



UNIVERSITY OF CENTRAL FLORIDA

RHCs in Accountable Care Organizations (ACOs)

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Rural Health Research Group: Research Activities



Rural Health Research Group at UCF: Research Activities

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

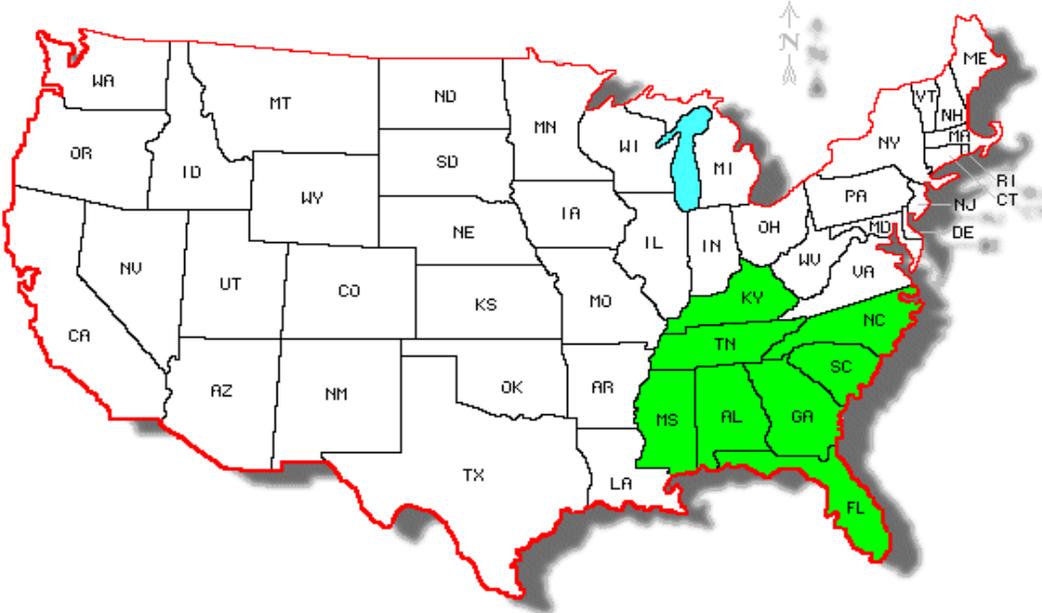
- **Ongoing study funded through the National Institutes of Health (NIH)**
- **Setting: HHS Region 4 (8 States)**



