

Access the entire webinar series here:

<https://files.asprtracie.hhs.gov/documents/aspr-tracie-healthcare-system-preparedness-considerations-speaker-series-summary.pdf>

Access speaker bio here:

<https://files.asprtracie.hhs.gov/documents/healthcare-preparedness-speaker-series-mayo-clinic-speaker-bio.pdf>

Access the recording here: <https://attendee.gotowebinar.com/recording/3405628839477723400>



TRACIE
HEALTHCARE EMERGENCY PREPAREDNESS
INFORMATION GATEWAY

Healthcare System Preparedness Considerations Speaker Series

June 2022

Unclassified//For Public Use





THE FUTURE OF HOSPITAL CARE

HOME HOSPITAL PROGRAMS, COMMAND CENTER DIRECTED
CARE DELIVERY, AND THE “WHY” BEHIND IT

Michael J. Maniaci, MD
Associate Professor of Medicine

ASPR TRACIE
June 30, 2022

LEARNING OBJECTIVES

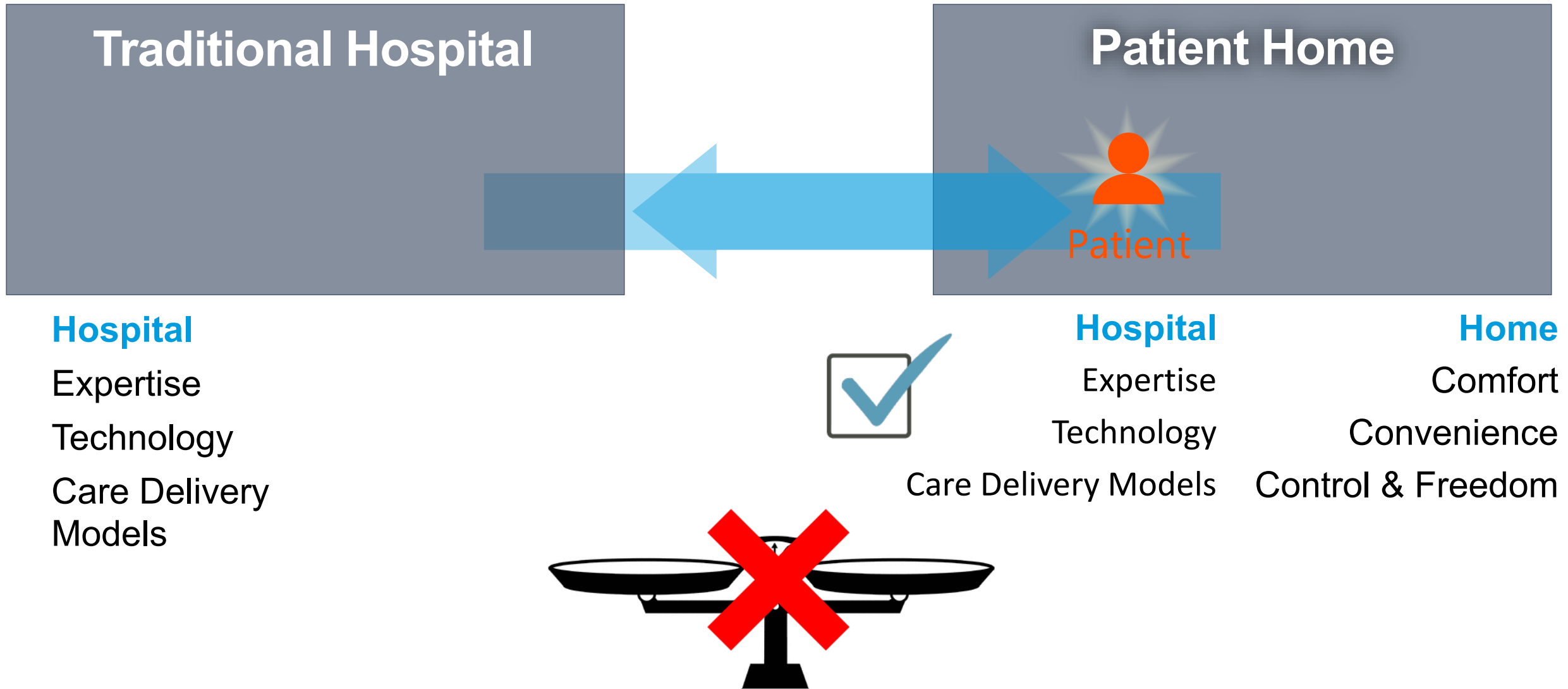
- Cite three reasons why patients may prefer to have their care in the home setting
- Identify three advantages to command center mediated care delivery
- Name three global impacts possible with these new models of care

