Integrating Discovery, Innovation, and Improvement

Mitch Cohen, MD

A NEW ACADEMIC MISSION: INTEGRATING INNOVATION, RESEARCH AND IMPROVEMENT INTO AN ACADEMIC DIVISION
HOW DO YOU BALANCE GRANTS/PAPERS AND PATIENT-CENTERED OUTCOMES?

Mitchell B. Cohen, MD Division Director
Gastroenterology, Hepatology and Nutrition
Joint Appointments

27 Clinical Faculty -
12 with >50% research funding

Discovery AND Translational Research
Each investigator is aligned with but not constrained by a Chronic Disease Program

Ph.D. Faculty

James M. Anderson Center
For Health Systems Excellence
Jose Garza
Emory
Who We Are

The leader in care of children and young adults with GI and liver disease within Greater Cincinnati and around the world

What We Do

- Our mission is fourfold: Clinical Care, Research, Education, Advocacy
  - Improve the digestive health of children
  - Discover and apply new knowledge (Research ↔ clinical care)
  - Educate patients, providers, and families, and the field at large
  - Improve the clinical care delivery system so that it provides the best outcome at the lowest possible cost

How We Work

- We partner with patients, families and care givers to deliver the safest, best patient care and experience
- We treat families and co-workers with integrity, courtesy and respect
- We continuously improve & innovate through research and clinical care
- We are constantly learning and sharing information as a team
- We are passionate and motivated by the impact we have on others

How We Differ

- Tradition of innovation and discovery; the most world renowned recipients of awards for leadership and contribution to the field
- Tertiary, Quaternary and Community focused
- Lead the most improvement networks
- Have the only pediatric focused Digestive Disease Center funded by NIH
### Safety and Quality Dashboard

<table>
<thead>
<tr>
<th>Measures</th>
<th>Project Lead</th>
<th>FY2009</th>
<th>FY2010</th>
<th>FY 2011</th>
<th>FY 2012</th>
<th>FY 2013</th>
<th>Current FY14Q1</th>
<th>Goal</th>
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<tr>
<td># of Serious Safety Events</td>
<td>Cohen</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>3rd Next Available</td>
<td>Cohen/Thompson</td>
<td>22</td>
<td>33</td>
<td>14</td>
<td>4</td>
<td>8</td>
<td>11</td>
<td>10</td>
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<tr>
<td>Acceptable wait time in exam room</td>
<td>Cohen/Stark</td>
<td>72.0%</td>
<td>76.0%</td>
<td>79%</td>
<td>85.9%</td>
<td>85%</td>
<td>77%</td>
<td>80.0%</td>
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<tr>
<td>Exam Room Turns/Day</td>
<td>Cohen/Stark</td>
<td>n/a</td>
<td>3.25</td>
<td>3.3</td>
<td>3.9</td>
<td>3.9</td>
<td>3.7</td>
<td>3.9</td>
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**Gastroenterology 3rd Next Available**

- **Constipation follow-up: reduce demand**
- **Make up clinic**
- **Increase supply and open template**

**Last Update:** 10/7/2005 by A. Anneken, Division of Health Policy & Clinical Effectiveness

**Data Source:** Call Center
Building capacity and capability
Intermediate Improvement Science Series (I2S2): 8
Formal Leadership Development: 6
Quality Scholar: 1

Focus: Important diseases in pediatric GI that allow us to improve child health through better treatments & outcomes.

- Chronic Liver Disease
- Cincinnati Children’s Steatohepatitis Center
- Liver Transplant
- Schubert Martin Inflammatory Bowel Disease Center
- Cincinnati Center for Eosinophilic Disorders
- Motility and Neurogastroenterology
- Interdisciplinary Feeding Team
- Intestinal Rehabilitation
- Intestinal Transplant
- Pancreas Center

➢ For each, we are strengthening our model of integration of disease based research into clinical care.
Chronic Liver Disease
Pediatric Liver Care Center (PLCC):

Mouse model of biliary atresia
**Biliary atresia**

A model of translational research

- Child with biliary atresia
  - Comprehensive care
  - Clinical investigation
  - Basic research investigation

