

2024 VIZIENT CONNECTIONS SUMMIT

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# Creating a Safe Care Continuum for Persons Who Inject Drugs

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# Learning Objectives

- Discuss the impact of a multidisciplinary approach in treating patients with high burden infections complicated by substance use disorders
- Explain successful methods that can be used to manage LOS, resulting in downstream improvement in capacity and throughput



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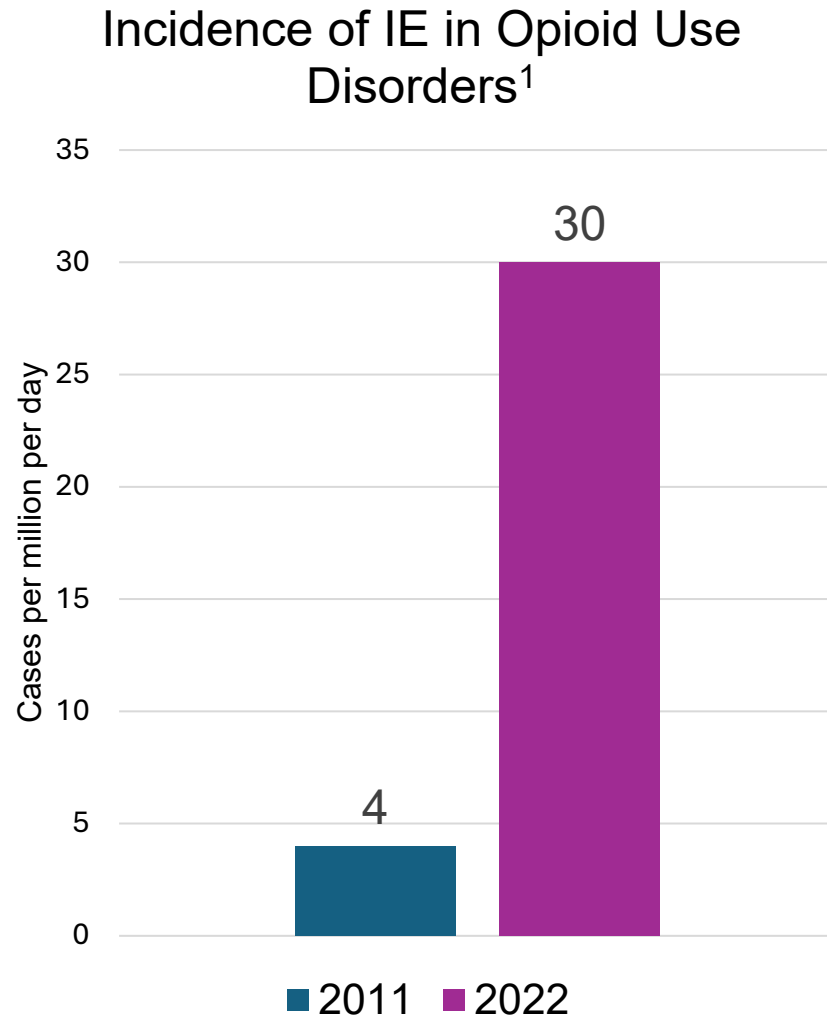
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# Burden of Infective Endocarditis (IE)



## Trends in IE, 2002 to 2016<sup>2</sup>:

- Drug abuse and IE are on the rise
- Increased incidence of hospitalized patients with IE
  - 8% vs. 16%
- Incidence rate increased more significantly in those with drug abuse
  - 48 per 10,000 to 79 per 10,000

REFLECTION

1. Wang, L., Volkow, N.D., Berger, N.A. *et al.* Association of COVID-19 with endocarditis in patients with cocaine or opioid use disorders in the US. *Mol Psychiatry* **28**, 543–552 (2023). <https://doi.org/10.1038/s41380-022-01903-1>

2. Kadri AN, *et al.* Geographic Trends, Patient Characteristics, and Outcomes of Infective Endocarditis Associated With Drug Abuse in the United States From 2002 to 2016. *J of Am Heart Asso* 2019; 8:9. <https://doi.org/10.1161/JAHA.119.012969>

# Economic Impact of Increasing IE

- Retrospective cross-sectional study from West Virginia (2008-2015)<sup>1</sup>
  - A total of 462 patients were hospitalized with IE and concomitant illicit drug use
  - IE cases increased from 26 admissions in 2008 to 66 in 2015
- Total hospital charges were **\$17,306,464**
  - Only 22% of these charges were collected
  - Resulting in a hospital deficit of over **\$13 million**
- Economic impact of COVID-19 caused significant burden on health-systems<sup>2</sup>
  - It is imperative for not-for-profit centers to focus on financials to reach stabilization

1. Bates MC, Annie F, Jha A, Kerns F. Increasing incidence of IV-drug use associated endocarditis in southern West Virginia and potential economic impact. Clin Cardiol. 2019 Apr;42(4):432-437. doi: 10.1002/clc.23162.