1

ADVANCED CARE IN THE HOME



WHY DO PATIENTS WANT THIS?



THE VOICE OF THE PATIENT

“I can’t see
my family”

“Food is
terrible”

“I’m stuck in
bed”

“No one tells
me what’s
going on”

“I can’t sleep
in this bed”

Current Problems with Hospitalization



Unintended adverse clinical events

- Delirium
- Weakness
- Infections



Access to Care

- Hospital bed capacity constraints

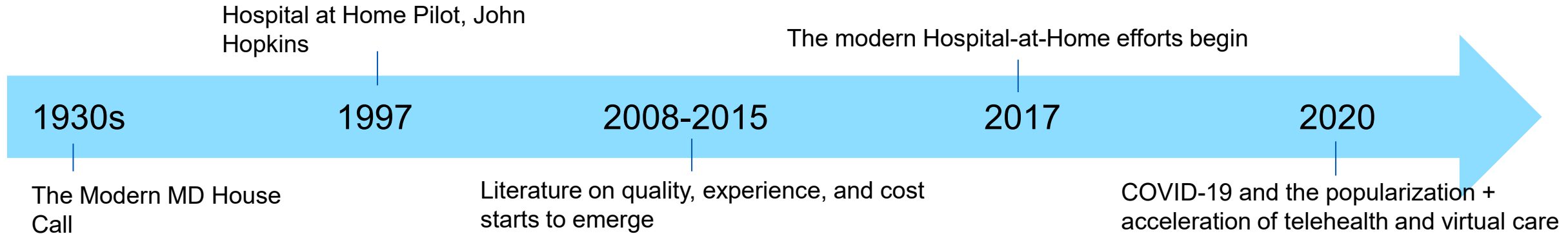


Cost of U.S. Healthcare

- 3-day average cost ~\$30,000
- Bankruptcy ~66% tied to medical

Creditor MC. Ann Intern Med. 1993.
Hung WH et al. JAMA Intern Med. 2013.
Covinsky K. JAMA 2011.
Healthcare.gov
Himmelstein et al American Journal of Public Health 2019
AARP 2020

Home Hospital Care: A History



- Decreased 30-day mortality
- Decreased 30-day readmissions
- Decreased falls
- Decreased delirium
- Improved mobility
- Improved sleep
- High patient experience
- Decreased cost of care
- Fewer healthcare resources used

JAMA Internal Medicine | [Original Investigation](#)

Association of a Bundled Hospital-at-Home and 30-Day Postacute Transitional Care Program With Clinical Outcomes and Patient Experiences

Alex D. Federman, MD, MPH; Tacara Soones, MD, MPH; Linda V. DeCherrie, MD; Bruce Leff, MD; Albert L. Siu, MD, MSPH

JAMA Internal Medicine | [Review](#)

Alternative Strategies to Inpatient Hospitalization for Acute Medical Conditions
A Systematic Review

Jared Conley, MD, PhD, MPH; Colin W. O'Brien, BS; Bruce A. Leff, MD; Shari Bolen, MD, MPH; Donna Zulman, MD, MS

CMAJ

RESEARCH

Avoiding hospital admission through provision of hospital care at home: a systematic review and meta-analysis of individual patient data