**Quality Dashboard**

<table>
<thead>
<tr>
<th>Measures</th>
<th>Project Lead</th>
<th>FY2009</th>
<th>FY2010</th>
<th>FY 2011</th>
<th>FY2012</th>
<th>FY2013</th>
<th>Current FY14Q1</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biliary Atresia % improved drainage @ 3mo N=51</td>
<td>Bezerra</td>
<td>n/a</td>
<td>57.3%</td>
<td>59.6%</td>
<td>58%</td>
<td>57%</td>
<td>58%</td>
<td>50.0%</td>
</tr>
<tr>
<td>Biliary Atresia 5 yr actuarial survival N=36</td>
<td>Bezerra</td>
<td>n/a</td>
<td>85.5%</td>
<td>89.3%</td>
<td>86%</td>
<td>86%</td>
<td>86%</td>
<td>85.0%</td>
</tr>
</tbody>
</table>

Previsit planning – led by program RNs (investment)
Population tracking
Focus for ChilLDREN
Chronic Liver Disease:

- Multi-center studies sponsored by the National Institutes of Health (ChiLDREN)
  - Prospective observational studies: PROBE, BASIC, LOGIC, MitoHEP, PUSH et al
  - Randomized trial of corticosteroids following portoenterostomy in biliary atresia (the START trial)
  - Upcoming clinical trials for children with biliary atresia (PRIME and CholADEK-vitamin) and inherited syndromes of intrahepatic cholestasis (IMAGINE, ITCH, INDIGO)

- Jaundice Chip: high-throughput gene chip to diagnose mutations in children with genetic liver dz
- LiverChip, a new high-throughput blood test that screens for mutations in 13 genes that cause genetic liver diseases

Kathy Campbell MD, Medical Director, John Bucuvalas, MD, ISOT Director

- Top ten centers (#) in the country for pediatric liver transplantation (>550 patients transplanted since 1986)
Pediatric Liver Transplant

- Ongoing involvement and leadership in all NIH-funded multi-center studies in pediatric liver disease and transplantation
  - Pediatric Acute Liver Failure Study Group (PALF),
  - Medication Adherence in Children who had a Liver Transplant (MALT),
  - Immunosuppression Withdrawal for Stable Pediatric Liver Transplant Recipients (iWITH),
  - Studies in Pediatric Liver Transplantation (SPLIT)
  - Clinical Trials in Organ Transplantation in Children (CTOT-C) project,
  - Impact of Everolimus on Renal Function in Pediatric Liver Transplantation.

John Bucuvalas  Jorge Bezerra  Jim Heubi  Alex Miethke  Kathy Campbell  Mike Leonis  Bill Balistreri  Rohit Kohli
Pediatric Liver Tumors

- Children with primary liver tumors throughout the US.
- Pediatric Transplant Surgery, Pediatric Hepatology and Pediatric Oncology.

Schubert-Martin Pediatric Inflammatory Bowel Disease Center (IBD)

- Important GI disease
- Strategic growth and investment
  - Clinical (faculty recruitment)
  - Translational Research, Basic Research, DHC
  - QI – local and national network alignment – (ImproveCareNow)
- Benefits
  - Improved outcomes
  - Enhanced education and philanthropy

PI in GI: R01, U01, R21, CCFA, DOD, KL2
PLUS: Margolis, Hommel, Hogan, Lipstein, Finkleman, Hoebe
IBD

- IBD care for ~550 children
- First pediatric IBD center to develop evidence-based guidelines for IBD care.
- Developed weekly pre-clinic planning process: all active patients are reviewed; changes in management to reflect our guidelines are identified.
- Able to take questions from the clinic to the lab: development of biomarkers to predict disease course

Chelly Dykes  Phil Minar  Michael Rosen  Ted Denson  Shehzad Saeed

Global AIM
The ImproveCareNow Collaborative will build a sustainable network to improve the outcomes of care for children with inflammatory bowel disease that will over the next decade dramatically reduce the morbidity of children with inflammatory bowel disease

Outcomes
Key Drivers
Intervention/Change Concepts

Accurate diagnosis and disease classification
Appropriate drug dosage
Appropriate drug selection
Adequate nutritional intake
Appropriate growth monitoring

