

STRATEGIC INSIGHTS FOR REGIONAL AND COMMUNITY HOSPITALS

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# Sustainable Rural Health Care Delivery



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## Executive Summary

Access to quality health care resources is becoming increasingly difficult in many rural parts of the United States. Technology continues to advance rapidly. Specialists are increasingly in short supply and economic constraints limit how much can be expended. To date, the solution has been to extend existing urban models more efficiently to rural markets through better outreach, deployment of new technologies to small hospitals, more training, closer connections to referral centers and prioritizing resources in the communities to those of highest value. While this has worked to a point and must continue to be part of the solution, incremental efficiency improvements will not be enough to save quality rural health care. Instead, a new model is needed. After working with hospitals across the United States, we believe an innovative use of distributed networks will be part of the solution. This report outlines initial thinking around distributed networks and pairs it with approaches to improve the existing delivery model as a blueprint for improving access to quality care in the rural communities of the United States.

### Background

Rural markets face challenges in accessing a continuum of health care. These markets are characterized by sparse populations, increasing disease comorbidities, large driving distances, an aging and declining workforce and reimbursement pressures.

Service delivery must be based on the resource and quality stewardship principle: appropriate care in the appropriate location, through the appropriate channel.

Gaps in services for rural markets exist primarily for secondary and procedural care, which require specialty expertise yet should be provided in the local environment. Today, these services are provided two ways:

1. Locally, often by overextending the competencies of the local environment (poor quality)
2. Regionally, when specialists travel long distances from a regional hub to provide few services (inefficient and inconsistent)

### Findings

Rural health care delivery requires a comprehensive, sustainable approach that incorporates three distinct elements:

- > **Local assets.** Fixed services in markets supported and controlled by individual communities. These services support the basic provision of care the community warrants, without compromising quality or scope.
- > **District services.** Services distributed through the region that are brought to the market, maintained by the network and connected with the regional provider to ensure a system of care delivery. This is a new component of the model.
- > **Regional assets.** Services provided through partnerships with expert providers, where the patient travels to the site for care and consultation with subspecialists.

# The rural health care delivery model is under intense pressure throughout the United States.

## The Rural Health Care Gap

The rural health care delivery model is under intense pressure throughout the United States. Currently subsidized by special reimbursement, care in many rural markets survives on the ability to pass costs through to Medicare.

The viability of this model will only become more tenuous with aging, declining populations in rural counties; a decreasing supply of physicians (especially in primary care), physician subspecialists and technical staff; tightening critical access hospital (CAH) reimbursement regulations; care coordination difficulty due to long distances; and lack of critical mass at rural sites to support programs, infrastructure, staff, physicians and management resources. (See Case Study in Appendix.)

Indicators throughout the country suggest rural health care quality is different from that in urbanized areas. Factors involved in this disparity include:

- > **Projected population declines.** Trends in most rural markets forecast further declines in population. Rural markets will become even more rural as time goes on.
- > **Physicians and technical staff reimbursement and supply are limited.** While physician shortages are becoming the norm everywhere, rural communities often face not just a shortage, but a complete lack of any physicians in common specialties.

- > **Access to care is becoming constrained.** Large geographic areas with sparse populations have inconsistent access to care. A high proportion of medically underserved areas in rural markets are also tied directly to professional shortages.

To address these challenges, society infuses larger and larger amounts of capital, currently through CAH reimbursement. In virtually every case, eligible rural hospitals have converted to CAH designation for this special reimbursement. Even while adding more and more financial support to hospitals, however, care in many communities continues to degrade on measures such as quality, access, staffing and leadership.

