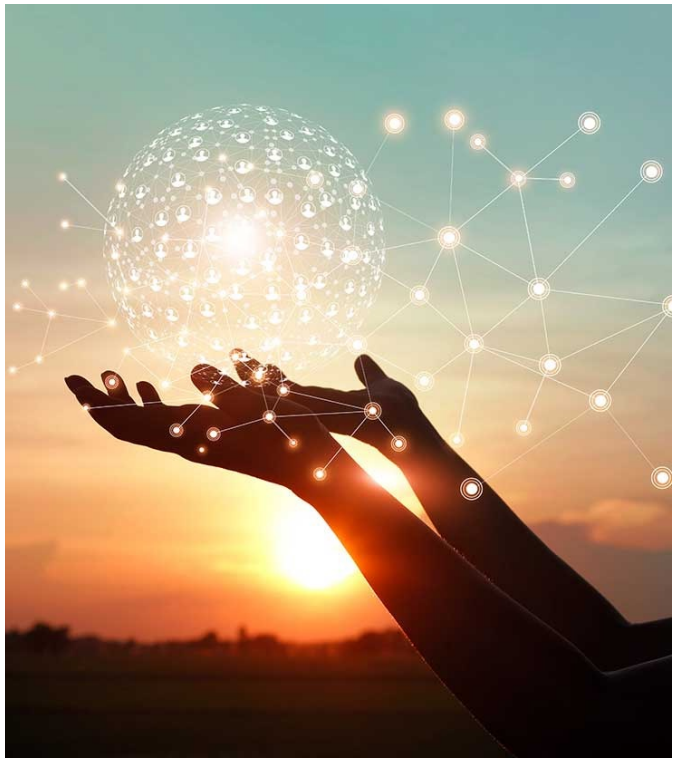
NO NEW BUILDINGS.

Prescribing the Home, for Life.

Scott Willits, ACP, CP

Faculty & Affiliation Disclosure



Scott Willits, ACP, CP

- **Medically Home, Clinical Network Director**
- **National Association of MIH Providers, Board Member**
- **Oregon, USA MIH Coalition, Vice Chair**

The following presentation contains clinical summaries of real patients with protected health information removed.

Review a brief history of the Hospital at Home model.

Use available technologies to challenge the concept of clinically qualified patients for a Hospital at Home program.

Understand how the modern Hospital at Home model can challenge and decentralize healthcare to promote innovations.

Enabling the Decentralization of Healthcare

Empowering health systems and providers to decentralize healthcare with a patient-centric model by supporting, advocating, and leading advancements in the MIH industry.