Registry/Population Management Consistent, reliable data entry process, enumeration of entire population and population management

Protocols
Protocols for model care spread throughout the practice with reliability of at least 90%

Pre-visit Planning
Clear process and tools for pre-visit planning implemented across clinic with ongoing monitoring for consistency

Auditing Delivery of Appropriate Care
Regular use of audit tool with results shared across practice on a daily basis to inform practice changes

Self-Management Support
Self-management consistently offered with goals documented for all patients with reliable follow-up

Project AIM:
By June 30, 2010, ImproveCareNow teams will achieve the following targets:
- Patients in remission >70%
- Patients not taking prednisone >92%
- Patients with complete classification bundle >90%
- Patients on appropriate drug dosage >85%

ImproveCareNow
Improving lives through collaborative medicine

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Inflammatory Bowel Disease: Remission Rate Among Patient Population

Percent of Patients with IBD in Remission as Documented by Physician Global Assessment as Quiescent most recent assessment within 13 months used each month visits less than 112 days after diagnosis are not included

Remission Rate

- With Adherence
- Best Practice
- With New Discoveries & Clinical Trials

Remission Rate

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Time
IBD QI

• 82% percent in remission - up 20% in last 2 years.
• > 75% consistently rate their quality of life as optimal.
• > 90% consistently achieve optimal nutritional status and growth.
• 97% do not receive corticosteroids beyond 3 months from diagnosis.
• Annual surgical rate is 2.5%, (national average: 5% from pediatric IBD registries).

Lessons learned

• Need differentiated committed teams
• Give Ownership (Accountability, Responsibility)
• Provide necessary infrastructure and training
• Answer: What’s in it for me?
• Avoid extra work (not always possible but there are trade offs)
• Give positive feedback: mission related recognition
Where are We Headed? Improving the Health of the Community

Mona Mansour, MD, MS
Monica Mitchell, PhD

Cincinnati Children’s Population Health Initiative for Asthma
IHI Virtual Session

Mona Mansour, MD, MS
Orlando, Florida
December 9, 2013
Population Health Strategic Improvement Priority

- **Target Population**: Hamilton County: 190,000 children age birth -17yrs

- **Purpose**
  Lead, advocate, and collaborate to measurably improve the health of local children and reduce disparities in targeted populations

**High Level Measures**

By June 30 2015,

- Reduce the occurrence of **unintentional pediatric injuries** 30%
- Reduce **infant mortality** by 15%, 20 infant deaths per year
- Reduce the use of the ED and inpatient services by 20% in children with **asthma** covered by Medicaid
- Reverse the trend of increasing childhood **obesity** in grades K-3

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**The Story of Darryl**

![Image of Darryl](Image)

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**The Triple Aim**

- **Improve individual experience**
- **Improve population health**
- **Control inflation of per capita costs**

**The best care**

For the whole population

At the lowest cost

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James M. Anderson Center
For
Health Systems Excellence
**The Story of Darryl**

**Who Am I?**
- 9 year old with severe persistent asthma
  - My first admission was when I was age 7
  - I have had 4-8 ED visits/year, but no ICU admits yet
  - My dad and younger sister have asthma
  - My medications are Symbicort, Qvar, Singulair, Flonase, and Albuterol
    - I take them sometimes
  - My triggers are activity, changes in weather, tobacco smoke, animals, and dust
  - I am getting admitted today

**What’s going on with me?**
- I live with my mom and siblings; I just relocated AGAIN due to apartment fire and my mom’s boyfriend did not move with us due to domestic violence
- I spend weekends with my dad and his girlfriend, but my aunt and grandma also care for me
- I have difficulty getting some of my medications due to insurance denial
- My new apartment is very old, dusty and might have mildew in the basement
- My sister has bipolar disorder and my mom has to spend a lot of time caring for her
- I am 9 and I forget to take my medications or can’t take them sometimes if I’ve left them at another caretaker’s home
Partners

- Multiple divisions and partners within the institution
  - Inpatient, Outpatient, ED, Pharmacy, Home Health, Sub-specialty (Pulmonary/Allergy), Asthma Center