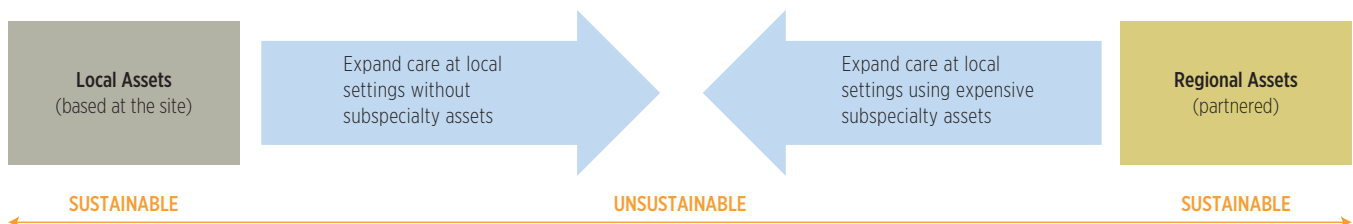
Moreover, a gap exists between the services provided by local assets and the needs of the population. Anyone who needs services must either travel many hours to a larger center or depend on outreach efforts by specialists.

On the whole, the current approach to rural health care has received significant financial support through CAH reimbursement. Unfortunately, the model is not being sustained on virtually all the other factors related to serving the health care needs of the population.

Traditionally, the approaches providers have taken to fill the gap in services have been unsustainable in the long term.

These approaches have included growing local services or extending subspecialty services from regional centers. (See Exhibit 1.)

### EXHIBIT 1: Extension of Local and Regional Strategies



There are examples of systems that have done a better job than others at both ends of the spectrum (highly consolidated systems and tightly run small hospitals). Unfortunately, the ability to close the gap in care is typically based on subsidization with better reimbursement rather than by creating a more efficient model. Specifically:

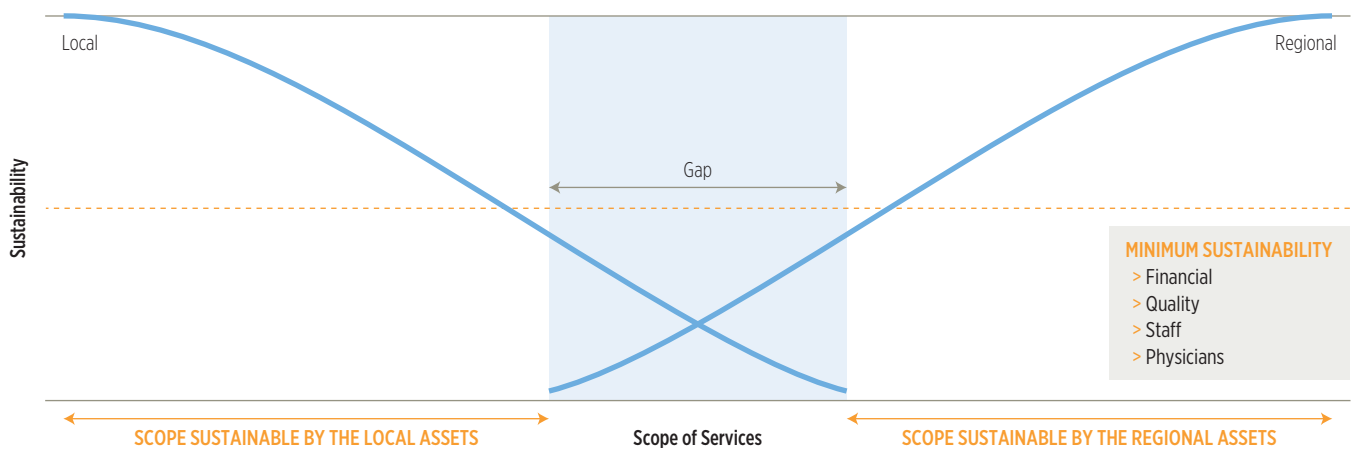
1. Critical access hospitals have special reimbursement that allows them to prop up programs that would otherwise be financially unsustainable due to scale, physician support, community need or other factors.
2. Subspecialists have taken an aggressive approach to referring all procedures back to the hub or an aggressive approach to reimbursement (or both) to financially support outreach efforts. Other challenges remain, such as consistent provision of care at the outreach site.

Neither approach results in good stewardship of resources for rural care. Filling the gap with the existing model is inefficient.

As subspecialty assets are exported from the regional center (outreach), they tend to be less efficiently utilized due to time spent commuting and time spent providing general care. The critical mass required at a single site to support delivery infrastructure, scope of services and a quality program often does not exist. Thus, as small programs expand their scope from primary care to specialties, they often do so with general rather than specialized assets. As a result, the potential for lower quality increases significantly. (See Exhibit 2.)

