RHCs in Accountable Care Organizations (ACOs)

Judith Ortiz, Ph.D., Thomas Wan, Ph.D.
Richard Hofler, Ph.D., Angeline Bushy, Ph.D., R.N.
Yi-ling Lin, Ph.D., Celeste Boor, B.S., Jackie Ong

Rural Health Research Group
College of Health & Public Affairs
University of Central Florida (UCF)
Orlando, Florida
Rural Health Research Group: Research Activities

“RHCs in ACOs: Impact on Disparities” Project
We conduct many research activities such as:

- Interviews
- Surveys
- Statistical analyses of federal data sets
“RHCs in ACOs: Impact on Disparities” Study: An Overview
“RHCs in ACOs: Impact on Disparities” study

- Ongoing study funded through the National Institutes of Health (NIH)

- Setting: HHS Region 4 (8 States)
“RHCs in ACOs: Impact on Disparities” Project
“RHCs in ACOs” study goals

3 Major Goals

1. Analyze & describe the extent of RHC participation in ACOs, & the characteristics of RHCs that choose to participate in ACOs.

2. Analyze ACO participation & other factors that impact health disparities of rural populations served by RHCs.

3. Analyze ACO participation & other factors that impact cost efficiency and preventive care effectiveness for RHC older adult patients.

Also, 4 Minor Goals
Accountable Care Organizations (ACOs): Description
ACOs: Description (cont’d)

- A new model for health care delivery; a new payment model

- **Description of Medicare ACOs**: Groups of doctors, hospitals, and other health care providers who come together voluntarily to give coordinated high quality care to the Medicare patients they serve (CMS, ‘12)

- **Overall Goals of ACOs**: 1) provide high quality care to a defined population, & 2) achieve cost savings
ACOs: Description (cont’d)
ACOs: Types

ACOs: Types

- Public Sector Payer (CMS)
  - Pioneer ACO Model
  - Medicare Shared Savings Program
  - Others

- Private Sector Payer
  - Example 1: Anthem Blue Cross (CA)
  - Example 2: Medica (MN)

“RHCs in ACOs: Impact on Disparities" Project
ACOs: Growth in U.S.

As of January 2016, there are an estimated 838 ACOs (all types – public & private) in U.S.

Medicare Shared Savings Program (MSSP) ACOs:

- Apr., 2012: 27 MSSP ACOs announced by CMS
- As of Jan., 2016: 433 total (about 16 times the number there were in 2012)
Our Study

Point of Clarification:

Our study concerns the 8 Southeastern States of HHS Region 4 and RHCs’ participation in Medicare Shared Savings Program ACOs in those states.
Our Dataset

We report on our findings from analysis of a dataset we created that contains data for:

- 705 clinics throughout the Southeast (Region 4)
- 250,000 patients
- 7 years (2007 – 2013)
- 179 variables for each year (RHC patient & RHC operations-related)
For Our Presentation:
4 Major Research Questions

**Question 1:** How many RHCs participate in MSSP ACOs, & what are their characteristics?

**Question 2:** What impact does ACO participation have on RHC patient outcomes?

**Question 3:** What impact does ACO participation have on health disparities of rural populations served by RHCs?

**Question 4:** What impact does ACO participation have on RHC operational costs?
Question 1:
How many RHCs participate in MSSP ACOs (Region 4), & what are their characteristics?
RHCs’ Participation in ACOs

RHCs in MSSP ACOs nationwide:
There are an estimated less than 10% of RHCs in MSSP ACOs.

RHCs in MSSP ACOs in Region 4:
As of Jan. of 2015 there were an estimated 35 Region 4 RHCs participating in MSSP ACOs.
RHCs’ Participation in ACOs

Point of Clarification:
Our analyses were for experiences of RHCs after 1 to 2 years’ participation in MSSP ACOs (i.e., for the 2012 & 2013 cohorts).