Sasha Shepperd MSc DPhil, Helen Doll MSc DPhil, Robert M. Angus MBChB, Mike J. Clarke MA DPhil, Steve Iliffe BSc MBBS, Lalit Kalra MD PhD, Nicoletta Aimonio Ricauda MD, Vittoria Tibaldi MD PhD, Andrew D. Wilson MD

[Annals of Internal Medicine](#) |

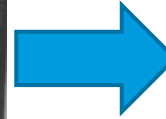
ORIGINAL RESEARCH

Hospital-Level Care at Home for Acutely Ill Adults
A Randomized Controlled Trial

David M. Levine, MD, MPH, MA; Kei Ouchi, MD, MPH; Bonnie Blanchfield, ScD; Agustina Saenz, MD, MPH; Kimberly Burke, BA; Mary Paz, BA; Keren Diamond, RN, MBA; Charles T. Pu, MD; and Jeffrey L. Schnipper, MD, MPH

Unclassified//For Public Use

WHY DID IT TAKE 20 YEARS TO CATCH ON?



Limitations to the old model:

- Expenses are high compared to return (physician to patient ratios 1:4).
- Resources are limited (only so many providers, nurses, meds, etc.).
- Geographic coverage is limited (one hub model).

Home Hospital v2.0



Virtual care addresses the highest cost and most limited resources, the physician and the bedside nurse



Advances in telehealth technology and both internet and cellular connectivity give new overcome geographical challenges



Outsourced vendor-mediated medical supply chains become a partner in advanced care at home delivery

WHAT DOES V2.0 LOOK LIKE?

Medical Institution

Patient Home

Patient

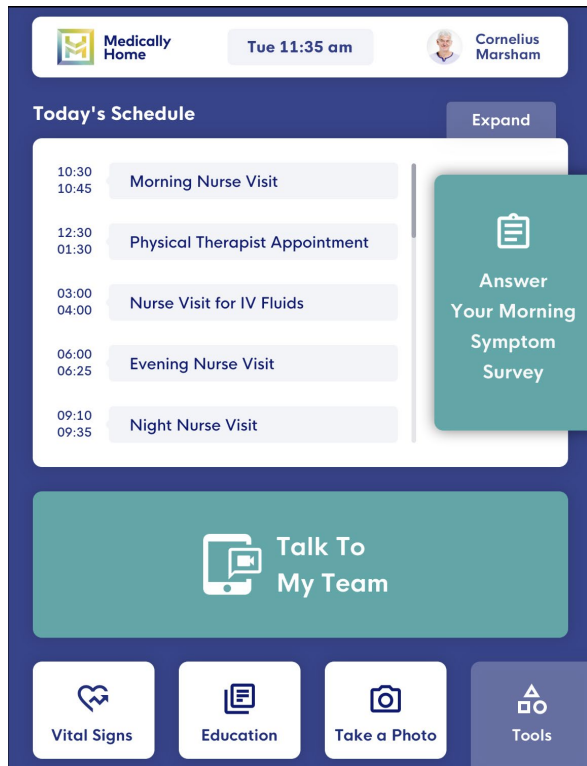


Home Technology

Home Technology

IN-HOME TECHNOLOGY

Virtual care of ACH patients is supported by Bluetooth-enabled technology



WHAT DOES V2.0 LOOK LIKE?

Medical Institution



Software
Platform

Patient Home



Patient



Home
Technology



Software
Platform

WHAT DOES V2.0 LOOK LIKE?