Nevertheless, these approaches remain in many markets because they are subsidized by a larger referral center to drive volume into the system or there would be no alternative option for care. Communities take what they can get, not dissimilar to third world environments.

**EXHIBIT 2: Service Gap for Services and Population Needs**



# A Sustainable Rural Health Care Delivery Model

## Transforming the Model

Transforming the rural health care delivery model begins with this question: Do hospital systems manage only health care delivery assets or do they also provide health care services?

Considering a hospital system’s role as a health care service provider in addition to an asset manager allows the formation of a new approach to addressing the gap. This new approach focuses on service delivery where the major asset is the collection of service delivery capabilities rather than fixed infrastructure in a local market. In effect, it adds to the stewardship principle: appropriate care in the appropriate location, through the appropriate channel.

A similar concept allowed Wal-Mart to fully transform the retail industry. No longer did everything have to be provided and stocked locally. Rather, through a robust network, goods could be available in towns that previously could not support a wide range of products.

While a network model has been challenged in urban settings (not dissimilar to Wal-Mart), the dispersed nature of rural markets provides an excellent test case because of the model’s adaptability to rural markets where the gap in care is larger and other solutions are cost prohibitive or negatively affect quality.

A comprehensive, sustainable approach to delivering rural health care requires three distinct elements (see Exhibit 3):

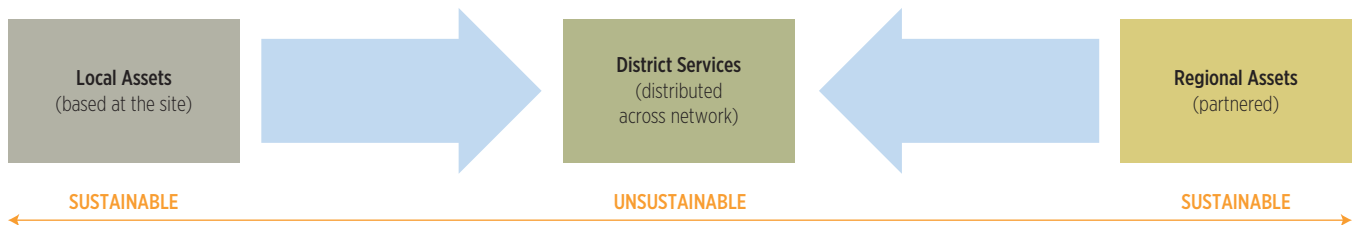
- > **Local assets.** Fixed services in markets supported and controlled by individual communities. These services support the basic provision of care the community warrants, without compromising quality or scope.
- > **District services.** Services distributed through the region brought to the market, maintained by the network and connected with the regional provider to ensure system of care delivery.
- > **Regional assets.** Services provided through partnerships with expert providers, where the patient travels to the site for care and consultation with subspecialists.

This new approach seeks to augment current approaches (local and regional services) with a new element that allows care to be distributed to communities through the scale and demand of a larger service area (the district) with multiple markets and sites.

## Local Services

Local services support care provision and delivery in local communities. Services are based on community demand and critical mass required to support quality. Collaborating with network and regional services, local services prioritize efficiency for patients and staff by providing appropriate information and care in the local community, then coordinating with network and regional resources for follow-up and consultation. (See Case Study in Appendix.)

EXHIBIT 3: Rural Health Care Delivery Model



The current scale and scope of local services are driven by finances (CAH designation) rather than quality or community need. To improve financial stewardship as well as match services with need, the revised approach to local services attempts to expand and rationalize programs and markets based on the groupings described here and in Exhibit 5 in the Appendix.