RHCs in MSSP ACOs in our study panel of 705 Region 4 RHCs:

2012: There were 6 RHCs in ACOs.
2013: There were an additional 14 RHCs in ACOs.
RHCs’ Participation in ACOs: State of Location

All Region 4 RHCs, 2013

- SC 12%
- TN 6%
- AL 8%
- FL 16%
- GA 10%
- MS 19%
- KY 18%
- NC 11%

Region 4 RHCs in MSSP ACOs, as of 2013

- FL 70%
- TN 15%
- MS 10%
- GA 5%

RHCs were dispersed throughout the Region 4 states. However, most RHCs that joined MSSP ACOs were in Florida.

“RHCs in ACOs: Impact on Disparities” Project
ACOs & Medicare Enrollment: State Distribution

MSSP ACOs, 2013
- FL: 40%
- GA: 17%
- NC: 10%
- SC: 6%
- KY: 10%
- MS: 4%
- AL: 3%
- TN: 10%

Medicare Enrollment: All Beneficiaries (July 2012)
- FL: 33%
- GA: 15%
- NC: 15%
- MS: 5%
- KY: 7%
- AL: 8%
- TN: 11%
- SC: 8%

“RHCs in ACOs: Impact on Disparities” Project
RHCs’ Participation in ACOs: Organizational Characteristics

Independent vs. Provider-based Participation, 2013

A slightly higher % of “ACO RHCs” were Independent as compared to “non-ACO RHCs.”

“RHCs in ACOs: Impact on Disparities" Project
RHCs’ Participation in ACOs: Summary

For Region 4 RHCs in MSSP ACOs (2013):

- Largest % were located in FL & TN
- Slightly higher % were Independent
- Larger portion were for profit
- Appear to be larger clinics
- Most were between 5 - 10 years old
- Appear to serve a higher % of White & a lower % of African-American beneficiaries than non-ACO RHCs.
Question 2:

What impact does ACO participation have on RHC patient outcomes?
Impact of ACO Participation on Patient Outcomes:

Background

Points of clarification

• We used data on services received by RHC older adult patients. Services may have been provided by medical facilities other than RHCs.

• We present here just some of many findings to date
Impact on Patient Outcomes: 
Background

Terms and Definitions

Patient Outcomes (or preventive care effectiveness): Condition of a patient at end of disease process, as measured by:

- Admissions rate: Admissions rate for # patients discharged
- Readmissions rate: Risk-adjusted rate for # patients readmitted within 30 days per 100 patients hospitalized
- Ambulatory care sensitive conditions (ACSCs): Avoidable hospitalizations of 100 outpatients with a specific ACSC related to: COPD/Asthma, Diabetes, Heart Failure
Factors related to Patient Outcomes

For all 705 RHCs in our study, we statistically analyzed various factors related to Patient Outcomes.

Some of the many factors (“variables”) we used:

- Fixed variables (Year, Rurality, etc.)
- Demographic variables for county where RHC is located (Poverty rate; % Older adults; Racial/Ethnic composition)
- Organizational variables (Size, ACO Affiliation, etc.)
- Patient-related variables (Age, Gender, Diagnosis mix, etc.)
An example statistical model

Chi-Square = 116.192
Degree of Freedom = 42
P < .001
Model Fit Summary
CFI: .593 RMSEA: .125
Impact on Patient Outcomes: Findings for ACSC Rates

Summary

RHCs participating in ACOs were located in areas with higher percentages of older adults & less rurality.