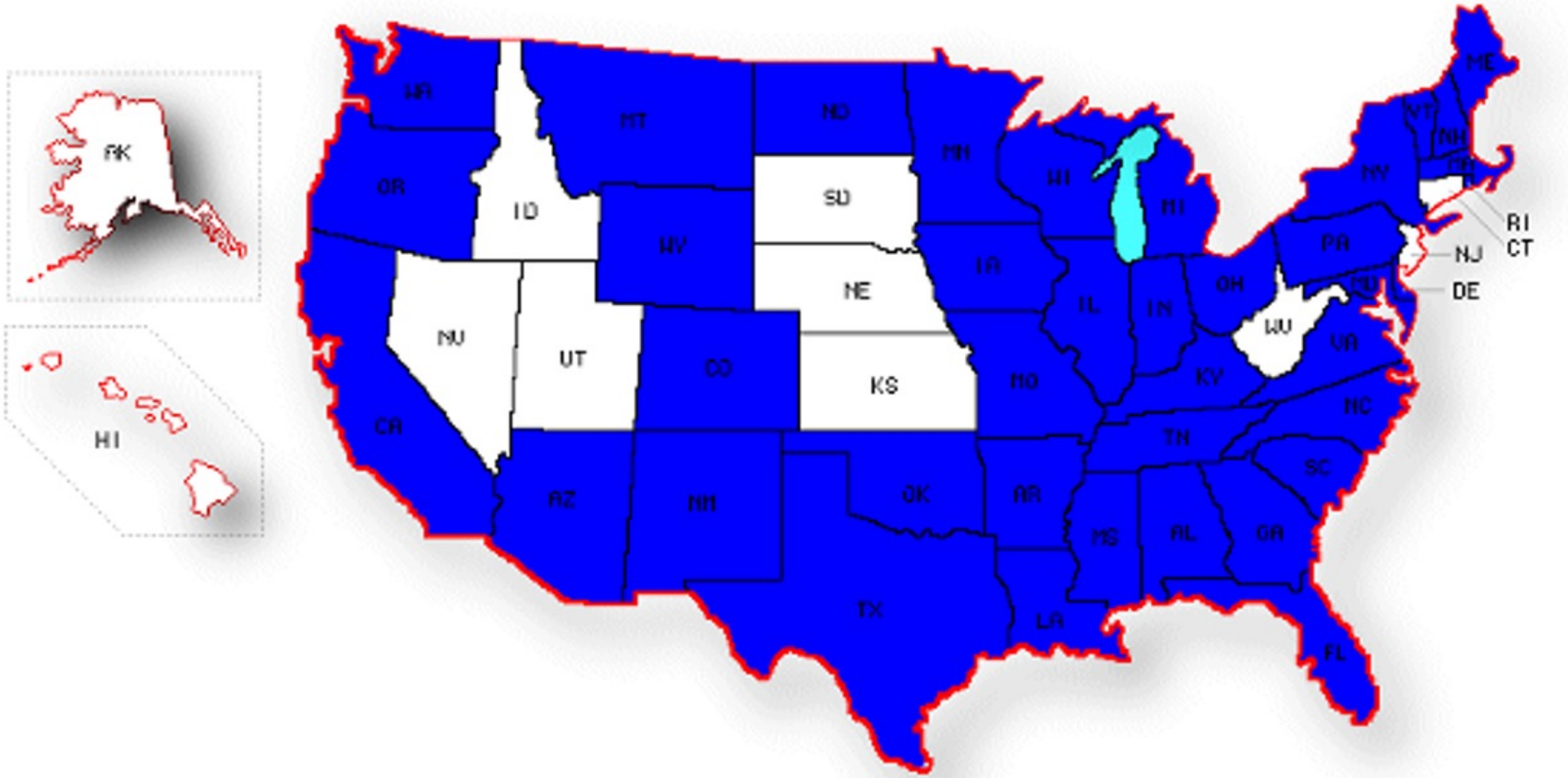
Medically Home®

medicallyhome.com

NATIONAL ASSOCIATION

OF

MOBILE INTEGRATED HEALTHCARE PROVIDERS



Community Paramedicine is a segment of **Mobile Integrated Healthcare** that is a provider-led, patient-centered delivery care model using appropriately trained Emergency Medical Service (EMS) clinicians in an expanded role to render care, facilitate a more efficient delivery of care, and enhance access to community resources that address the social determinants of health.

Mobile Integrated Healthcare (MIH) is a coordinated, patient-centered, evidence-based, holistic model of care using collaborative, interdisciplinary teams to serve patient needs at the most appropriate level of care at a safe location of their convenience.

No Place Like Hospital at Home

Hospital at Home (HaH) was introduced as a model of care over 50 years ago, and has spread across the world since then. The implementation of HaH in the U.S. began at Johns Hopkins School of Medicine in 1994. In November 2020, the Centers for Medicare and Medicaid Services (CMS) launched the Acute Hospital Care at Home (AHCaH) waiver program. As of March 2023, this waiver has enabled over 275 hospitals across 115 health systems and 37 states to adopt HaH programs in the U.S. with the following goals: to improve clinical outcomes, reduce hospital readmissions, improve patient safety and experience, and prioritize patient choice.[1]

HISTORY OF HOSPITAL AT HOME

1961
Origination of Hospital at Home
France originates Hospital at Home with "Hospitalisation à Domicile

1970s-1990s
Hospital at Home programs launched in Canada, Australia, New Zealand, Israel the United Kingdom and Spain

Launch of Hospital at Home programs in other countries

1994
Birth of Hospital at Home in the U.S.
Johns Hopkins University begins development of first Hospital at Home program in the nation

2005
Researchers published results from a National Demonstration and Evaluation Study of Hospital at Home Care for Elderly Patients, conducted across three Medicare managed care plans at two sites and at a Veterans Administration medical center

Results published from first hospital at home use at VA medical center

2014
Mount Sinai receives CMMI award to study Hospital at Home
In 2014, CMMI awarded a Health Care Innovation Award to the Icahn School of Medicine at Mount Sinai to demonstrate the clinical effectiveness of hospital at home care under a 30-day risk-bearing arrangement

2018
Researchers at Brigham and Women's Hospital and Harvard Medical School published the first U.S. randomized controlled trial of hospital at home and determined substituting home hospitalization for in-hospital care reduced cost and utilization and improved physical activity

2019
Hospital at Home Users Group established
In 2019, The Hospital at Home Users Group was established to promote the development of develop standards for and provide technical assistance for Hospital at Home

NOV. 2020
CMS launches the Acute Hospital Care at Home (AHCaH) waiver program; Mount Sinai is first hospital approved