- > **Ambulatory Services:** Communities offer ambulatory services focused on screening, prevention and diagnostics, with no acute capabilities. Emergency services are limited to transfer and are coordinated with a larger site (e.g., acute care center). This limited amount of fixed service allows communities that have typically not had access to local health care to support some level of basic services.
- > **Basic Hospital:** In addition to the services described above, basic hospitals offer ambulatory and inpatient services focused on diagnostic and non-emergent treatment, medical inpatient and rehabilitation recovery. Emergency services are organized for urgent care and coordinated with larger centers for transfer. Diagnostic capabilities focus on general radiography and ultrasound. The physician presence includes general practitioners and emergency physicians, supported by mid-level providers.
- > **Full-Service Hospital:** These markets have traditionally defined critical access hospitals. In addition to the services outlined above, these markets have ambulatory and inpatient services with limited specialty care, infusion capabilities and medical inpatient care. Emergency services are focused on urgent and emergent patients with strong connections to regional providers for trauma.

Specific criteria should determine how markets fit into each of the three segments. For example:

- > **Distance.** Are there other alternatives nearby?
- > **Community size.** Does the community size warrant services?
- > **Geographic distribution.** Are communities grouped together?

- > **Inpatient services (ADC).** Does the population utilize the inpatient services?
- > **Support.** Do existing services have strong physician support?
- > **Facilities and capital.** Is there infrastructure in place that does not need major new investment?

While these criteria are measurable proxies to balance community need and quality, it is likely one criterion will be highly correlated to the rest—distance to other services.

The goal is to provide a guideline to ensure local assets are appropriate for the population given the distance to alternative providers. When strategic, long-term issues arise (e.g., markets need large investment, loss of physicians), the market will shift to the appropriate scope. As markets cannot support additional levels of services, they will utilize either district services or patients will travel to region-based assets.

### District Services

District services focus on the second half of the principle: appropriate care in the appropriate location, through the appropriate channel. The collective scale of district services allows provisioning of specialty care (screening, diagnostics, selected treatments) on a more frequent basis than that provided through local assets. District services target key conditions and modalities where larger portions of the patient population need access to care that local assets cannot support due to scale and lack of support.

To have the largest impact, district services must first focus on major population needs, which in most rural markets are the three leading causes of death: cancer, heart disease and stroke.

Cancer services provided through district services might initially focus on breast health and colorectal health.

#### Breast health

Improve early detection of breast cancer through routine screening, diagnostic testing and education. Services may include:

# Hospitals will need to use multiple vehicles to increase alignment with physicians and force better partnerships.

- > Mobile digital mammography with immediacy via online transmission and interpretation via satellite. In 2007, Aberdeen Indian Services and the University of Michigan piloted a program using a GE Senographe 200D system and found “reasonable” transmission time despite the large size of mammogram files. Overall turnaround from transmission to reading to response was less than 60 minutes.
- > Breast biopsy services with stereotactic breast biopsy using equipment in a mobile environment. Research studies have supported comparable cancer detection rates to national figures and a fairly stable biopsy recommendation rate.
- > Treatment planning, with referral center coordination and chemotherapy services.

## Colorectal health

Improve early detection of colorectal cancer through routine screening, diagnostic testing and education. Services may include:

- > Virtual colonoscopy with remote reading.
- > Mobile colonoscopy services, with screening colonoscopy, sigmoidoscopy and blood tests.
- > Education and consultation, with condition education, risk factors, screening types and prevention.
- > Treatment planning, with referral center coordination and district chemotherapy.
- > Physician consultations.

Heart disease is by far the leading cause of death in the United States and—more significantly—a cause of death that reduces life expectancy more than any other major cause of death. The objective of cardiovascular services would be to improve the early diagnosis and prevention of heart-related disease in rural markets. It might focus on prevention: mobile non-invasive tests such as echoes, heart CT scans and specialty remote consults.

Stroke takes a large toll on the elderly, especially in rural areas where the death rate in some markets after admission

is high. The initial focus of district services for stroke care might be to establish emergent transport teams stationed throughout the market, to define clear treatment protocols and to conduct risk factor assessments and screenings.

## Regional Services

Regional services support care delivery through the dissemination of expertise and consolidation of infrastructure. Today, patients in rural markets typically travel to regional centers to access subspecialty care. The process is frequently disjointed across multiple organizations and driven by referral patterns often established on service rather than quality metrics. As a result, specialists who want referrals must often establish consistent, long-outreach “trap lines.” These are time consuming to maintain, as “windshield time” is lost time from the practice. Moreover, the vast majority of patients seen by the subspecialists through outreach efforts do not need a subspecialist, but rather a general specialist. The costs in both time and talent often mean the rural population cannot access subspecialty care effectively.