HHS Region 4

CMS Region 4

● - CMS Region 4



“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

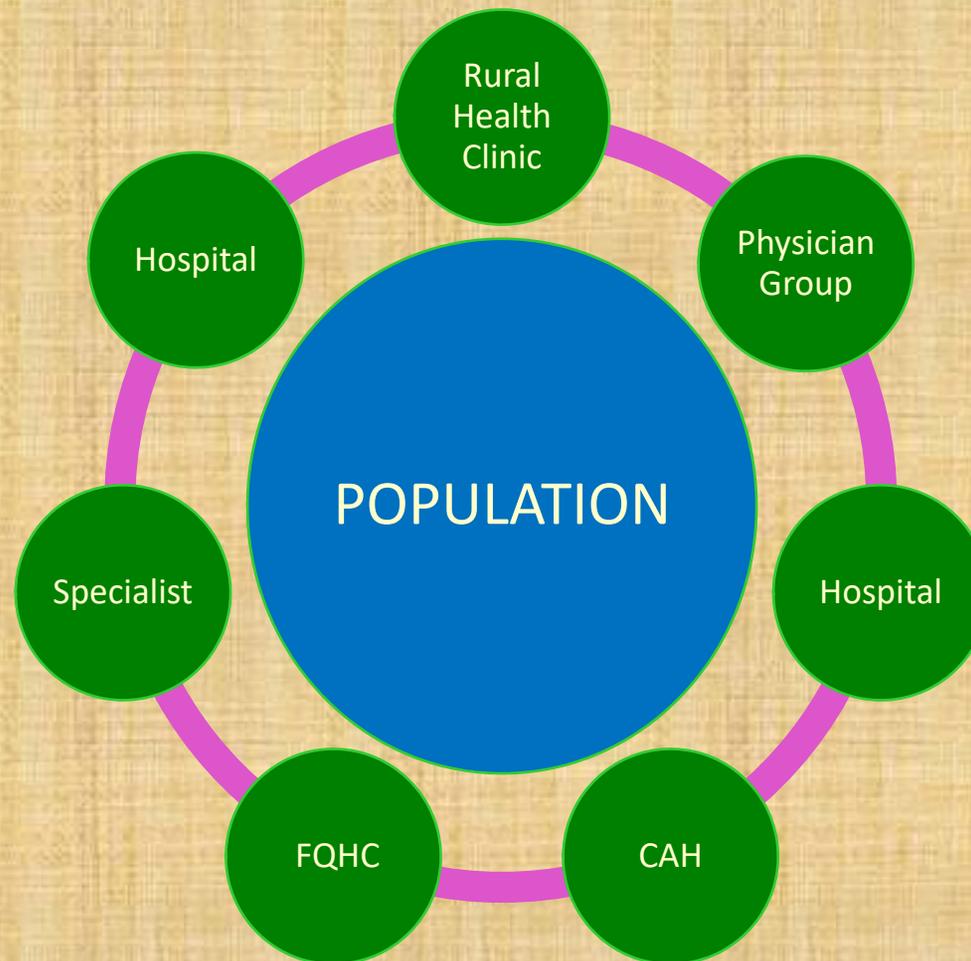


ACOs: Description (cont'd)

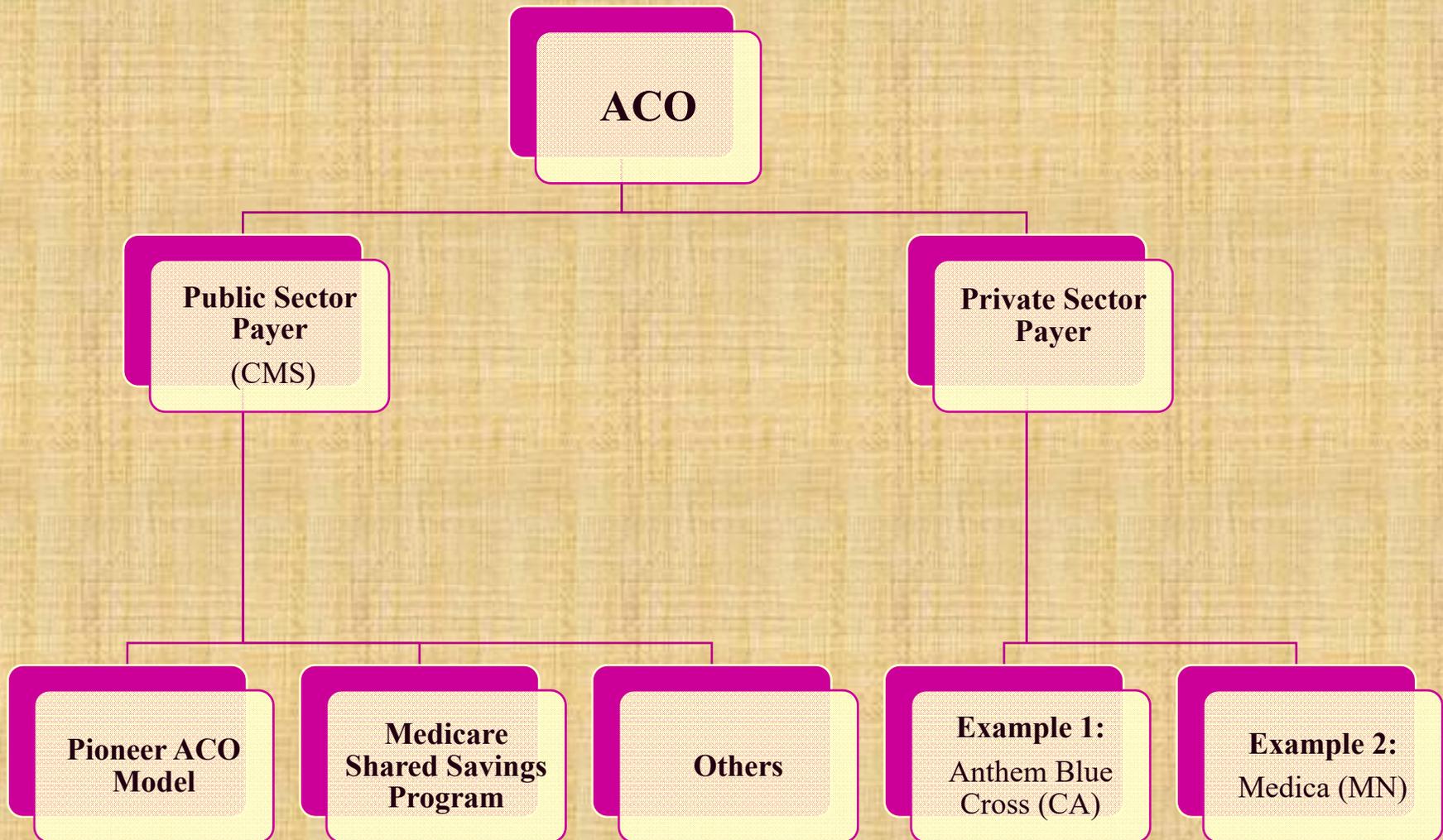
- A new model for health care delivery; a new payment model
- Description of Medicare ACOs: Groups of doctors, hospitals, and other health care providers who come together voluntarily to give coordinated high quality care to the Medicare patients they serve (CMS, '12)
- Overall Goals of ACOs: 1) provide high quality care to a defined population, & 2) achieve cost savings