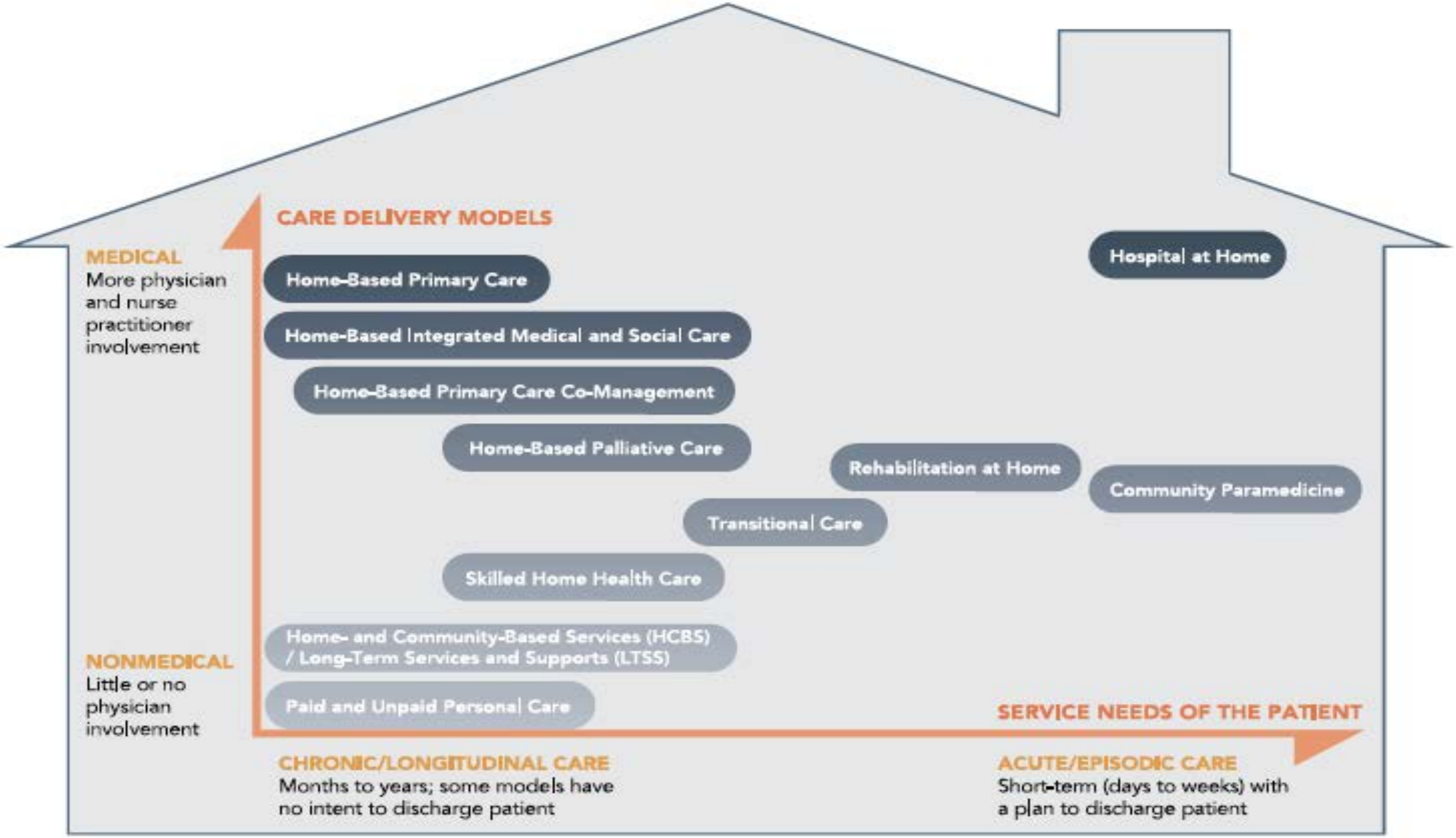
CMS launches AHCaH waiver program

SEP. 2022
CMS approves 256th hospital for participation in AHCaH waiver program
St Luke's Hospital of Kansas City in MO was approved for the waiver

DEC. 2022
Congress passed the Consolidated Appropriations Act of 2023 which included an extension of the AHCaH waiver through Dec. 31, 2024

Congress extends AHCaH waiver program

Hospital at Home Makes a Fully-Baked Home-Based Care Ecosystem Possible



https://www.chcf.org/publication/medical-care-home-comes-age
www.chcf.org/publication/medical-care-home-comes-age

Examples of Health and Safety Regulations

The Network of Support

Reduce Hospital Harms → Bring the Hospital to the Home → Hospital at Home

CENTRALIZED MEDICAL COMMAND AND CONTROL

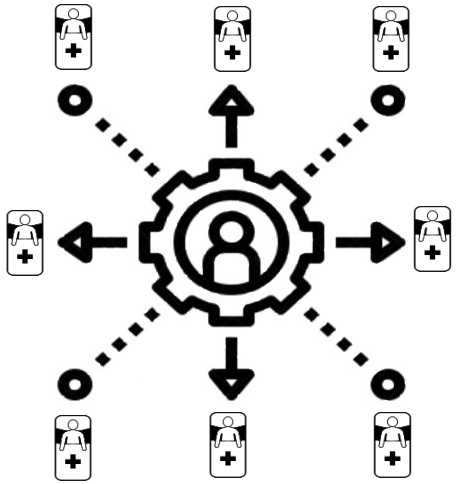
Physicians, RNs, APPs

Patient attending function, diagnosis, writes orders, observes patients

Peer-to-peer partnering with specialists

TECHNOLOGY/EQUIPMENT IN THE HOME

- Bi-Directional Audio/Video Communication with Patient Care Team in Command Center
- Vitals Sign Monitoring
- Backup Power/Broadband
- Emergency Response System



MOBILE INTEGRATED HEALTH

- Experienced Paramedic trained specifically for hospital at home care
- Dispatchable on-demand to patient's home 24x7
- Travels to the home fully equipped for routine and emergent patient care
- Tethered via video to Command Center physicians and nurses

ENABLING SOFTWARE

Services Brought into Patients' Homes

Tests


Mobile Imaging (X-ray)


Ultrasound


EKG


Echocardiogram


Lab Tests

Treatments


IV Medications


Oxygen


Dialysis


Nebulizer


Meals and Nutrition


Medical Supplies


Prescriptions

People


Mobile Integrated Health Paramedics


Registered Nurses and Nurse Practitioners


Physical and Occupational Therapists


Speech Therapists


Home Health Aides


Physician Assistants


Social Workers

Why Community Paramedics?

Why is Hospital at Home Different than Home Health

ACUTE CARE

NOT SCHEDULED CARE

PERFORMED UNDER THE DIRECTION OF A PHYSICIAN

(JUST LIKE IN A HOSPITAL)

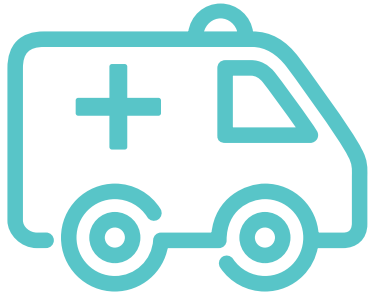
IT IS NOT A HANDOFF

HOME HEALTH IS MD

OVERSIGHT ONLY

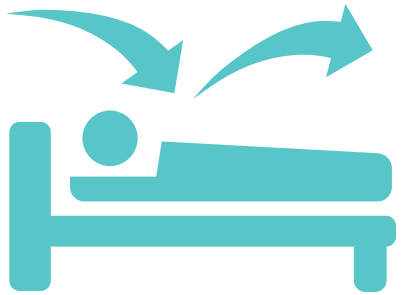
Potential Patients

Episode Prevention



ED Substitution

Oncology Patients



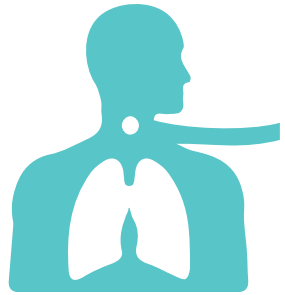
Acute Substitution

Pediatric Patients

Observation Substitution

Transfusion

Reduced LOS



Ventilated Patients

SNF Substitution

Prescribe the Home, For Life.