- Multi-disciplinary involvement
  - Providers (MD/NP), RN, MA, RT, pharmacist, residents, social work, health-unit coordinators, care coordinators, data analysts, senior leadership, patients, and caregivers

- Community Partners
  - Health Department, schools, Medicaid Managed Care, Legal Aid, pharmacies, community practices

Intervention Phases and Outcomes

- **Phase 1, Hospital Focus:** ~July 2008-December 2009 (pre-EPIC)
  - Measure: Readmissions and/or ED revisits within 30-days of discharge
  - Key intervention: Medications in-hand at discharge

- **Phase 2, Home Focus:** ~January 2010-June 2011 (EPIC “infancy”)
  - Measure: Readmissions and/or ED revisits within 90-days of discharge
  - Key interventions:
    - Systematic risk assessment with standardized tools
    - Home health pathway
    - CLEAR
    - Care coordination

- **Phase 3, Community Focus:** ~July 2011-present (EPIC “teen” years)
  - Measure: 90 day and overall utilization measures. **targeting “hot spots”**
  - Key interventions: geographic data, community partnerships
Children from RED neighborhood:
- 5x more likely to lack reliable transportation
- 5x more likely to live in poverty
- 7x more likely to have a depressed parent
- 8x more likely to be exposed to cockroaches
- 2.5x more likely to have cracks/holes in wall

Mapping Asthma Hot Spots: CCHMC Admissions by Neighborhood and Poverty Rate
Cincinnati Asthma Admissions and Neighborhood Asthma Hotspots

Community Partnerships: Working in the Schools

• Partnering with Cincinnati Public Schools, Cincinnati Health Department, and Growing Well Cincinnati
• Asthma Control Test screening of all children
• Identify those in potential poor control and connect back to established medical home or new medical home
• Data collected in PowerSchool (CPS electronic database)
• Piloted with 2 schools in the Cincinnati Public District last school year
• Now spreading to additional schools in District
  • All schools do screening
  • 8 schools implement interventions to reliably connect back to medical home
Breathing Room

Smart Aim: Increase the percent of children with poorly controlled asthma (ACT<20) with visit to medical home within 1 month from 10% to 90% by June 2013

Process Name: Breathing Room – CPS Health Team

<table>
<thead>
<tr>
<th>Student identified with Asthma</th>
<th>ACT obtained</th>
<th>ACT score &lt;20</th>
<th>Enter in PS Monitor for exacerbations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify Medical Home</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Care Coordination</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection to Medical Home</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Failure Modes:
- No health history
- Parents mis-understand diagnosis
- Old or incorrect diagnosis
- Students absent or difficult to locate
- Questionable skill level of screeners
- Fitness levels
- Illness
- Unable to reach parent
- Discrepancies between child & parent ACT
- Staffing
- Transience of students
- No show policies
- No transportation
- Difficulty getting apps
- Insurance issues
- Limited provider availability
- Staffing
- HIPAA
- Parent doesn’t consider priority
- Lack of monitoring process
- Info not in PowerSchool
- No ongoing care
- No emergency meds/EAPs
- Sustainability issues

Interventions:
- Student asthma education
- Parent asthma education
- Asthma data validation
- ACT screening training for screening students
- Mass ACT screenings using CCHMC protocol
- ACT score education
- ACT score validation & respiratory assessment
- Research re: current Asthma Action Plans
- Parent inquiry re relevant medical visits (using # from PS)
- Ramp: student interviews for #
- Contact identified providers to establish expedited appointment process
- Ramp: contact all named providers
- Comprehensive process to assure appointment scheduled & completed at established medical home

Contact identified providers to establish expedited appointment process
- Ramp: contact all named providers
- Comprehensive process to assure appointment scheduled & completed at established medical home
Breathing Room:
% of students with poorly controlled asthma who completed medical home visit (March 6--June 5, 2013)

PDSA #1: verification of medical home with parent/AAP
PDSA #2: develop expedited appointment process
PDSA #3: schedule appts utilizing expedited process
PDSA #4: modify expedited process
PDSA #5: visit medical home site
PDSA #6: persistant phone contact w/family & provider