Medical Institution



Software
Platform



Command
Center

Patient Home



Patient



Home
Technology



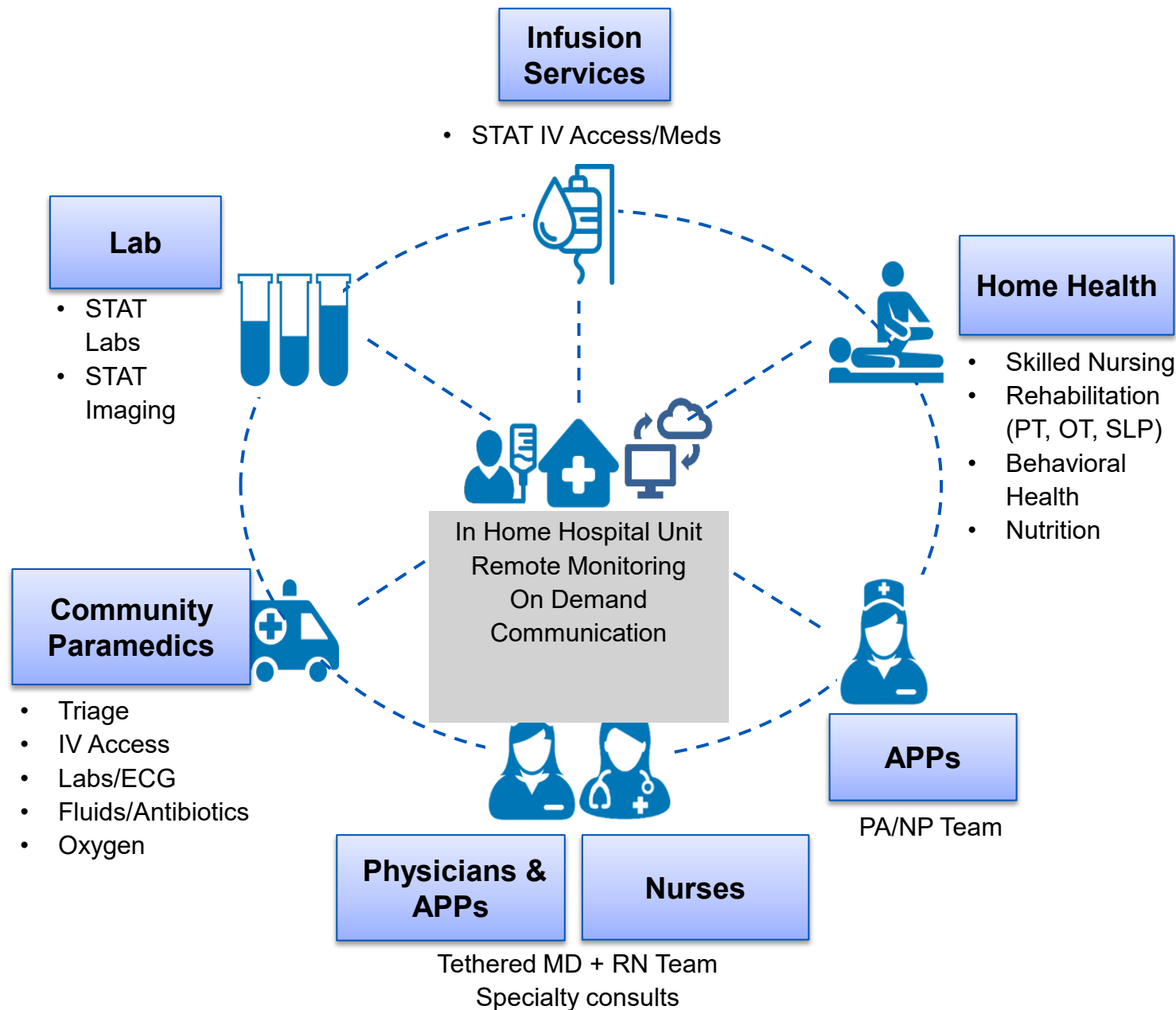
Command Center

WHAT DOES V2.0 LOOK LIKE?