Acute respiratory illness	Diverticulitis
Bacteremia	Edema
Bronchitis	Gastroenteritis
Cancer-related diagnoses, such as febrile neutropenia	Hypertension
Cellulitis	Inflammatory bowel disease
Chronic obstructive pulmonary disease	Kidney injury or infection
Congestive heart failure	Liver disease
Complicated urinary tract infection	Other viral illnesses, such as severe influenza
Covid-19 and related conditions, such as COVID-19 pneumonia	Pneumonia
Deep vein thrombosis & pulmonary embolism	Post-partum complications Post-surgical conditions such as orthopedic, gastrointestinal and transplant care
Dehydration	Sepsis
Diabetes complications	Severe asthma exacerbation

Hospital at Home v. Brick and Mortar

Hospital Acquired Infections

HCaH	B&M
0.26%	8.6%

30-Day IP Readmissions

HCaH	B&M
9.9%	17.2%

Average Acute Length of Stay

HCaH	B&M
6.9	5.7

Exceptional Patient Experience

HCaH	B&M
89	38

HCaH Misc. Facts

Volume	Daily Census
409	7.90

30-Day Return to Emergency Department

Mortality Rate

HCaH	B&M
0.0%	3.0%

Source / Note

HAI: AHRQ Nation Scorecard

30Day Readmit: Yale Report to CMS 2022

Avg LOS: HCUP 2020 article summarizes the results of 9 studies.

IP Cost: AHRQ 2021 Studies forecast HCaH will cost 25% to 38% less then Traditional IP stay.

Patient Experience: Lobbie.com :50-79 is excellent 80 or higher is world-class

Mortality: NCBI Mortality Studies forecast that there will be no difference between the two.

Why Hospital at Home is Inevitable: Traditional Hospital Care is UNSUSTAINABLE

Five Unstoppable Forces

- Growing cost of medical care – medical education, labor, cancer treatment, medical devices
- Aging population
- Link between healthcare and economic development
- Pandemic and other public health emergency threats
- Growth in disparities

The U.S. Healthcare System is not Designed to Address Current/Future Healthcare Demands

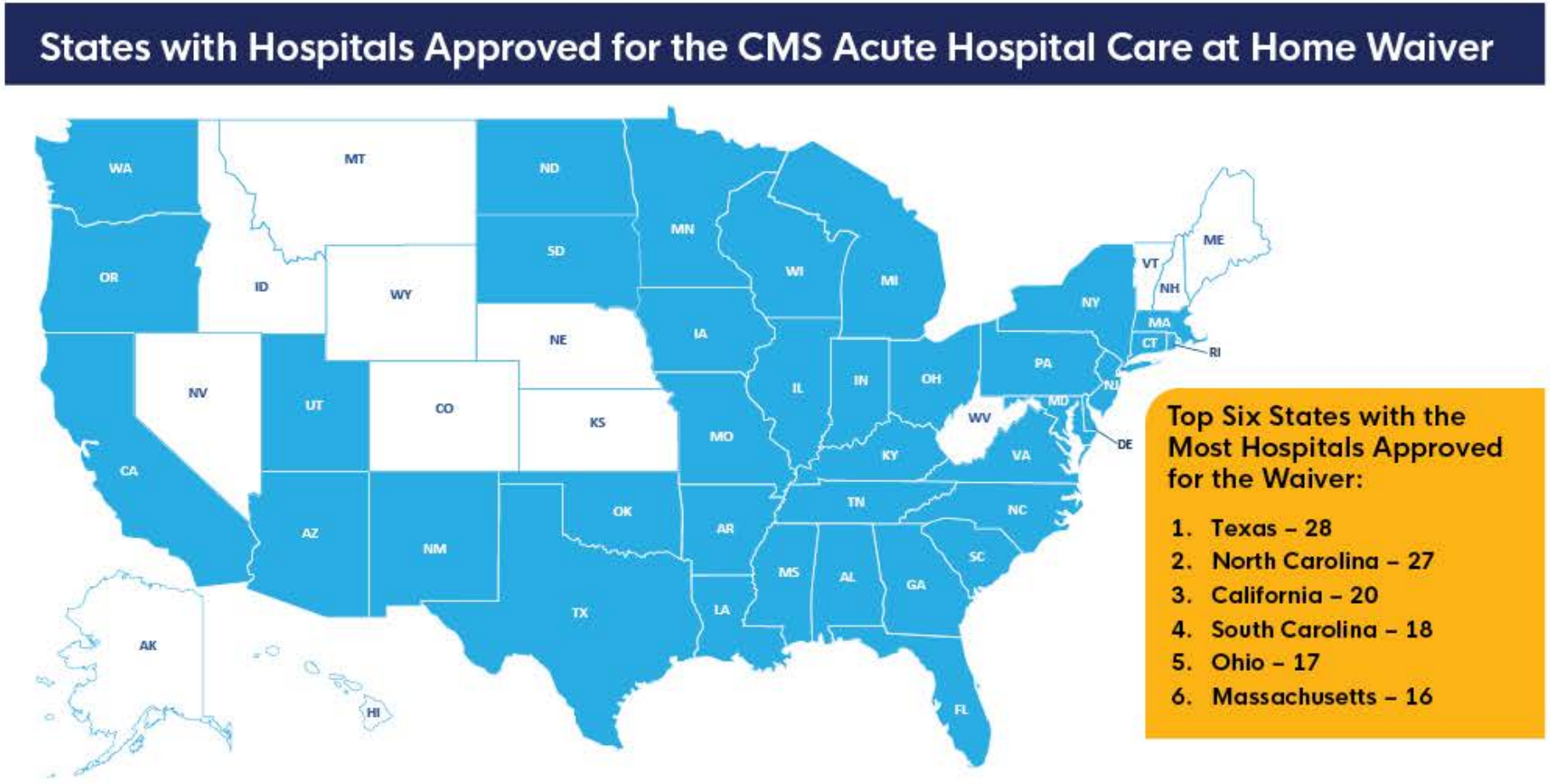
- Overcrowded
- Centralized
- Facilities-based
- Designed around provider (vs. patient) needs
- Lacks capacity adjustment flexibly
- Creates major access challenges – cost, time and location
- Does not democratize highest standard of care access