Rapid Cycle Improvement Collaborative (RCIC)

Failure Rate for General Pediatrics Asthma Patients in Care Coordination (Failures/1000 Days Enrolled)

- Desired direction

April 2011 - hired 2nd CC
Nov 2011 - MD direction
Nov 2011 - modified POC
Jan 2012 - implemented enrollment algorithm (n=31 pts, graduated 8 in 32 pts "Rejected", data correction for utilization prior to enrollment)
Feb 2012 - special cause 3/3 failures, hired 3rd CC
Mar 2013 - hired CC, support
Aug 2013 - CC vacancy at FPC
Oct 2013 - revised methodology
Where We are Headed: Improving the Health of the Community

Engaging the Community

Monica J. Mitchell, PhD
Professor, Division of Behavioral Medicine
Senior Director, Community Relations
Cincinnati Children's Hospital Medical Center
Community Engagement

IOM  “Community engagement is critical in all phases of clinical and translational research from basic research to clinical practice and community and public health research.”


NIH  “The NIH has recognized that community engagement plays a critical role in fostering collaborative research partnerships and enhancing public trust in clinical and translational research.”


CDC  The community plays an important role in improving adult and childhood obesity, heart disease, high blood pressure, and diabetes, air pollution, traffic injuries, safety and crime ” and making “the community stronger and more enjoyable for everyone.”

http://www.cdc.gov/Features/HealthyCommunities/

Community Engagement

CCHMC  Vision: To be the leader in improving child health

The medical center’s 2015 strategic plan calls for the hospital to lead, advocate and collaborate to measurably improve the health of local children and reduce health disparities in targeted populations. We realize this work can be accomplished only through new approaches and collaborations with community partners. Together we will map targeted health issues across the neighborhoods we serve to better understand the causes and draw on the most effective and innovative ideas within the community to improve health.”

http://www.cincinnatichildrens.org/service/j/anderson-center/community-population-health/default/
Design of a Triple Aim Enterprise

CCHMC Community Engagement Strategy

- Community Relations
- Community Outreach
- Employee Engagement
- Collaborative Research and Data Sharing
CCHMC Community Engagement Strategy

Community Relations

- CCHMC Community Advisory Council
- Collaborations with Community Organizations
  - Obesity Clinic partnership between Heart Institute, Cincinnati Public Schools, other partners

CCHMC Community Engagement Strategy

Rockdale Academy

- Communication Link between School Health Clinic and PPC
- Integrating Obesity and Injury Health Education
- Student Health Speaker Series
- Monthly Parent Health Speaker Series
- Teacher Appreciation/Health Series
- Adopt a Class Program
CCHMC Community Engagement Strategy

Community Outreach

- Strategic Health Priorities:
  - Asthma
  - Infant Mortality
  - Injury
  - Obesity

- Community Awareness, Education and Outreach

CCHMC Community Engagement Strategy

Employee Engagement

- Connecting employees to:
  - Volunteerism
  - Community health opportunities
  - Community benefit and philanthropy opportunities

- 300+ Volunteers engaged in Q1 of FY14
Population Health Safety Day

Volunteer Opportunity: Norwood Safety Day

- Partnership between Cincinnati Children’s Hospital and Norwood Community.
- Volunteers helped to install safety equipment in homes: smoke detectors, cabinet locks, outlet covers, etc. and educating families about injury prevention.
- Volunteers are trained and can choose to work one of three shifts.
- To date, safety equipment has been installed in over 300 homes in Norwood.