In addition, the disjointed nature of the process means the regional centers and associated specialty physicians often provide not only the subspecialized components of the care but also the general medicine and diagnostic components. Both of these elements combine to make the current model of unaligned regional services inefficient in providing subspecialty care to rural markets.

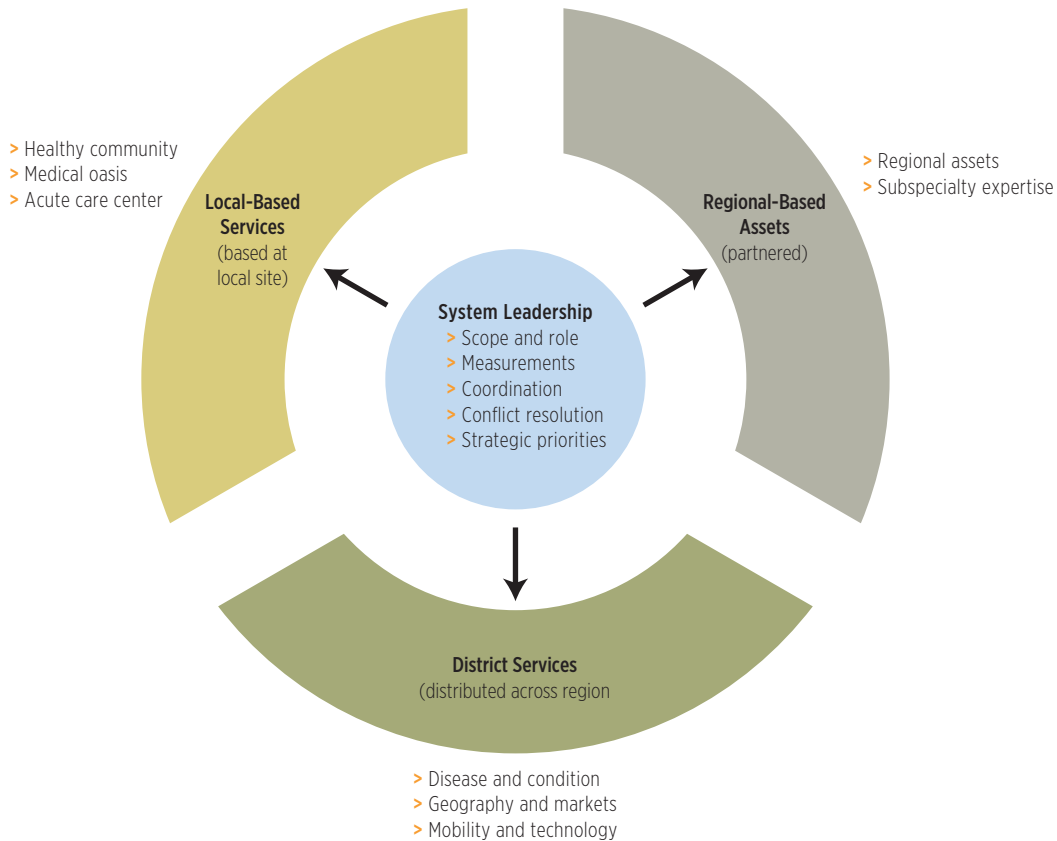
As part of a sustainable rural health care delivery model, incentives must be better aligned and more efficient models must allow the population and providers to access and deliver care. (See Exhibit 4.)

Better alignment can be achieved through five theme areas:

- > **Financial.** Integration between small hospitals with critical access hospital reimbursement and regional centers will align financial incentives to deliver care in rural locations through financial incentives for the larger system.