Requirements for System-Level Healthcare Transformation

- Decentralized
- Patient home and community based
- Designed around patient
- Flexible
- Democratized access to the highest standard of care

Broad Uptake of the CMS Acute Hospital Care at Home (AHCaH) Waiver

As of April 27, 2023, 278 hospitals in 37 states and across 124 health systems are approved to participate in the AHCaH program



Source: https://qualitynet.cms.gov/acute-hospital-care-athome/resources

Benefit Limitations to Full Hospital at Home Model of Care

Emergency Department

Acute Hospital Substitution

Reduced Length of Stay

Brick & Mortar Hospital

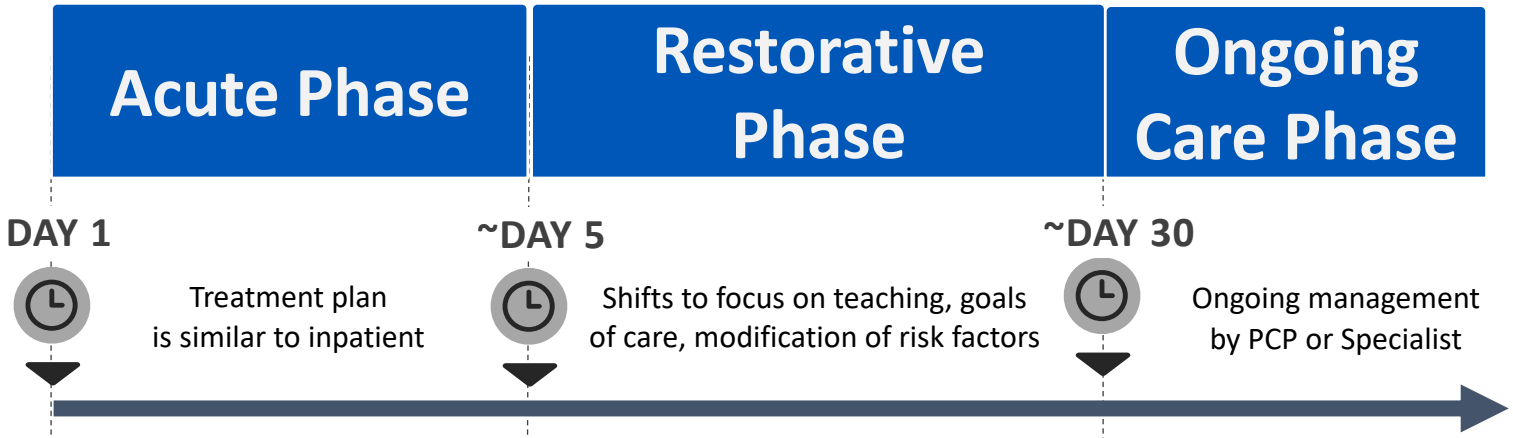
- Qualifying DRG
- Meet IP Criteria
- Clinical Stability Screen
- Social Stability Screen
- Participating Health Plan
- Covered Geography

Acute Phase	Restorative Phase	Ongoing Care Phase
DAY 1	~DAY 5	~DAY 30
Treatment plan is similar to inpatient	Shifts to focus on teaching, goals of care, modification of risk factors	Ongoing management by PCP or Specialist
Inpatient-Level Care Physician-Led Care Nursing & Therapies (Daily Virtual RN Assessments at least 4x day) Frequent Clinician Visits (Day 1 & 3 NP/APP Visits) In-Home Diagnostics (Labs, IV medication, imaging, home health aid, medical meals)	Post-Acute Level Care APP-Led Care Continued Rehabilitation with focus on ancillary services such as PT, OT, nutrition, and social work (Daily Virtual RN Assessments at least 2x day) Medication Management Patient Education Gradual Transition to PCP	Full recovery from medical episode New stable baseline established

All services, equipment, and supplies brought to the patient

Ongoing patient and family engagement

Full Hospital at Home Model of Care Drives Cost Savings



30-Day Episode Approach

Total Cost of Care Reduction ~ 30%

Value Creation

- All-Cause Readmissions decrease 50% - 70%
- Skilled Nursing Facility Expense decrease ~ 100%
- ED bounce backs decrease 90+%
- Post acute services replaced by in-home services

Leff B, Burton L, Mader SL, et al. Hospital at Home: Feasibility and Outcomes of a Program To Provide Hospital-Level Care at Home for Acutely Ill Older Patients. *Ann Intern Med*. 2005;143(11):798-808. doi:10.7326/0003-4819-143-11-200512060-00008

Quality Standards

- **Access & Equity**
  - Provide **access** to the Hospital at Home across multiple **payors, demographic variables**, and **points of entry**
  - Provide **equitable care** that accounts for **social drivers** of health outcomes
- **Safety & Reliability**
  - **Redundancy with reliability** - provide timely, efficient and effective care through **decentralized services**
  - Provide **meticulous care plan oversight** by command center team for safe and reliable care in the home
- **Engagement & Experience**
  - Provide exceptional **patient and caregiver experience** of **home-based** and **virtual care**
  - Provide exceptional **multi-disciplinary** provider experience for virtual and in-home providers
- **Cost & Affordability**
  - Provide **value-based healthcare** services for high acuity and **transitional care**
  - Reduce unnecessary **healthcare utilization**