CCHMC Community Engagement Strategy

Collaborative Research and Data Sharing

- Developing processes and tools for data sharing and dissemination
- Building capacity for use of data within the community
- Data as the basis for collaborative research and practice
Health Profile for Avondale Community

- Measures
  - Asthma
  - Unintentional injury
  - Pre-term births

Health Needs Assessment and Dissemination

Asthma

2011 Greater Cincinnati/Northern Kentucky Child Well-Being Survey

Obesity

2011 Greater Cincinnati/Northern Kentucky Child Well-Being Survey
Measuring Progress and Outcomes

<table>
<thead>
<tr>
<th>Gemeinschaft:</th>
<th>Projekt</th>
<th>Ziel</th>
<th>Ziel</th>
<th>Performance</th>
<th>Erfolg</th>
<th>Beobachtung</th>
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<td>Erfolg</td>
<td>Beobachtung</td>
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</table>

<table>
<thead>
<tr>
<th>Community Engagement/Outreach</th>
</tr>
</thead>
</table>

Outcomes

- **Numbers reached through community engagement**: 6,525, 8,000
- **Children and families reached: Community Health Priorities**: 4,341, 5,000
- **Departments leveraged/integrated**: 8, 20
- **Health and Data Measures Shared**: 1, 3
**CLEAR: Collaboration to Lessen Environmental Asthma Risks**

- Partnership with local families, Cincinnati Health Department and Legal Aid Society
- Identify and address housing problems that contribute to asthma triggers
- 50 buildings inspected
- 30 buildings repaired
Changing Outcomes at Scale Through Integration of Research and Improvement
Cincinnati Children’s Networks

Peter Margolis, MD, PhD

Networks for Improvement, Innovation and Research
Networks have been important in pediatrics

CHILDREN’S ONCOLOGY GROUP

The world's childhood cancer experts

Vermont Oxford NETWORK

CYSTIC FIBROSIS FOUNDATION
ADDING TOMORROWS
Learning Healthcare System

- Patients and providers work together to choose care based on best evidence
- Drive discovery as natural outgrowth of patient care
- Ensure innovation, quality, safety and value
- All in real-time
What if....?

...we could create a vastly better chronic care system by harnessing inherent motivation and collective intelligence of patients and clinicians?

“Once you open the possibility that people are not only using the web as a platform to produce their own individual content, but also to pool their efforts, knowledge, and resources ... the possibilities for what they can create are astounding.”*

Network-Based Production

Linux

Wikipedia
The Free Encyclopedia

Large Hadron Collider

IMPROVE CARE NOW
Figure 1

Percent of Patients in Remission

Remission rate: 60% to 77%

59 Care Sites
490 physicians
>17,000 patients

Crandall, Margolis, Colletti et al
Pediatrics 2012;129:1030

Activities in creating network-based production for health*

1. Focus on outcome
2. Build community
3. Effective use of technology
4. Learning system
   • System science, QI, qualitative research, clinical research

*Collective creativity (Swarm Creativity; Peter Gloor)
Lead User innovation (Democratizing Innovation; Eric von Hippel)
New economic models (The Wealth of Networks; Yochai Benkler)
Effective use of technology to reduce costs of data collection

John Hutton, MD; Keith Marsolo, PhD; Charles Bailey, MD; Christopher Forrest, MD, PhD; Marshall Joffe, MD, PhD; Wallace Crandall, MD; Mike Kappleman, MD, MPH; Eileen King, PhD

Data-in-once (at clinical visit)
### IBD Pre Visit Assessment

**Patient Name:** 16 - Patient Name/BHN Basic Report  
**Primary Provider:** 260  
**Secondary Provider:**

**Diagnosis:** Crohn’s Disease - 09/14/2012  
**Last Visit:** 10/24/2012

<table>
<thead>
<tr>
<th>Extent</th>
<th>Height (cm)</th>
<th>PPD Date</th>
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<tbody>
<tr>
<td></td>
<td>158.90</td>
<td></td>
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**Lower:** Colon only  
**BSA:** 1.293  
**Upper proximal:** Not Assessed  
**Upper distal:** No  
**Date of last hospitalization:** 10/24/2012  
**CRP Date:** Don’t Know