For African-American Medicare beneficiaries:

• ACO participation was associated with a higher ACSC COPD rate

For White Medicare beneficiaries:

• Higher preventive care utilization was associated with higher risk-adjusted ACSC rates
• There was no ACO participation effect on ACSC rates.
Question 3:

What impact does ACO participation have on health disparities of rural populations served by RHCs?
Impact on Health Disparities: Background

Terms and Definitions

Health Disparities: difference in health between a specific population & the general population, as measured by: Preventive Care and Risk-adjusted Hospitalizations for African-Americans & Whites

Predisposing factors: include demographic variables, socioeconomic status, attitudes, and beliefs

Enabling factors: include items such as the individual’s income, health insurance status, and access to a source of regular care

“RHCs in ACOs: Impact on Disparities” Project
Purpose

1. To examine the effects of ACO participation, predisposing factors, and enabling factors on preventive care

2. To investigate how ACO participation, predisposing factors, enabling factors, and the use of preventive care combined may account for racial differences in preventive care and patient outcomes
Impact on Health Disparities: Analyses

Design
• Cross-sectional design

Intervention Group
• RHC joined a MSSP ACO in 2012 or 2013.

Measurement Variables
1. Preventive Care: Influenza vaccine, Pneumococcal vaccine, Colorectal cancer screening
2. Patient Outcomes: Risk-adjusted hospitalizations for COPD or Asthma, Diabetes, Heart failure, & Pneumonia
Impact on Health Disparities: Findings for Preventive Care

Seasonal influenza vaccine immunization rate
- Was NOT influenced by ACO participation, predisposing & enabling factors for African-Americans & Whites

Pneumococcal vaccine immunization rate
- Was positively influenced by the RHC’s ACO participation for African-American beneficiaries
- Varied depending on the RHC’s state
- Was higher in urban as compared to rural areas for White beneficiaries.

Colorectal cancer screening
- Varied depending on the RHC’s state
- Was positively influenced by size of RHC for White beneficiaries
Impact on Health Disparities: Findings for Patient Outcomes

Hospitalizations for COPD/asthma
- Were increased by RHC’s ACO participation & were different in RHC’s state of location for African-Americans
- Were increased when the percentages of dual-eligibility & receipt of pneumococcal vaccine increased

Hospitalizations for Diabetes
- Geographic differences between African-Americans & Whites
- Associated with the following for Whites:
  - dual-eligibility (increased hospitalizations),
  - receipt of pneumococcal vaccine (increased hospitalizations), &
  - RHC’s rurality (decreased hospitalizations)
Impact on Health Disparities: Findings for Patient Outcomes

Hospitalizations for Heart Failure

- Geographic difference in African-Americans

Hospitalizations for Bacterial pneumonia

- Were increased influenced by receipt of influenza vaccine for African-Americans
- Were influenced by the following for Whites:
  - geographic difference,
  - receipt of influenza vaccine (increased hospitalizations), &
  - receipt of pneumococcal vaccine (increased hospitalizations)
Question 4:

What impact does ACO participation have on RHC operational costs?
**Impact on Costs:**

**Context/Background**

On average, **cost/visit rose in 2012 for all RHCs** (for RHCs in ACOs and other RHCs)

<table>
<thead>
<tr>
<th>Year</th>
<th>In ACO in 2012</th>
<th>Not in ACO</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>$119</td>
<td>$118</td>
</tr>
<tr>
<td>2008</td>
<td>116</td>
<td>107</td>
</tr>
<tr>
<td>2009</td>
<td>116</td>
<td>116</td>
</tr>
<tr>
<td>2010</td>
<td>116</td>
<td>113</td>
</tr>
<tr>
<td>2011</td>
<td>111</td>
<td>114</td>
</tr>
<tr>
<td>2012</td>
<td>126</td>
<td>122</td>
</tr>
</tbody>
</table>

**Note:** these results are for **ONLY THE 6 RHCs in Region 4 that joined an ACO in 2012**
Impact on Costs: Context/Background

*So far . . .*

- 6 RHCs in Region 4 joined ACOs in 2012
- 14 RHCs in Region 4 joined ACOs in 2013
- Our data is for 2007 – 2013
- For 6 RHCs that joined ACOs in 2012
  - on average, higher cost per visit
  - cost per visit steady 2007 – 2011
  - but ROSE in 2012
    - $15/visit higher vs. $8/visit for others
Impact on Costs