HaH Value Creation Example

Sample Data

	Bricks & Mortar	Hospital at Home	$ Savings
Acute Hospital Inpatient	$ 3,989,795	$ 3,989,795	
Acute rehab	$ 169,850	$ -	$ 169,850
Skilled Nursing Facility	$ 944,405	$ -	$ 944,405
PT/OT/ST	$ 19,882	$ -	$ 19,882
Radiology	$ 21,064	$ -	$ 21,064
Lab/Pathology	$ 19,104	$ -	$ 19,104
Infusions	$ 71,958	$ -	$ 71,958
Home Health	$ 166,141	$ -	$ 166,141
DME	$ 9,948	$ -	$ 9,948
Outpatient Facility	$ 137,851	$ -	$ 137,851
Other Outpatient	$ 610	$ -	$ 610
Readmissions	$ 1,098,917	$ 549,458	$ 549,458
Professional Inpatient	$ 139,028	$ 104,271	$ 34,757
Professional Outpatient	$ 70,436	$ 52,827	$ 17,609
Ambulance	$ 49,741	$ 2,487	$ 47,254
Emergency Room	$ 36,135	$ 1,807	$ 34,328
Total 30-Day Spend	**$ 6,944,866**	**$ 4,700,645**	**$2,244,221**

Payment equivalence to the DRG (Diagnosis-Related Group)

Post Acute replaced by In-home services

Typically 2/3rds of Savings Generated

Utilization reductions (e.g., 50% decrease in readmissions)

Typically 1/3rd of Savings Generated

Total Cost of Care Savings targeted by MA Plans

32% Savings

*
Data Source: 2019 CMS research database
293 Patients whose inpatient diagnosis matched an Acute Substitution eligible MS-DRG
30-Day Costs Model created by national actuarial firm and licensed to Medically Home

Why We Are Optimistic About Hospital at Home: 30 Years of Data

A robust body of research, nationally and internationally, supports hospital at home as a **safe, effective, and preferred** care delivery model.[2] Data from the AHCaH program confirm the decades of studies demonstrating the benefits of hospital at home care.[2] Over **345** published research studies and **30 years** of randomized controlled trials, including studies of hospital at home care provided under the waiver, consistently convey the following messages, as illustrated by the examples below:

LOWER READMISSIONS

9 Randomized Clinical Trials assessed 959 adult patients with chronic conditions. Patients who received HaH care had statistically significant lower 30-day readmissions, lower Emergency Department revisits, and lower risk of long-term care readmissions.[3]

FEWER INFECTIONS

Representative HaH programs have reported <1% Hospital Acquired Infection (HAI) rates in 2022, significantly lower than national average of 8.6%.[4]

LESS DELIRIUM

Studies from 2005 through the present report 9% delirium in patients receiving HaH care compared to 24% delirium from brick-and-mortar hospital care.[5]

REDUCED SNF ADMISSIONS

A meta-analysis determined that HaH care led to a statistically significant reduction in patient discharges to a skilled nursing facility (SNF). HaH care was affiliated with a 1.7% SNF discharge rate vs. the 10.4% average brick-and-mortar SNF discharge rate.[6]

LOWER UNEXPECTED MORTALITY

Data suggests that an estimated 3.1% of inpatient deaths are preventable.[7] In a recent paper published on the CMS waiver experience, researchers evaluated nearly 1900 patients who received HaH care from 2020-2021 and found an overall unexpected mortality rate of 0.43%, which is lower than reported rates for traditionally hospitalized patients.[7]

PREFERRED CARE MODEL

A 21-year long longitudinal analysis from 1995 - 2016 assessed patients in 25 systematic reviews with serious medical conditions who had received HaH care compared to inpatient hospitalization. Results showed higher patient and caregiver satisfaction with HaH care compared to traditional inpatient hospital care.[8]

PATIENTS ARE MORE ACTIVE AT HOME

A randomized controlled trial conducted by Harvard Medical School compared HaH care with traditional inpatient care. Results showed improved physical activity in patients who received HaH care vs. brick-and-mortar care and improved patient satisfaction.[9]

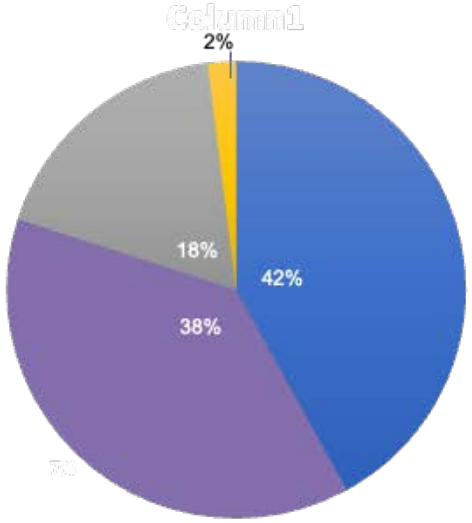
- Proportion of the day sedentary: 12% HaH vs 23% in brick-and-mortar hospital
- Proportion of the day lying down: 18% HaH vs. 55% in brick-and-mortar hospital

Hospital at Home

Health equity in Hospital at Home: Outcomes for economically disadvantaged and non-disadvantaged patients

Albert L. Siu MD, MSPH[1,2] | Duzhi Zhao MS[1] | Evan Bollens-Lund MA[1] | Sara Lubetsky MS[1] | Gabrielle Schiller MPH[1] | Pamela Saenger MD, MPH[1] | Katherine A. Ornstein PhD, MPH[1] | Alex D. Federman MD, MPH[3] | Linda V. DeCherrie MD[1,4] | Bruce Leff MD[5]