ACOs: Description (cont'd)



ACOs: Types



ACOs: 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 data set 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:

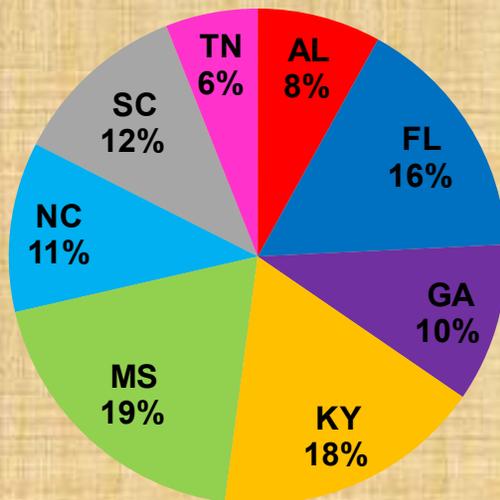
2012: There were 6 RHCs in ACOs.

2013: There were an additional 14 RHCs in ACOs.

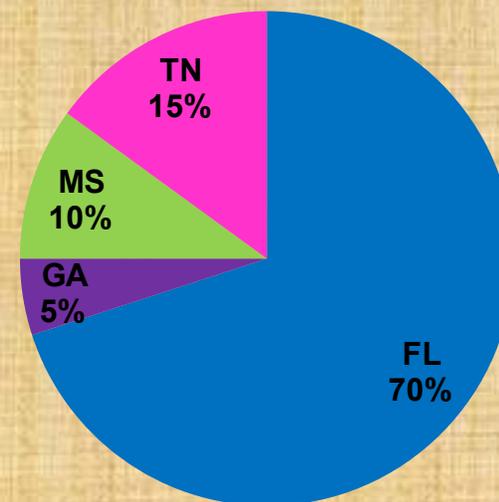


RHCs' Participation in ACOs: State of Location

All Region 4 RHCs,
2013



Region 4 RHCs in MSSP ACOs,
as of 2013