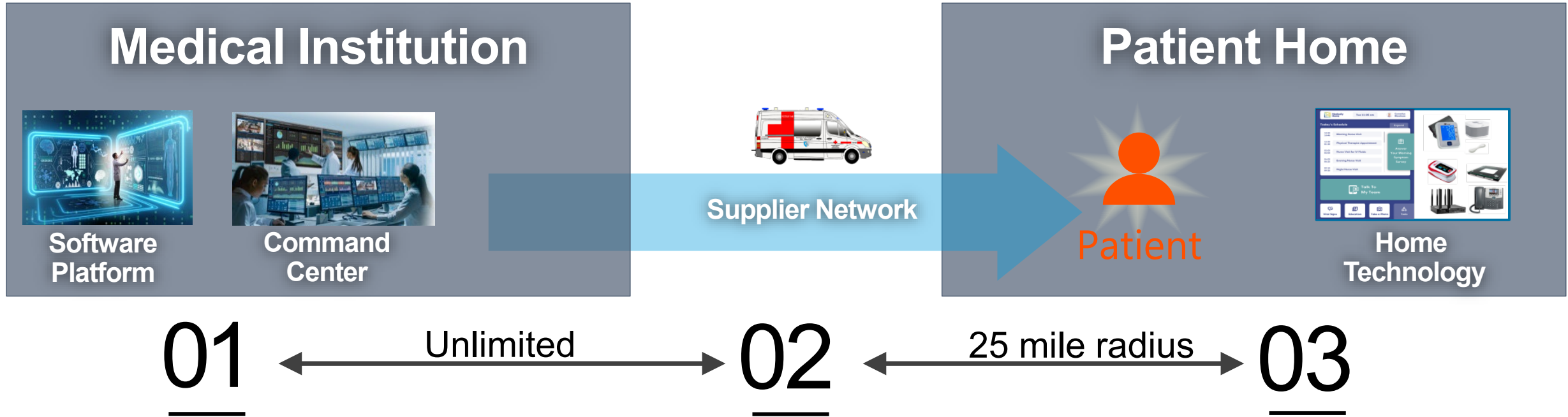
Community Paramedicine / ARR	Courier	DME	Home Health Aides	Home Care Services	Home Technology
Infusion Therapy	Lab Processing	Medical Meals	Medical Supplies	Medical Waste	Mobile Diagnostics
Nurse Practitioner	Oxygen/Respiratory	Phlebotomy	Pharmacy	Security	Transportation

Supplier Network



Our goal is to replicate as closely as possible the capabilities of a brick and mortar hospital

WHAT DOES THIS GIVE US?



ADVANCED CARE AT HOME ACROSS MAYO CLINIC GEOGRAPHIES



Unclassified//For Public Use

04092021-058

Key Advantages of a Virtual Hospital Model

- Allows brick-and-mortar beds to be used for acute, unstable patients
- Enables providers to truly understand the patient's lifestyle and care ecosystem to provide tailored, individualized care
- Can, at scale, create cost savings for healthcare providers, insurers, and patients



2

COMMAND CENTERS AND CARE DELIVERY



Hospital Command Centers

- “Air Traffic Control” for hospitals and hospital systems
- Combine real-time analytics with interdisciplinary teams in order to coordinate communication and impact outcomes.
- Focus depends on need, but common themes include:
 - Patient flow and bed capacity management
 - Management of hospital staffing
 - Resource deployment
 - Coordination of hospital transfers
 - Centralization of safety huddles and quality control coordination
 - Rapid response to both urgent medical needs and patient experience issues

1. Ground Control to Major Growth in Hospital Command Centers. (2019, September 10). Accessed June 26, 2022, from <https://www.gehealthcare.com/article/ground-control-to-major-growth-in-hospital-command-centers>

2. Marcinkowski B. Hospital Command Centers. GW School of Health and Science. (2020, July 7). Accessed June 26, 2022, from <https://smhs.gwu.edu/urgentmatters/news/hospital-command-centers#ref2>

BUT CARE IS NO LONGER JUST THE HOSPITAL



Future of Healthcare Delivery

Today → defined by location and determined by provider

Tomorrow → defined by:



Acuity

(System and
Provider)



Clinical Need

(Provider)



