

A decorative graphic consisting of several orange lines and squares. A vertical line is on the left, a horizontal line is in the middle, and a vertical line is on the right. There are also several squares of varying sizes and positions, some overlapping the lines.

Critical Access Hospitals:

What Every Radiologist Needs to Know

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Disclosures

- Tarek Hanna is a recipient of an American Society of Emergency Radiology grant.
- Work for this exhibit was performed with the support of the American College of Radiology Network Committee of the General, Small, Emergency and/or Rural Practice Commission.
- No disclosures on behalf of the remaining authors.

INTRODUCTION TO CRITICAL ACCESS HOSPITALS (CAH)

CRITICAL ACCESS HOSPITALS (CAH)

1341 CAHs spanning 45 states (*as of July 12, 2017*)

What is a CAH? All CAHs must meet the following definitions

- ➔ **GEOGRAPHY** 35 miles from any other hospital (some exceptions)
- ➔ **SIZE** ≤ 25 acute care inpatient hospital beds
- ➔ **EMERGENCY** 24/7 emergency services
- ➔ **LENGTH OF STAY** ≤ 96 hours average length of stay

CAH Status is Voluntary: Largely reimbursement advantages, which can substantially influence finances.

Doctor Misallocation: Rural communities comprise 25% of patients, but only 10% of physicians practice in them.



**320 Million
U.S.
Residents**

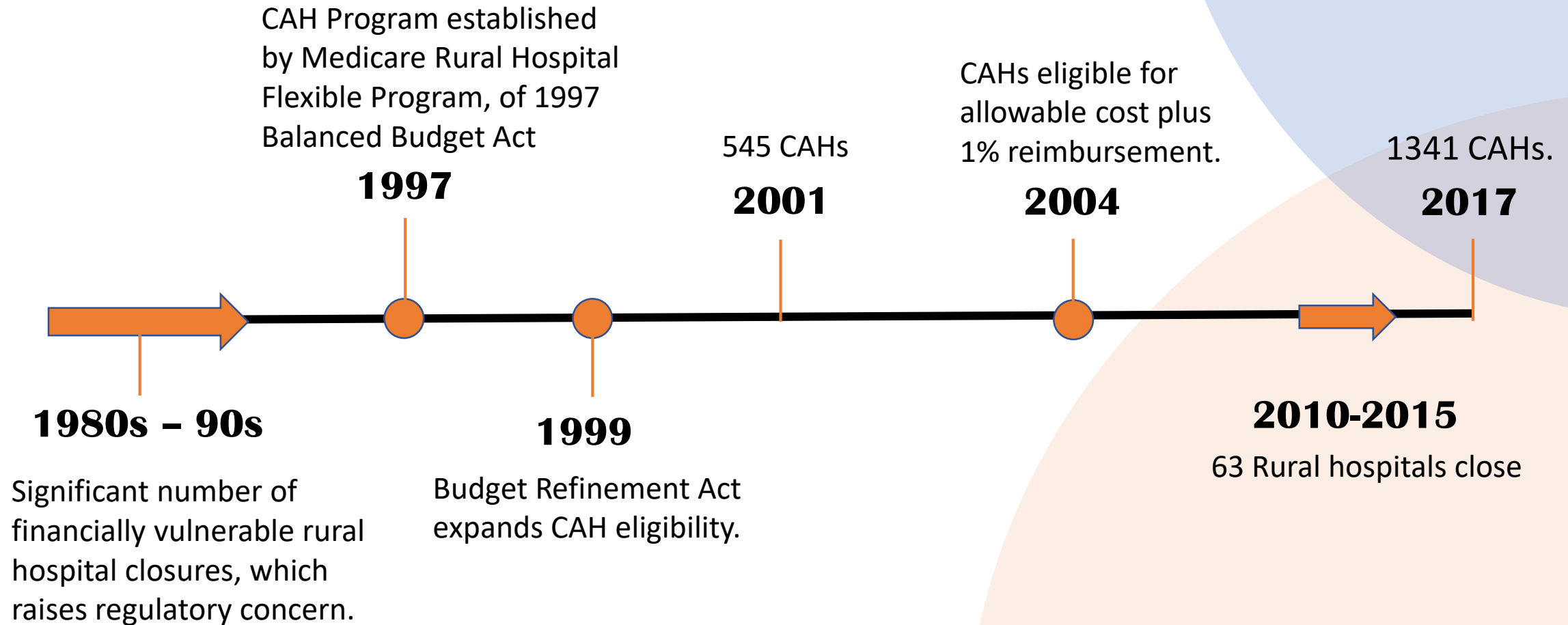


**60
Million in
Rural
Communities**

Population Perspective:

60 million Americans get care at CAHs (~20% of US residents)

A Timeline of CAHs: An Enlarging but Vulnerable Group



CAHs and the Radiologist

- ➔ CAHs comprise 25% of the national hospital supply, and provide care to 60 million Americans (20%).
- ➔ A substantial number of radiologists and radiology groups work in or with CAHs.
- ➔ Variable availability of advanced imaging services in CAHs: direct correlation of imaging availability with total revenue.
- ➔ Inadequate exam volume for certain subspecialty interpretations in CAHs.
- ➔ Hospital network affiliation may increase advanced imaging.