Background & Definitions

• **How do we measure cost?**
  
  • **Dependent variable (variable to analyze)**
    
    • *cost per visit (risk adjusted)*
    
    • *(total cost of health services + total non-reimbursable costs + total facility overhead) / total visits*
  
  • **Independent variables (variables related to cost per visit)**
    
    • **Size**
    
    • **Provider-based or not**
    
    • **Ownership (for-profit corporate, non-profit, etc.)**
    
    • **Age (years certified)**
    
    • **Rurality**
Impact on Costs

• Analysis in two parts
  • Part 1. Cost per visit
  • Part 2. Cost efficiency
  • Treatment effects methods
    • Use SOME RHCs in sample (ALL ACO RHCs and SOME non-ACO RHCs)
    • Average treatment effects approach where “treatment” is joining an ACO.
    • “Treated” RHCs (in ACO) were matched with “Untreated” RHCs (not in ACO)
Impact on Costs

Background & Definitions (cont.)

- **Average Treatment Effect on the Treated (ATET)**
  - Average difference between outcomes with treatment & outcomes without treatment for ONLY treated RHCs (ACO)
  - Average difference between cost per visit for RHCs in ACOs & cost per visit for **SAME RHCs AS IF NOT in ACOs**
    - We can estimate outcomes for ACO RHCs as if they hadn’t joined an ACO
    - Two costs per visit for each ACO RHC
      - Cost/visit after joining ACO - **ACTUAL**
      - Cost/visit as if hadn’t joined ACO - **ESTIMATED**
### Impact on Costs

**Cost Results – Part 1**

Average effect of joining an ACO on mean cost/visit per year.

Table 1, Part 1. Difference in cost/visit. Estimated ATET by number of matches and pooled across the different numbers of matches.

Year is 2012. The 6 RHCs that joined an ACO in 2012. \( n=544 \)

Test of pooled ATET = 0: \( z = 6.68 \), \( p = 0.000 \)

<table>
<thead>
<tr>
<th>Study</th>
<th>ATET</th>
<th>[95% Conf. Interval]</th>
<th>% Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matches=1</td>
<td>$26.74</td>
<td>8.022</td>
<td>45.458</td>
</tr>
<tr>
<td>Matches=2</td>
<td>$29.41</td>
<td>11.653</td>
<td>47.167</td>
</tr>
<tr>
<td>Matches=3</td>
<td>$26.61</td>
<td>8.931</td>
<td>44.289</td>
</tr>
<tr>
<td>Matches=4</td>
<td>$23.04</td>
<td>8.066</td>
<td>38.014</td>
</tr>
<tr>
<td>Matches=5</td>
<td>$22.43</td>
<td>7.691</td>
<td>37.169</td>
</tr>
<tr>
<td>Pooled Impact of ACO</td>
<td><strong>$25.19</strong></td>
<td>17.799</td>
<td>32.588</td>
</tr>
<tr>
<td>Percentage of mean</td>
<td>20.74%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

"RHCs in ACOs: Impact on Disparities" Project
Impact on Costs
Cost Results – Part 2

Average effect of joining an ACO on mean cost/visit per year.

Table 1, Part 2. Difference in cost/visit. Estimated ATET by number of matches and pooled across the different numbers of matches.

Year is 2013. The 6 RHCs that joined an ACO in 2012. n=435
Test of pooled ATET = 0: z = 3.17, p = 0.002

<table>
<thead>
<tr>
<th>Study</th>
<th>ATET</th>
<th>[95% Conf. Interval]</th>
<th>% Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matches=1</td>
<td>$14.11</td>
<td>-10.488 38.708</td>
<td>18.81</td>
</tr>
<tr>
<td>Matches=2</td>
<td>$19.79</td>
<td>-5.592 45.172</td>
<td>17.67</td>
</tr>
<tr>
<td>Matches=3</td>
<td>$18.45</td>
<td>-5.030 41.930</td>
<td>20.65</td>
</tr>
<tr>
<td>Matches=4</td>
<td>$16.98</td>
<td>-6.285 40.245</td>
<td>21.03</td>
</tr>
<tr>
<td>Matches=5</td>
<td>$17.17</td>
<td>-5.664 40.004</td>
<td>21.83</td>
</tr>
<tr>
<td>Pooled Impact of ACO</td>
<td><strong>$17.28</strong></td>
<td>6.612 27.951</td>
<td>100.00</td>
</tr>
<tr>
<td>Percentage of mean</td>
<td><strong>14.02%</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Impact on Costs
Cost Results – Part 3

Average effect of joining an ACO on mean cost/visit per year.