Resources Available

(System)

Future Command Centers

- Will help providers determine acuity and expeditiously help drive resource delivery through automation and AI
- Will have to organize resources across different geographies, capacity levels, and payers
- Will need to drive workforce and care delivery efficiency
- Will need to track healthcare resources and workforce in real-time
- Will have to anticipate and react to different external forces, like supply chain disruptions, local and national disease outbreaks, incremental weather, traffic, and international stressors.
- Will be interconnected with the global healthcare market
- CANNOT be human dependent

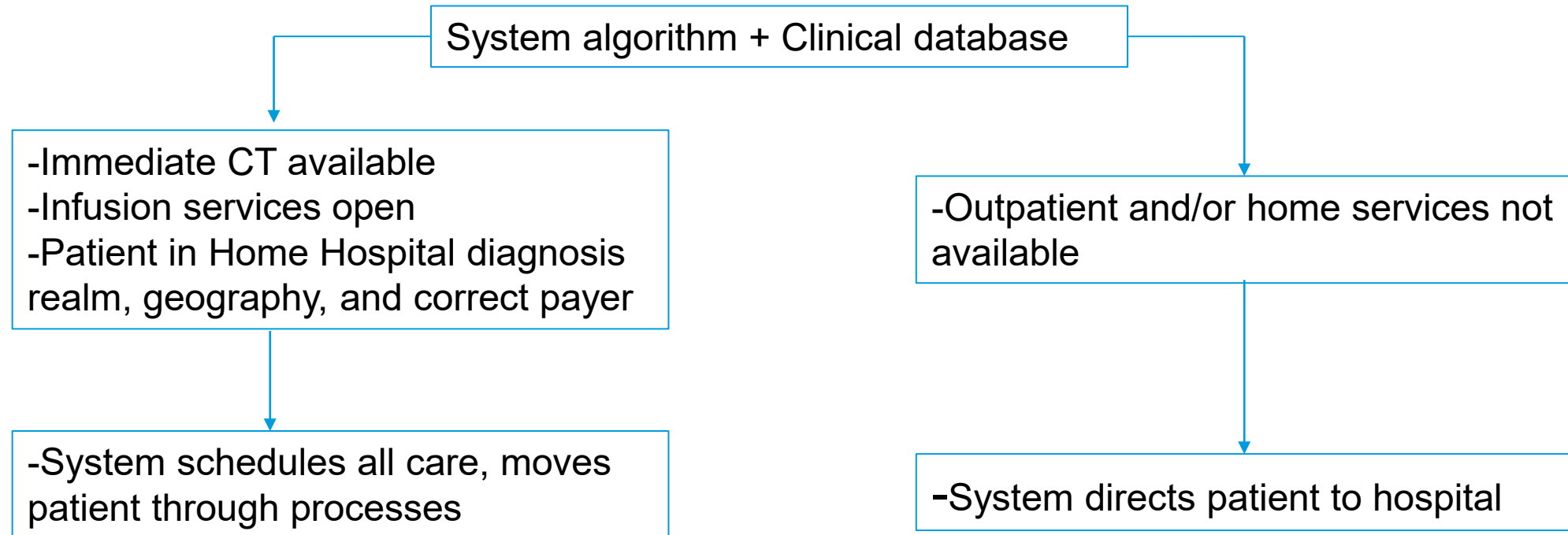
Care Delivery: Now and the Future

Today:

An ill patient seen by clinician → determination that high-acuity care needed → patient sent to Emergency Department → Patient admitted to the hospital

Tomorrow:

