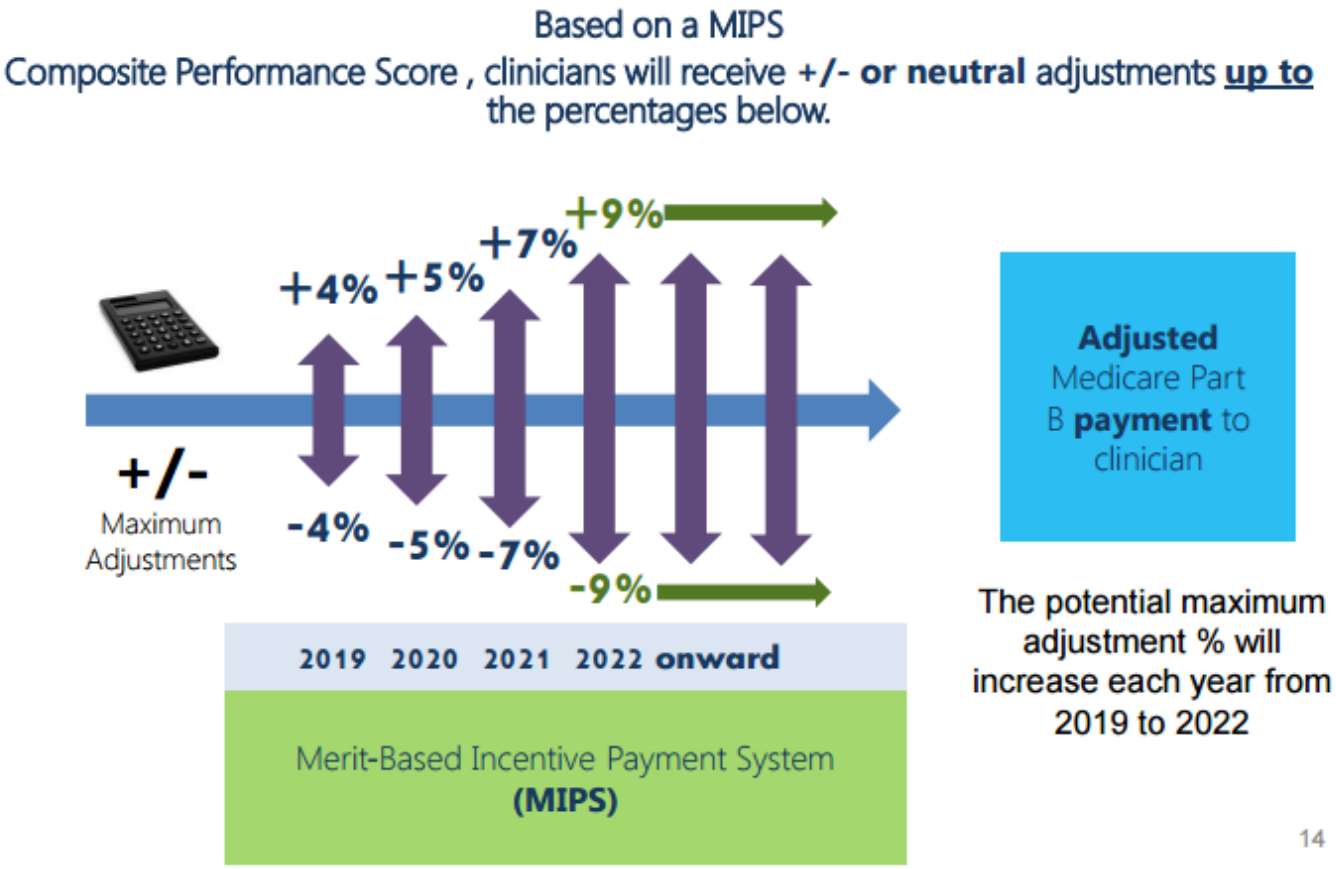
- PQRS, Value-Based Payment Modifier, and Medicare EHR Incentive Program are the current programs for Medicare physicians and practitioners
- These will be streamlined into MIPS (Merit-Based Incentive Payment System)
- MIPS is 1 of 2 pathways under MACRA ‹