- > **Strategic.** Establishing a common vision for the care model of rural markets—appropriate care at the appropriate location, through the appropriate channel—will be important to aligning strategic incentives.
  - > **Operational.** Agreement on the role and scope of each component (local assets, district services and regional assets) in providing for the health care needs of the population will reduce overlaps.
  - > **Quality.** Extending organizational relationships from small markets with Healthy Community-type assets through district services to larger referral markets and regional partners will allow coordination of care across the continuum to occur more effectively. A single standard for quality of care throughout all system elements, including care conducted with telemedicine and other nontraditional approaches, will also improve the quality of services.
  - > **Markets.** Establishing a rationalized approach to services across markets will reduce the need for each market to provide all services and for the regional program to use expensive, specialized physicians to support referral trap lines.
- Investigating and expanding on the use of district services to provide increased local access to health care services is the critical next step. (See Case Study in Appendix.)

**EXHIBIT 4: Role and Scope of Operational Components**



## Future Research Needs

While we believe there is a strong need for a new approach to delivering care to rural markets, there are barriers to changing the inefficient and ineffective system in place today. To date, these barriers have been sufficient to ensure the status quo, and we believe a new approach is important to breaking them down. To that end, we propose three areas for further research and discussion.

First, a new model for reimbursement must be developed with the payors. In this model, payments will be tied to outcomes regardless of the delivery mechanism. Today, payments are significantly different depending on the delivery mechanism, whether it is hospital size, location, complexity or provider type. (See Case Study in Appendix.)

Second, fixed infrastructure in rural markets often represents a large portion of the employment base in these communities. While elimination of inefficient, fixed infrastructure for better quality network-based capabilities addresses the health care needs of the communities, it might also eliminate large numbers of jobs in the rural markets. Models to mitigate the loss of jobs will be needed.

Third, countless national regulations, state regulations and industry norms pose challenges to the use of extenders and other nonphysicians to provide care, as well as to having physicians oversee the delivery of health care from afar through telemedicine and other information system technologies. Some regulations have been developed to ensure quality. Others, however, are in place to protect the established way of practice. New education, training, certification and regulation processes must be created for services delivered via a network model.

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Harvey, Dan. Mobile & Digital—Real-Time Reporting Adds Immediacy and Convenience to Remote Breast Cancer Screening. *Radiology Today*. Vol. 8, No. 2, P. 8. <http://www.radiologytoday.net/archive/rt01292007p8.shtml>.

Kann, PE, Bradley C, Lane DS. Outcomes of recommendations for breast biopsies in women receiving mammograms from a county health van. *Public Health Rep*. 1998, Jan–Feb; 113(1): 71–74. For full text, please see <http://www.opencongress.org/bill/111-h3590/show>.

## Case Study: Rural Health Care in North Dakota

Much of North Dakota represents a typical rural health care environment. As a whole, North Dakota's population declined 0.1% from 2000 to 2008, compared to national average growth of 8%. Additionally, the dispersion of physicians is inadequate when compared to the population: 20% of citizens live in rural areas while only 9% of physicians live in rural areas. North Dakota's sparsely distributed population (9.3 people per square mile compared to the national average of 79.6) creates difficulties when moving people and services. Finally, the average age of hospitals and related facilities is 15 years in North Dakota but only nine years nationally.

Catholic Health Initiatives (CHI) provides health care services in seven markets in North Dakota, ranging from critical access to full community care. In the past, CHI ND operated at a loss, with a negative 5.5% operating margin in 2007 despite critical access hospital (CAH) reimbursement. Additionally, CHI ND markets rely heavily on physicians; movement or relocation of even one physician significantly affects program quality and delivery of care.

In 2008, CHI ND created the sustainable rural delivery model to change its delivery position and financial performance. So far the change seems to be paying off financially: 2009 financial performance projected a 5% operating margin.