An ill patient [seen] by clinician → determination that high-acuity care needed



3

DELIVERABLES

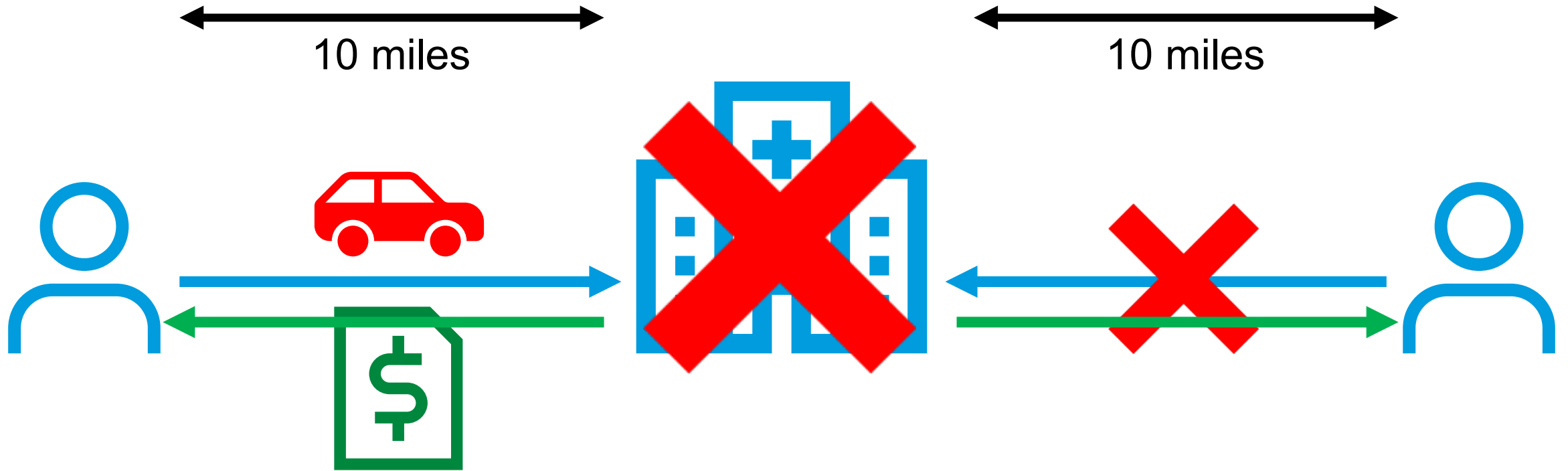


What is the impact?



Healthcare Equity

Decentralization of Healthcare



Decentralization of Healthcare

- Get healthcare to people that need it most
- Urban care
- Rural care
- People of color
- People that can't afford care
- The elderly
- People who need mental health and behavioral resources

What is the impact?



Healthcare Equity



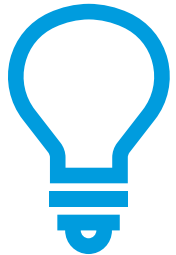
Environmental Impact

50% of Healthcare Dollars:



Cost of the building

Construction → carbon footprint



Utilities (lighting, water, etc.)

Energy conservation



Environmental services

Chemicals, plastics, etc.

Environmental Impact

- Command centers and software reducing resource waste
- Electronic and/ or hybrid vehicles becoming the cornerstone of care delivery in alternate environments
- Virtual technology allows an electronic connection, reducing travel needs and environmental impact
- Point-of-care labs, camera technology, and enhanced Wi-Fi will reduce the use of plastic, glass, and other resources

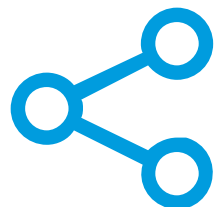
What is the impact?



Healthcare Equity



Environmental Impact



Surge Capacity

Surge Capacity

- The current system does not have a relief valve
- The ability to mobilize virtual resources quickly
- The ability to expand rare resources nationally and globally



SUMMARY

Decentralized healthcare, led by advanced care in the home, will become a pillar of medicine

Hospital command centers will drive healthcare delivery based on acuity, need, and resource availability

These combined efforts will help drive healthcare equity, have a positive contribution to the environment, and help provide surge capacity

Contact ASPR TRACIE



asprtracie.hhs.gov



1-844-5-TRACIE



askasprtracie@hhs.gov