	Medicaid: HaH 25% of patients in study	Medicaid: Brick & Mortar 16% of patients in study	Non-Medicaid: HaH 35% of patients in study	Non-Medicaid: Brick & Mortar 24% of patients in study
Acute LOS (days)	3.33*	5.81	3.13*	4.94
Readmission, all cause (30-day rate)	9.92	20.27	9.52	14.04
ED revisits, all cause (30-day rate)	4.96*	16.22	6.55	7.89



Acute care at home patient safety measures	INTEGRIS Health rate	National rate
Acquired infections	0%	8.6%[1]
30-day readmissions	10.58%	13.1%[2]
Average acute length of stay	5.54 days	4.6 days[3]

Historically Marginalized Patients Have

High-Quality Outcomes From Hospital at Home

Medicaid Patients and Patients of Low Socioeconomic Status (SES) Receiving HaH Care Have Lower 30-Day Readmissions Than Comparable Patients Receiving Traditional Inpatient Care

	All-cause hospital readmission	All-cause Emergency Department revisit
Low SES Hospital at Home	13.21	6.92
Low SES Inpatient Hospital	17.39	13.91
Medicaid Hospital at Home	9.92	4.96
Medicaid Inpatient Hospital	20.27	16.22

2014-2017 longitudinal study (Siu et al., 2022)[10] [Care provided pre-waiver]

In a Study of Care Provided Under the AHCaH Waiver, Medicaid Patients Have Lower 30-Day Readmission Rates with HaH Care

	30-Day Readmissions (%)	
	Hospital at Home	Inpatient Hospital
Medicaid as Primary Payer	5.7	14
Medicaid as Secondary Payer	7.9	21.5

(Michaelidis, 2022)[10] [Care provided under AHCaH waiver]

Why Hospital at Home is Inevitable: Traditional Hospital Care is UNSAFE

The NEW ENGLAND JOURNAL of MEDICINE

SPECIAL ARTICLE

The Safety of Inpatient Health Care

Adverse events in 1 of 4 admissions

- 23% are preventable
- 33% caused **serious harm** – resulted in substantial intervention or prolonged recovery
- 15% associated with nursing care

These rates of adverse events are unchanged from landmark studies of the safety of hospital care conducted in the 1990s

New England Journal of Medicine 2023;388:142

Hazards of Hospitalization of the Elderly

Morton C. Creditor, MD

- Delirium
- Falls
- Immobility
- Disability
- Incontinence
- Adverse drug events
- Nosocomial infections
- Pressure sores

JAMA. 2011;306:1782; Ann Intern Med. 1993;118:219; N Engl J Med. 2013;368:100

Examples of Health and Safety Regulations

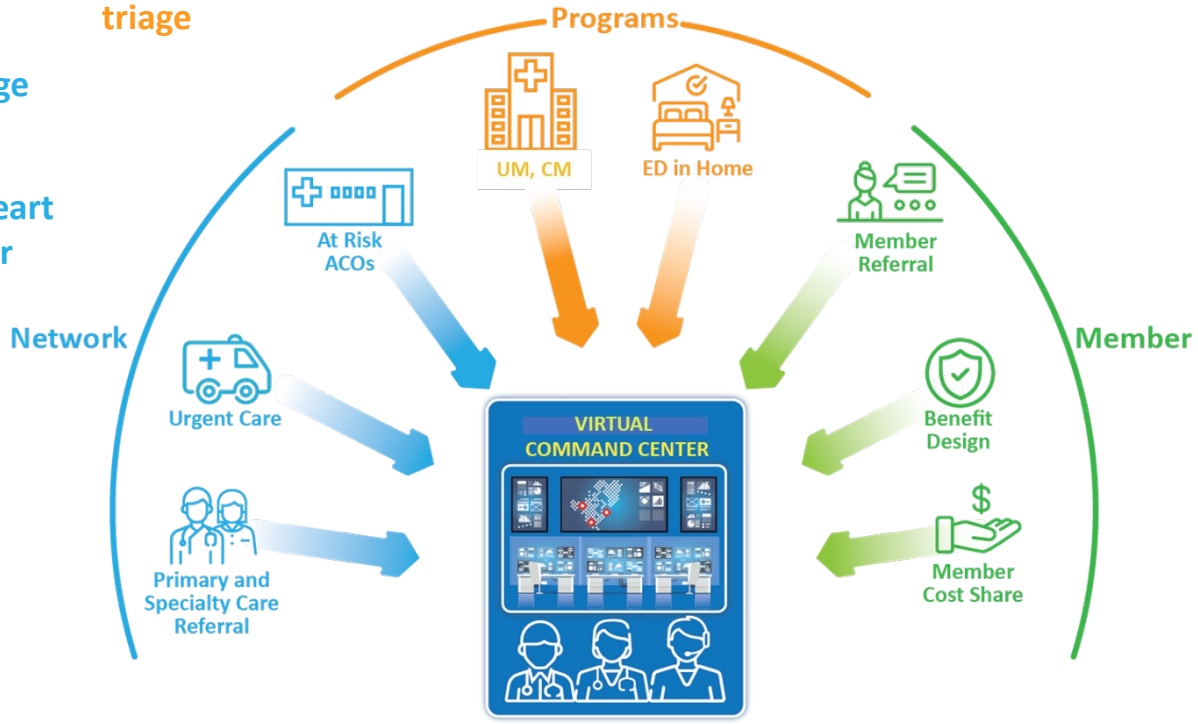
Environmental Services:

Prescribe the Home, For Life.