METHODS

- ➔ Systematic PubMed literature search on “CAHs” and “Radiology.”
- ➔ 7 out of 11 articles were relevant to our review with topics including:
 - Image-guided procedure feasibility in CAHs (#1)
 - Advanced imaging availability in CAHs (#2,4,10)
 - Regulatory impact on CAHs (#6,7)
 - State-based initiatives to narrow the care-disparity gap (#8)
- ➔ A summary of each article was prepared (**Table 1**)

#	Title	Authors	Subject & Results	Peer Reviewed Publication?	Directly Related to CAHs?	Include in Review
1	Improving Access to Image-guided Procedures at an Integrated Rural Critical Access Hospital: Ultrasound-guided Thyroid Biopsy Program	Le TQ, Sánchez Y, Misono AS et al.	Proves that imaged guided thyroid biopsies can be successfully performed in the absence of in-hospital pathology services.	Yes	Yes	Yes
2	The Impact of Hospital Characteristics on the Availability of Radiology Services at Critical Access Hospitals.	Khaliq AA, Deyo D, Duszak R Jr.	Shows that there is a relationship between CAH resources and network affiliation and the prevalence of advanced imaging services like PET-CT.	Yes	Yes	Yes
3	Characterizing the performance of the nation's hospitals in the Hospital Outpatient Quality Reporting Program's imaging efficiency measures.	Rosenkrantz AB, Doshi A.	Evaluates the CMS Hospital Outpatient Quality Reporting Program, which can help to identify hospitals with inefficient imaging practices.	Yes	No	No
4	The scope and distribution of imaging services at critical access hospitals.	Khaliq AA, Nsiah E, Bilal NH et al.	Scarcity of access to certain imaging services exist at CAHs throughout the USA. Unclear if this may affect patient outcomes.	Yes	Yes	Yes
5	A telecommunications journey rural health network.	Moore J.	Information on the construction of the fiber health network known as the Iowa Rural Health Telecommunication Project	No		No
6	Are the CMS hospital outpatient quality measures relevant for rural hospitals?	Casey MM, Prasad S, Klingner J, Moscovice I.	Assess the relevance of current and proposed CMS outpatient quality measures in rural hospitals.	Yes	Yes	Yes
7	Meaningful use of health information technology by rural hospitals.	McCullough J, Casey M, Moscovice I, Burlew M.	Examines the difficulty in the meaningful use incentive system for implementation of information technology in CAHs.	Yes	Yes	Yes
8	Statewide efforts to narrow the rural-urban gap in acute stroke care.	Okon NJ, Fogle CC, McNamara MJ et al.	A systematic state-wide effort (Montana Stroke Initiative) can improve stroke care in rural facilities and narrow the care gap.	Yes	Indirectly	Yes
9	The challenge of CT and MRI imaging of obese individuals who present to the emergency department: a national survey.	Ginde AA, Foianini A, Renner DM et al.	Evaluate the availability of large weight capacity CTs and MRIs in EDs.	Yes	No	No
10	Availability and quality of computed tomography and magnetic resonance imaging equipment in U.S. emergency departments.	Ginde AA, Foianini A, Renner DM et al.	Evaluate the availability and quality of ED CT and MRI in smaller hospitals; determined that CT availability was high (90%+) but quality/resolution was variable.	Yes	Indirectly	Yes
11	Approved: interim action for Standard MM.4.10, Element of Performance 1, for critical access hospitals and hospitals: modifications for the emergency department and radiology practitioners.	Joint Commission on Accreditation of Healthcare Organizations	One of a series of Joint Commission updates over the past 20 years intended to ensure rigorous imaging standards, patient safety, oversight of imaging services, staff competency, equipment maintenance and quality control.	No	Yes	No

RESULTS: Article Summaries

1

TITLE: Improving Access to Image-guided Procedures at an Integrated Rural Critical Access Hospital: Ultrasound-guided Thyroid Biopsy Program.