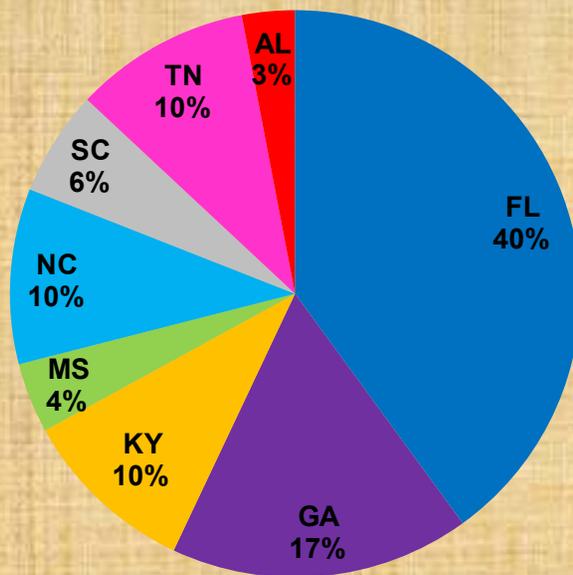


**RHCs were dispersed throughout the Region 4 states.
However, most RHCs that joined MSSP ACOs were in Florida.**

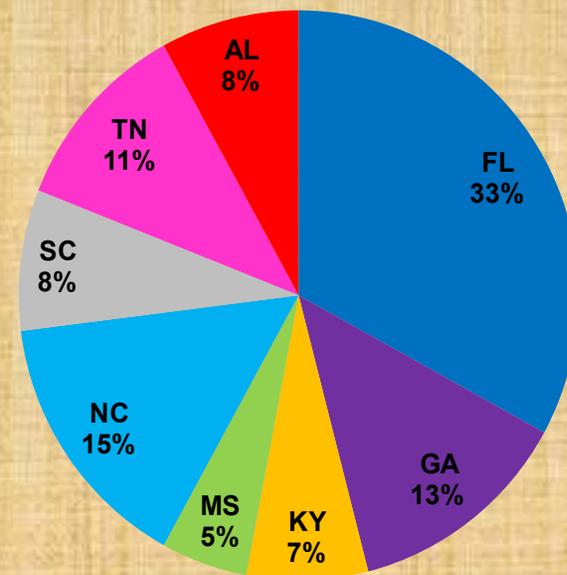


ACOs & Medicare Enrollment: State Distribution

MSSP ACOs,
2013

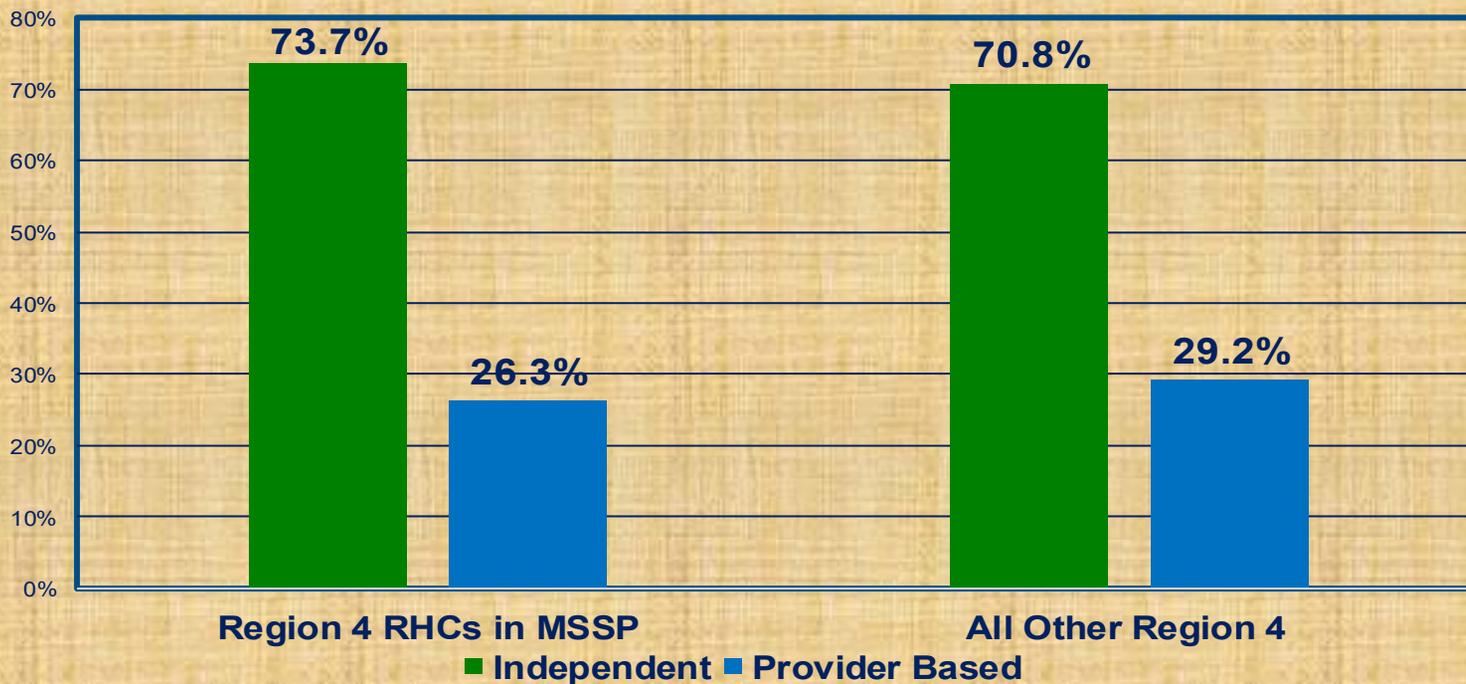


Medicare Enrollment:
All Beneficiaries (July 2012)



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' 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