MIPS Composite Performance Score

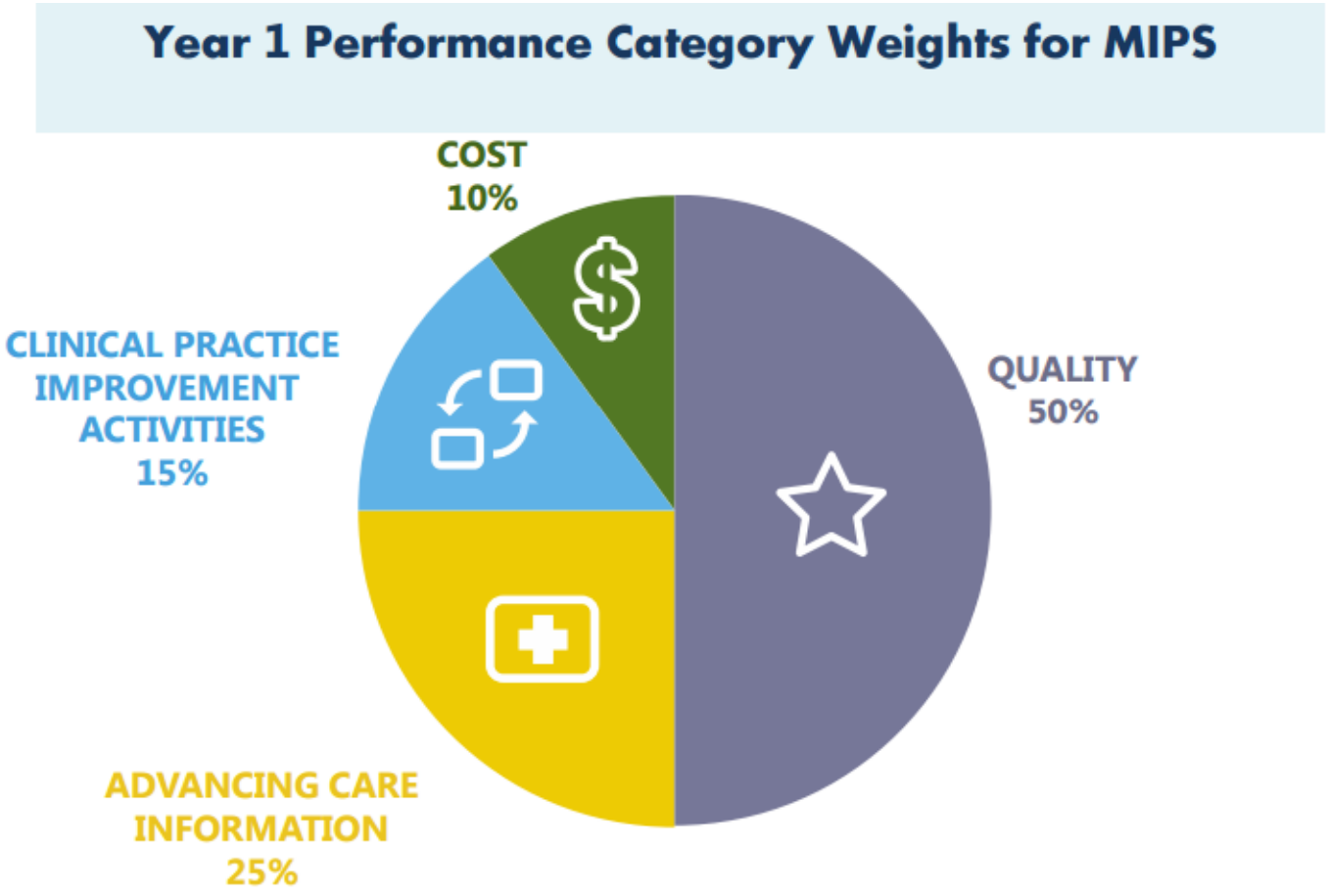
- Quality
- Resource Use
- Clinical Practice Improvement Activities
- Meaningful Use of certified EHR technology

MIPS

- Payment adjustments/bonuses will occur in 2019



MIPS Performance Category Weights



CMS Quality Measures for Hepatology (2017)

- Hepatitis C
  - HCV screening in baby boomers
  - Shared decision making documentation about treatment options
  - HCC screening/surveillance in patients with cirrhosis from chronic HCV infection

Summary

- Healthcare is now pursuing quality as a metric as we shift away from fee-for-service models
- Lack of standardization and large amount of variation across care (IBD and hepatology as 2 examples) are examples of quality gaps
- Collaboratives have an important role in identifying such gaps, testing, and implementing improvements
- Many rely on technology (registries, care coordination, patient reported outcomes) for implementation and dissemination
- Potential benefits are significant: improved patient reported outcomes, improved morbidity/mortality

Acknowledgements

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- Corey Siegel, MD
- Jay Talkwakar, MD
- Amit Singal, MD