RESULTS: Thyroid FNA success rate was 94%. Specimens were prepared to allow for transport. 83% of patients had benign results after review and did not need further care. 17% were referred to a tertiary care center.

TAKE HOME: On-site minimally invasive biopsies such as thyroid FNAs at CAHs can be done successfully without pathology services – and this may ultimately improve rural care access for patients.

2

TITLE: The Impact of Hospital Characteristics on the Availability of Radiology Services at Critical Access Hospitals.

RESULTS: Network affiliation and total expenditures were positively associated with CAHs providing MRI, PET-CT, and Mammography services. Rural location was negatively associated with PET-CT availability.

TAKE HOME: Participation in larger hospital networks improves imaging services at CAHs

4

TITLE: The Scope and Distribution of Imaging services at Critical Access Hospitals.

RESULTS: Mammography, US, and CT were the most widely available imaging services in CAHs, but were available in 13%, 33% and 56% of all state CAHs respectively. In no state was >64-slice CT, SPECT, and PET-CT available in 100% CAHs.

TAKE HOME: The variability of imaging technology available in CAHs has significant policy implications.

RESULTS: Article Summaries

6

TITLE: Are the CMS Hospital Outpatient Quality Measures Relevant for Rural Hospitals?

RESULTS: ED measures are relevant to rural hospitals, as are outpatient surgical measurements. However, outpatient imaging and condition-specific measures were not selected as relevant.

TAKE HOME: To increase sample size for rural hospitals, CMS could combine data for similar inpatient and outpatient measures, use composite measures by condition, or use longer time period.

7

TITLE: Meaningful Use of Health Information Technology by Rural Hospitals.

RESULTS: Of many IT measures, only 4 are met by a majority of rural hospitals: electronic patient demographics, electronic lab reports, radiology reports, and radiology images. CAHs use is worse than rural hospitals overall.

TAKE HOME: The meaningful use incentive system creates challenges for CAHs. CAHs assume financial risk when adopting health IT. Intangible costs (workflow disruption) are not supported.

RESULTS: Article Summaries

8

TITLE: Statewide Efforts to Narrow the Rural-Urban Gap in Acute Stroke Care.

RESULTS: The Montana Stroke Initiative developed protocols, educational material, and did pre-hospital and in-hospital stroke care training. This systematic state-wide effort improved acute stroke care capabilities and narrowed the rural-urban care gap.

TAKE HOME: Targeted wide-spread educational and pre-hospital care efforts can help narrow rural-urban care gaps.

10

TITLE: Availability and Quality of Computed Tomography and Magnetic Resonance Imaging Equipment in US Emergency Departments.

RESULTS: CT scanners were present in 96% of institutions, and of these 94% had 24-7 access for ED patients. 28% were 1-4 slice, 33% were 5-16 slice, and 39% were >16 slice. Onsite MRI was present in 66%.

TAKE HOME: Although access to CT is high, CT quality/resolution is variable and access to MRI is also variable. This could affect imaging quality and diagnostic capabilities.

DISCUSSION: The Known

- CAHs have limited access to advanced imaging services such as multi-slice CT, MRI, Mammography and PET, which have high capital investment that may not be supported by patient volumes.
- In addition, meaningful use of health IT legislation has been inadequate to offset the adoption costs and risks shouldered by CAHs.
- Participation of CAHs in hospital networks increases access to advanced imaging services and may offset capital investment.
- Small size/selection bias may lead to inadequate CMS quality measures of CAHs. Regulations may not always be written with small hospitals in mind.

DISCUSSION: Challenges

- CAHs are almost always in rural communities; residents in these communities are more likely to be older, uninsured, and have higher rates of poverty.
- These individuals often need **MORE** healthcare resources, but have access to **LESS**. This dichotomy leads to health disparities.
- CAHs are essential in addressing this healthcare gap. Yet, there is little research examining imaging frequency or quality (including image-guided procedures), healthcare quality, and care outcomes in CAH hospitals.
- Perhaps instead of trying to achieve technology and care equivalency, we need to focus on how to adapt best-imaging practices to CAH centers which may be resource poor.

DISCUSSION: Future Study

- Do CAH Emergency Departments or inpatient wards overutilize imaging because of lack of access to specialty care consultation or some other factor(s)?
- How does teleradiology/telemedicine fit into the CAH ecosystem, and how does this effect/improve patient care?
- We know that approximately 28% of ED CTs are 1-4 slice; 34% of EDs do not have MR access. These centers are disproportionately CAHs. Does this technological disparity truly affect diagnosis or patient management?

Do what you can, with what you have, where you are.

Theodore Roosevelt

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