#### Visits

<table>
<thead>
<tr>
<th>Date</th>
<th>POA</th>
<th>SGA</th>
<th>Nutritional Status</th>
<th>Growth Status</th>
<th>Albu*</th>
<th>CRP*</th>
<th>HbA1C*</th>
<th>HAmatocrit*</th>
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<td>08/16/2009</td>
<td></td>
<td></td>
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<td>45.7</td>
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<td>45.8</td>
<td>45.7</td>
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<tr>
<td>05/24/2011</td>
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<td>In failure</td>
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<td>0.51</td>
<td>45.8</td>
<td>45.7</td>
</tr>
<tr>
<td>06/25/2012</td>
<td></td>
<td></td>
<td>In failure</td>
<td>In failure</td>
<td>4.7</td>
<td>0.65</td>
<td>45.8</td>
<td>45.7</td>
</tr>
<tr>
<td>10/24/2012</td>
<td></td>
<td></td>
<td>In failure</td>
<td>Missing</td>
<td>4.9</td>
<td>0.60</td>
<td>45.8</td>
<td>45.7</td>
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</tbody>
</table>

*Result may differ from visit data

#### Care Stratification

<table>
<thead>
<tr>
<th>CS Score</th>
<th>SS Group</th>
<th>Current Disease Activity</th>
<th>12 Month Disease Activity</th>
<th>BMI Z-score</th>
<th>Ht Velocity</th>
<th>CRP taken in 3 months</th>
<th>Currancy on Cortico</th>
<th>Corticosteroid last 12 months</th>
<th>PRF Risk Factor</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>1.4 (Low)</td>
<td>0 (Quiescent)</td>
<td>3 (Quiescent)</td>
<td>3 (Majority)</td>
<td>3 (Majority)</td>
<td>0 (No or Unknown)</td>
<td>0 (No or Unknown)</td>
<td>0 (No or Unknown)</td>
<td>0 (No or Unknown)</td>
</tr>
</tbody>
</table>

#### IBD - Population Management Report

**Page 1 of 7**

**Nationwide Children’s Hospital**  
**Date:** 10/25/2013  
**H2:** Crohn’s Disease,Intermediate Coltis,Obstructive Coltis

#### Care Stratification Score

- **12 Month Disease Activity - CSS**
  - 9.3 (Critical): 490
  - 4.0 (High): 96
  - 1.5 (Moderate): 5
  - 0.3 (Low): 5
  - Total: 697

- **Care Stratification Score - n (%)**
  - 9.3 (Critical): 490
  - 4.0 (High): 96
  - 1.5 (Moderate): 5
  - 0.3 (Low): 5
  - Total: 697
Building community

- Compelling purpose
- Core leadership – patients, clinicians, researchers
- Sharing stories
- Many ways to contribute

Jill Plevinsky, Chair, PAC
Awareness → Participation → Contribution → Ownership

100%
90%
9%
1%

Awareness
Knows of ImproveCareNow
Understands they have a role to play

Participation
Signs Consent
Reads Loop
Joins ICNExchange

Contribution
Joins QI Team
Becomes a mentor
Joins PWG, PAC
Posts to Loop

Ownership
Leads Teams
Organizes Events
Trains mentors
Runs QI projects
Creates tools
### Re-design Care - Care Center Level Studies

<table>
<thead>
<tr>
<th>Treatment Combination</th>
<th>Pre-visit Planning</th>
<th>Population Management</th>
<th>Self-Management Support</th>
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</thead>
<tbody>
<tr>
<td>Site 1</td>
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</tr>
<tr>
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<tr>
<td>Site 8</td>
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</tbody>
</table>

#### Graph
- % in Remission
- Run Order Plot

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**James M. Anderson Center**

**For Health Systems Excellence**

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**Anti-TNF antibodies - 1993**

5 years later FDA approval for Crohn’s disease - 1998

14 years later – 1st pediatric controlled clinical trial → REACH - 2007

**But….treatment effects estimated without a comparison group**
Web-based “MyIBD” Platform
Pediatric Learning Health System

• Engages all stakeholders (patients, clinicians, researchers)
• Measurable impact health
• Reduces time from knowledge generation to patient impact from years to months
• A lab to prototype and test innovations and respond to priorities for research and outcomes data
• Generate new evidence - faster, cheaper, and with higher quality than conventional scientific models
Leadership and Governance for Transformation

Tom Cody, Chairman of the Board
Michael Fisher, President and CEO
James Anderson, Advisor to the CEO and former CEO
Panel Discussion

Resilience: Staying the Course

The Tressel Video