Patient Entry into HaH (and EDiH) not limited to hospital encounter

- EDiH – for every 1,000 EDiH visits ~100 HaH admissions
- CM– educational campaign to active lists
- High Risk pre-activation
- SDOH Partners / Community Resources, Sr. Centers Educ, road show
- Link with Chronic Home Care – in home referral from vendor base
- Link with virtual pcp program, educ, referral, warm handoff to EDiH triage

- At-Risk POs/ACOs – Program linkage
- Primary Care - direct referrals
- Specialties – target high volume heart failure programs (Heart & Vascular Institutes) – direct referrals
- Command Center Tours
- CME / Continuing Ed programs – Decentralizing High Acuity Care
- Urgent Care staff visit/educ



- Member ID Card – EDiH Triage Number on card back
- Member direct mail
- Client performance meetings - educate model, past history / potential impact
- Business Journals
- Link to member facing sites/materials for telehealth, online visits/MDLive
- Cost share – mirror $0 of virtual pcp program
- Cost share –B&M ED Visit if triaged from EDiH

Ms. J.S.

J.S.. is a 40 yr. old woman with graft versus host disease (GVHD) of her lungs following a stem cell transplant for Acute Myeloid Leukemia.

Due to her GVHD, she has been admitted and intubated three times.

Though her condition was worsening, and she had been holding out to see her two children graduate.

Soon after she took another downturn and agreed to be DNR but declined hospice.

Ms. J.S.

Then one evening Her sister called as J. was becoming increasingly short of breath.

She wanted to call 911 but knowing her sister did not want to return to the hospital, she was reaching out for help.

After discussion with her MGH team, we agreed she needed a vascular access, and IV ABX.

Treatment Plan:

- Vascular Access
- Q6H IV Antibiotics
- Pain Management (IV Morphine)

Ms. J.S.

2-weeks later, Ms J.S. was enrolled in Home Hospice.

Community Paramedics provided scheduled assessments Q48hrs and remained available for unscheduled, acute responses for patient or family needs.

Community Paramedics were activated three times for increased pain, dehydration, and post-fall evaluation.

Over 10 days, Ms. J.S. remained in the home with comfort and pain management available.

Ms. Cindy-Lou

- **Primary Care at Home:**
  - **A coordinated Community Paramedic in-home visit with the virtual Primary Care Clinician for a wellness physical and general assessment.**
- **Post Cardiac Discharge Program:**
  - **A coordinated Community Paramedic in-home visit with the virtual Cardiology Clinician for a wellness physical and targeted assessment every 3-5 days.**
- **Palliative Care Community Paramedic Program:**
  - **A coordinated Community Paramedic in-home visit with the virtual Palliative or Hospice Clinician every 5-7 days or same-day urgent visit.**
- **Hospital at Home:**
  - **A partnership of a virtual clinical team and local Community Paramedics with 2-3 appointments per day to fulfill the treatment plan.**

Ms. Cindy-Lou

67-year-old female.

Retired after 39 years teaching in the public schools.

Fixed income with government assisted living.

Spouse passed away 10+ years ago with no immediate family in the area.

Myocardial Infarction x 3 (2017, 2019, 2022)

Congestive Heart Failure (LVEF <40%)

AV Block, Complete (2022)

Hypertension

Severe Obesity

No history tobacco use

History of alcohol addition, 20+ years sober

Physical activity is seasonal (spring-summer)

Ms. Cindy-Lou

Myocardial Infarction #1 — **2017**

2017-2019 — **9 Admissions for Exacerbated CHF (B&M). ALOS = 22 midnights.**

Myocardial Infarction #2. Enrolled in Post Cardiac Discharge Program x 30 days. — **2019**

2019-2020 — **7 Admissions for Exacerbated CHF (B&M). ALOS = 13 midnights. Enrolled in Post Cardiac Discharge Program x 30 days.**

4 Admissions for Exacerbated CHF (Hospital at Home). ALOS = 8 midnights. Enrolled in Post Cardiac Discharge Program x 30 days. — **2020-2022**

2022 — **Myocardial Infarction #3 + pacemaker. Discharged to Palliative Care Community Paramedic Program.**

Ms. Cindy-Lou

Myocardial Infarction #1 — **2017**

2017-2019 — **9 Admissions for Exacerbated CHF (B&M).**
ALOS = 22 midnights.

Myocardial Infarction #2. — **2019**
Enrolled in Post Cardiac Discharge Program x 30 days.

2019-2020 — **7 Admissions for Exacerbated CHF (B&M).**
ALOS = 13 midnights.
Enrolled in Post Cardiac Discharge Program x 30 days.

4 Admissions for Exacerbated CHF (Hospital at Home).
ALOS = 8 midnights.
Enrolled in Post Cardiac Discharge Program x 30 days. — **2020-2022**

2022 — **Myocardial Infarction #3 + pacemaker.**
Discharged to Palliative Care Community Paramedic Program.

Ms. Cindy-Lou

Myocardial Infarction #1 — **2017**

2017-2019 — **9 Admissions for Exacerbated CHF (B&M).**
ALOS = 22 midnights.

Myocardial Infarction #2. — **2019**
Enrolled in Post Cardiac Discharge Program x 30 days.

2019-2020 — **7 Admissions for Exacerbated CHF (B&M).**
ALOS = 13 midnights.
Enrolled in Post Cardiac Discharge Program x 30 days.

4 Admissions for Exacerbated CHF (Hospital at Home).
ALOS = 8 midnights.
Enrolled in Post Cardiac Discharge Program x 30 days. — **2020-2022**

2022 — **Myocardial Infarction #3 + pacemaker.**
Discharged to Palliative Care Community Paramedic Program.

No New Buildings.

Prescribe the Home,
For Life.

With Hospital at Home.

Scott Willits, ACP, CP