Impact on Patient Outcomes: Background

Factors related to Patient Outcomes

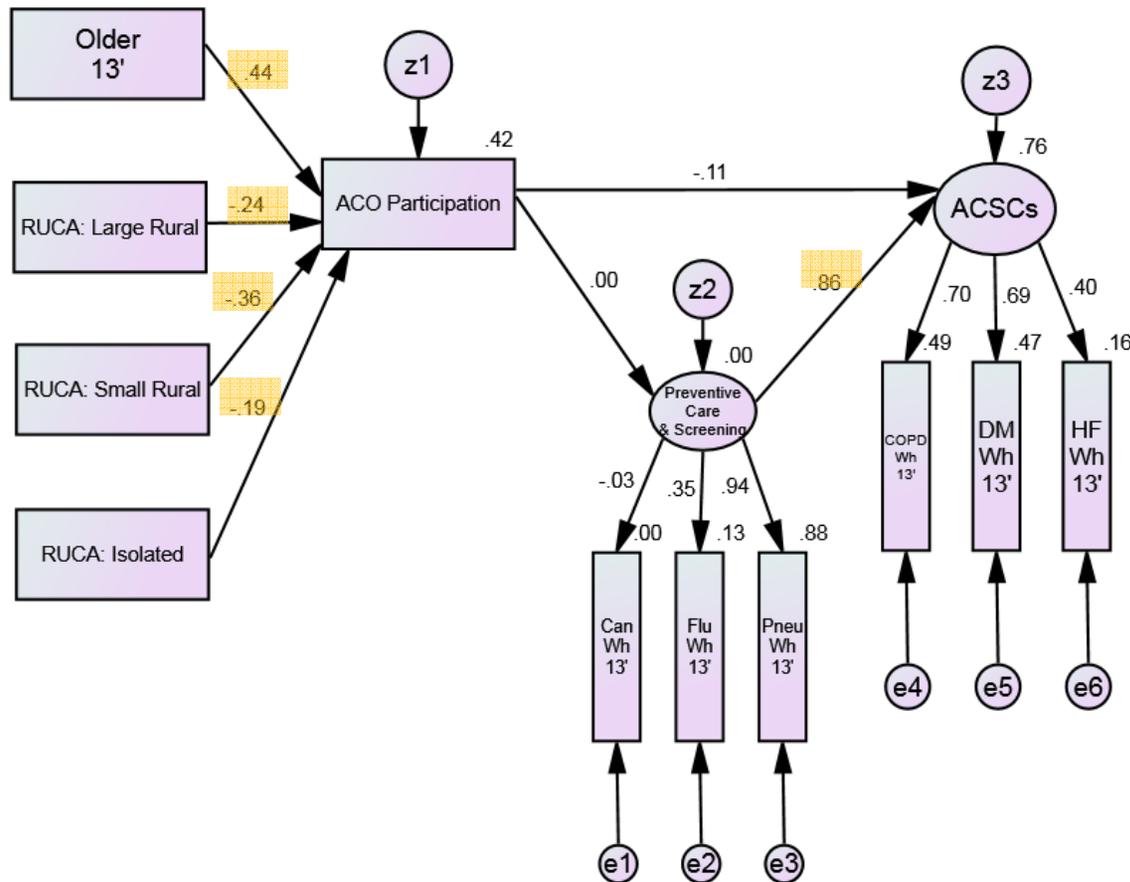
For all 705 RHCs in our study, we statistically analyzed various factors related to Patient Outcomes

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.)



Figure 3b. ACO participation Effects on Preventive Care Practice/Ambulatory Care Use and Ambulatory Care Sensitive Conditions in White Medicare Beneficiaries



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



Impact on Health Disparities: Background

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)

<u>Year</u>	<u>In ACO in 2012</u>	<u>Not in ACO</u>
2007	\$119	\$118
2008	116	107
2009	116	116
2010	116	113
2011	111	114
2012	126	122

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: $z = 6.68$, $p = 0.000$

Study	ATET	[95% Conf. Interval]		% Weight
Matches=1	\$26.74	8.022	45.458	15.61
Matches=2	\$29.41	11.653	47.167	17.34
Matches=3	\$26.61	8.931	44.289	17.50
Matches=4	\$23.04	8.066	38.014	24.39
Matches=5	\$22.43	7.691	37.169	25.17
Pooled Impact of ACO	\$25.19	17.799	32.588	100.00
Percentage of mean	20.74%			



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

Study	ATET	[95% Conf. Interval]		% Weight
Matches=1	\$14.11	-10.488	38.708	18.81
Matches=2	\$19.79	-5.592	45.172	17.67
Matches=3	\$18.45	-5.030	41.930	20.65
Matches=4	\$16.98	-6.285	40.245	21.03
Matches=5	\$17.17	-5.664	40.004	21.83
Pooled Impact of ACO	\$17.28	6.612	27.951	100.00
Percentage of mean	14.02%			



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

Study	ATET	[95% Conf. Interval]		% Weight
Matches=1	\$27.59	0.621	54.559	17.60
Matches=2	\$23.84	-2.267	49.947	18.78
Matches=3	\$20.18	-5.535	45.895	19.36
Matches=4	\$17.74	-5.976	41.456	22.76
Matches=5	\$19.85	-4.552	44.252	21.50
Pooled Impact of ACO	\$21.55	10.231	32.859	100.00
Percentage of mean	17.48%			