### Major changes to CHI ND's local services include:

- > Reorganized seven markets into local services
  - Ambulatory (three markets, e.g., Healthy Communities) for preventive screening care
  - Basic hospital (two markets) with lower acuity inpatient and outpatient services
  - Full-service hospital (two markets) with full scope of primary and secondary services

- > Strengthened diagnostic services through technology
- > Increased ED presence with district services
- > Eliminated OB programs
- > De-licensed long-term care beds
- > Focused on home health programs

### Major changes to regional services include:

- > Centralized infrastructure and expertise, with dissemination through technology and connections.
- > Clinical services:
  - Telepharmacy coverage for two full-service hospitals during off hours
  - E-ICU coverage
  - E-ED models for Level V trauma centers
- > Non-clinical services:
  - Centralized administrative services for CHI ND
- > Markets (HR, finance, purchasing, mission, facilities)

### Although CHI ND's improvements are significant, looking forward, the system would benefit from additional changes, including:

- > Changing reimbursement models for diagnostic services delivery (e.g., radiology tech payment for procedures as opposed to physician-only payment).
- > Continued development of telehealth models and measuring the impact on quality and outcomes.
- > Selecting a regional or national partner to advance clinical care capabilities.

**EXHIBIT 5: Required Resources by Service Type**

TYPE OF SERVICE	SERVICES	PHYSICIANS/PERSONNEL	INFRASTRUCTURE	CONNECTIONS
<b>AMBULATORY SERVICES</b>				
<b>Preventive</b>	> Automated screenings (e.g., cholesterol, blood pressure), education materials (print)	> None	> Telehealth connections with district/regional services	> Regional programs and expert resources
<b>Diagnostic</b>	> Phlebotomy, EKG, X-ray, ultrasound	> Through ED imaging tech	> Lab infrastructure	> Interpretation > Reference lab
<b>ER</b>	> EMS stabilization > Transfer/transport services (vehicular) > Primary care/urgent care	> EMS > Physician assistants > Nurse practitioners	> ER tracking systems > Telepharmacy	> Interpretation > Patient follow-up
<b>Procedural</b>	> None			
<b>Non-Procedural Treatment</b>	> Short stay—medical observation	> Same as the ED		> Patient follow-up
<b>Recovery</b>	> Swing beds	> MD requirement?		
<b>BASIC HOSPITAL SERVICES</b>				
<b>Preventive</b>	> Routine screenings (e.g., cardiac, respiratory) > CHI connections	> Nurse practitioners	> Telehealth connections with district/regional services	> Regional programs and expert resources
<b>Diagnostic</b>	> Mobile imaging—network	> Tech teams	> Teleradiology > PACs	> Interpretation > Patient follow-up
<b>ER</b>	> Emergent ER visits > Non-emergent	> ER physicians	> Telemedicine > Tracking	> Interpretation > Transfer to another hospital
<b>Procedural</b>	> Procedures/GI > Limited anesthesia	> Selected specialty programs (general surgery, orthopedics)	> Procedure room/ operating room	> Interpretation
<b>Non-Procedural Treatment</b>	> Infusion (pain management, blood, other)	> Same as the ED > Family practitioner/midwife	> Telepharmacy > Labor and delivery	> Dispersing/coordination function > Patient follow-up
<b>Recovery</b>	> Post-procedural care > Medical inpatient stays	> Hospitalists > Primary care/NP	> Beds > Tracking	> Transfer protocols
<b>FULL HOSPITAL SERVICES</b>				
<b>Preventive</b>	> Community education (e.g., CPR, prenatal classes) > CHI newsletters	> Case workers/social workers > Educational consultants	> Telehealth connections with district/regional services	> Regional programs and expert resources
<b>Diagnostic</b>	> General radiography > Ultrasound > Network imaging	> Radiology technicians > Ultrasound technicians	> Teleradiology > PACs	> Interpretation > Patient follow-up
<b>ER</b>	> Non-trauma ER visits > Urgent care/primary care	> ER physicians > Physician assistants	> Telemedicine > Tracking	> Interpretation > Transfer to another hospital
<b>Procedural</b>	> Minor procedures > No anesthesia	> Family practice > Internal medicine > Nurse practitioners	> Clinic rooms > ED treatment rooms	> Interpretation
<b>Non-Procedural Treatment</b>	> Infusion (IV antibiotics)	> Same as the ED	> Telepharmacy	> Dispersing/coordination function > Patient follow-up
<b>Recovery</b>	> Medical inpatient stays	> Hospitalists > Primary care/NP	> Beds > Tracking	> Transfer protocols



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