Table 1, Part 3. Difference in cost/visit. Estimated ATET by number of matches and pooled across the different numbers of matches.

Year is 2013. The 14 RHCs that joined an ACO in 2013. n=434
Test of pooled ATET = 0: z = 3.73, p = 0.000

<table>
<thead>
<tr>
<th>Study</th>
<th>ATET</th>
<th>[95% Conf. Interval]</th>
<th>% Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matches=1</td>
<td>$27.59</td>
<td>0.621</td>
<td>54.559</td>
</tr>
<tr>
<td>Matches=2</td>
<td>$23.84</td>
<td>-2.267</td>
<td>49.947</td>
</tr>
<tr>
<td>Matches=3</td>
<td>$20.18</td>
<td>-5.535</td>
<td>45.895</td>
</tr>
<tr>
<td>Matches=4</td>
<td>$17.74</td>
<td>-5.976</td>
<td>41.456</td>
</tr>
<tr>
<td>Matches=5</td>
<td>$19.85</td>
<td>-4.552</td>
<td>44.252</td>
</tr>
<tr>
<td>Pooled Impact of ACO</td>
<td>$21.55</td>
<td>10.231</td>
<td>32.859</td>
</tr>
<tr>
<td>Percentage of mean</td>
<td></td>
<td>17.48%</td>
<td></td>
</tr>
</tbody>
</table>
Impact on Cost: Analysis Results Review

- Results for difference in cost/visit
  - Average “treatment” effect on mean cost/visit for RHCs that joined ACOs—only “treated” RHCs
  - Results all show increased cost/visit from joining an ACO
    - Compare ACO RHCs with non-ACO RHCs in same year
    - 2012, RHCs joined in 2012: 20.7% higher (p=0.000)
    - 2013, RHCs joined in 2012: 14.0% higher (p=0.002)
    - 2013, RHCs joined in 2013: 17.4% higher (p=0.000)
Impact on Costs: Analysis Results Review

- **Results for Cost**
  - **Small sample**: 6 RHCs that joined ACO in 2012 plus 14 RHCs that joined ACO in 2013
  - **Short time period**: Only two years of data
  - **More analysis needed**
Analyses to be continued. . .
What Does All of This Mean?

- Early, only 20 RHCs by 2013 (8 Southeastern states)
- In ACO
  - Larger clinics
  - Most in FL & TN
  - 5 – 10 years old
- ACO impacts on patient outcomes
  - Associated with higher ACSC COPD rate (African-Americans)
  - No effect on ACSC rates (Whites)
- ACO impacts on preventive care
  - Associated with higher pneumococcal immunization rate (African-Americans)
  - No effect on preventive care (Whites)
- ACO impacts on cost
  - Cost/visit: between 14% - almost 21% higher
  - Cost efficiency: mostly no impact
What Does All of This Mean?

Are you surprised?

Should we expect patient outcomes to improve right away?

Should we expect cost to be higher in the first few years?
Papers:  RHCs in ACOs


Other Related Papers


Rural Health Research Group at UCF

Interdisciplinary Team:

- College of Health & Public Affairs
- College of Business
- College of Nursing
- College of Medicine
- Graduate Research Associates, Graduate & Undergraduate Research Assistants (Ph.D., Master’s, Undergraduate-level students)
Thank You for your Attention.

Judith.Ortiz@ucf.edu
(407) 823-6145

“RHCs in ACOs: Impact on Disparities" Project 53