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

1. Hofler, R. and Ortiz, J. (2016). Costs of ACO Participation for Primary Care Providers: First Year Results. *BMC: Health Services Research*, 16:315.
2. Ortiz, J., Tang, C.Y., Lin, Y. L., & Masri, M.D. (2015). Primary Care Clinics and Accountable Care Organizations. *Health Services Research and Managerial Epidemiology*. 1 – 8. [PMC 4758220]
3. Ortiz, J., Hofler, R.A., Lin, Y. L., & Berzon, R. (2015). Participation of Rural Healthcare Providers in Accountable Care Organizations: Early Indications. *The Health Care Manager*, 34(3):255-264. [PMC 4593305]
4. Wan, T. T. H., Masri, M.D., & Ortiz, J. Predictors of Rural Health Clinic Managers' Willingness to Join Accountable Care Organizations. (2014). *Research in Sociology of Health Care, Vol. 32, 259-273 (Chapter in Technology, Communication, Disparities and Government Options in Health and Health Care Services)*. [PMC 4274791]
5. Ortiz, J., Bushy, A., Zhou, Y., & Zhang, H. (2013). Accountable Care Organizations: Benefits and Barriers as Perceived by Rural Health Clinic Management. *Rural and Remote Health*,13(2):2417. [PMC 3761377]



Other Related Papers

1. Wan, T. T. H., Lin, Y. L., & Ortiz, J. (2016). Disparities in Diabetes Hospitalization of Medicare Beneficiaries Served by Rural Health Clinics in Eight Southeastern States. *Health Services Research & Managerial Epidemiology*. [Accepted Date: 8/31/2016]
2. Wan, T.T.H., Lin, Y. L., & Ortiz, J. (2016). Contextual, Ecological & Organizational Variations in Risk-Adjusted COPD and Asthma Hospitalization Rates of Rural Medicare Beneficiaries. *Research in Sociology of Health Care, Vol. 34, 135-152*. (Chapter in Special Social Groups, Social Factors and Health Disparities in Health and Health Care.)
3. Wan, T. T. H., Ortiz, J., Berzon, R., Lin, Y. L. (2015). Variations in Colorectal Cancer Screening of Medicare Beneficiaries Served by Rural Health Clinics. *Health Services Research and Managerial Epidemiology, 2:* 1-7. [Open Access Journal] [PMC 4831917]
4. Wan, T.T.H., Ortiz, J., Du, Y., Golden, A. (2015) Contextual, Organizational and Ecological Effects on the Variations in Hospital Readmissions for Rural Medicare Beneficiaries in Eight Southeastern States. *Health Care Management Science*. [PMC 4792779]
5. Wan, T. T. H. (2014). A Transdisciplinary Approach to Health Policy Research and Evaluation. *International Journal of Public Policy*. 10(4/5): 161-177. [PMC 4237970]
6. Wan, T. T. H., Masri, M.D., & Ortiz, J. (2014). Infrastructural Mechanisms Leading to toward Pro-ACO Orientation: A Survey of Hospital Managers. *International Journal of Public Policy*. 10(4/5), 243-256. [PMC 4217167]
7. Wan, T. T. H., Masri, M.D., & Ortiz, J. (2014). Willingness to Participate in ACOs: Healthcare Managers' Perspective. *The Health Care Manager*, 33(1): 64-74. [PMC 4050369]
8. Golden, A. G., Ortiz, J. & Wan, T. T. H. (2013). Transitional Care: Looking for the Right Shoes to Fit Elderly Patients? *Care Management Journals*,14 (2): 78-83. [PMC 3778655]
9. Ortiz, J. Meemon, N. Zhou, Y. & Wan T. T. H. (2012). Trends in Rural Health Clinics and Needs During U.S. Health Care Reform. *Primary Health Care Research & Development*, 1-7. [PMC 3702672]
10. Agiro, A, Wan, T. T. H. & Ortiz, J. (2012). Organizational and Environmental Correlates to Preventive Quality of Care in US Rural Health Clinics. *Journal of Primary Care and Community Health*, 3(4):264-271. [PMC 3519391]



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.



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