2. 2024 Health System Predictions in Ten Charts. <https://angle.ankura.com/post/102iwlz/2024-health-system-predictions-in-ten-charts>. Published Jan 12, 2024. Accessed August 1, 2024.

# Carilion Roanoke Memorial Hospital



- Roanoke, Virginia
- 763-bed academic teaching hospital
- Level 1 Trauma Center
- Includes Carilion Children's Hospital
- 6 hospital health-system in Southwest Virginia



# Identified Need

## Situation

- Our average length of stay (LOS) was ~**6 weeks** compared with 5.5 days for endocarditis with and without a substance use disorder
- Significant financial burden for the health-system

## Barriers/Myths

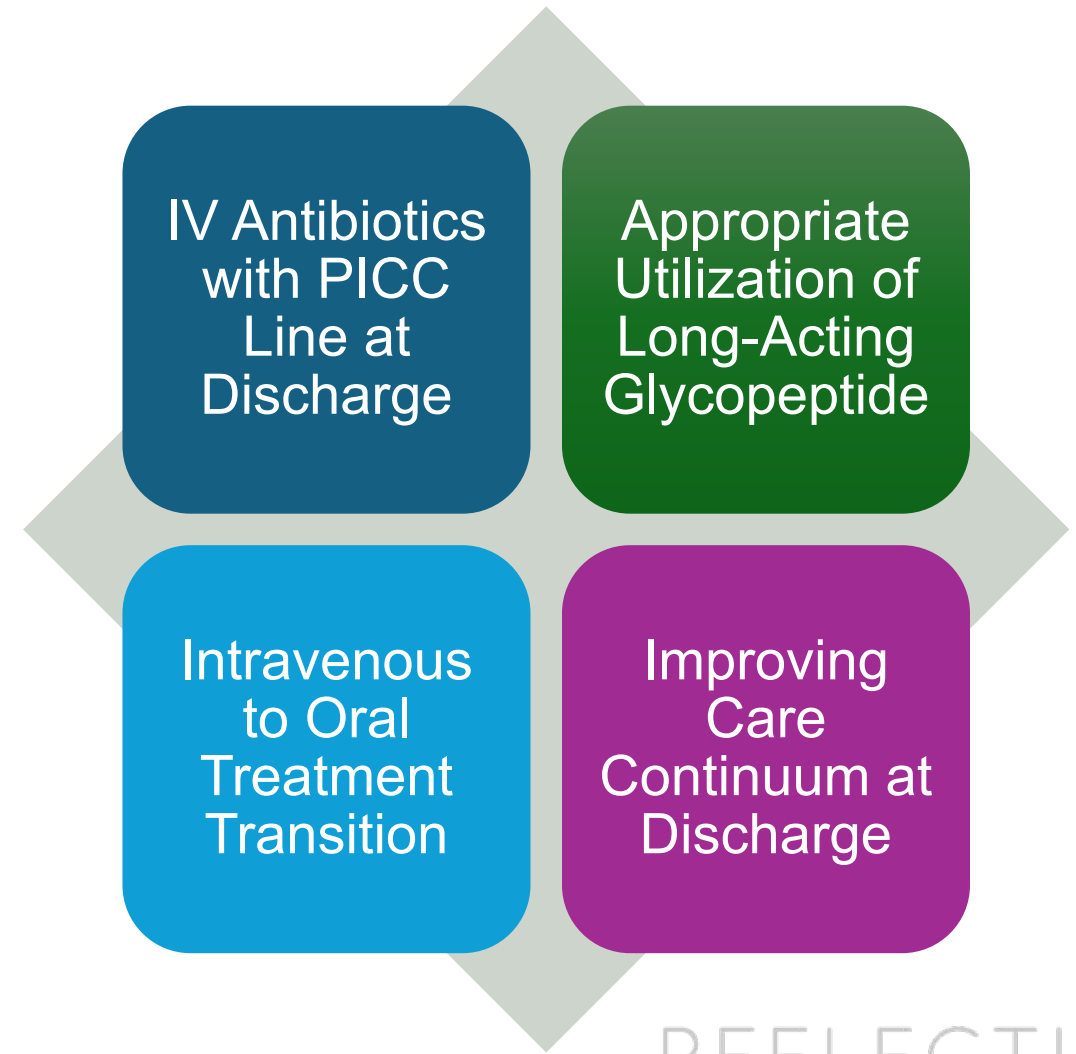
- All Infective endocarditis patients need 6 weeks of IV antibiotics
- Patients with IV drug use cannot be discharged from the hospital with a PICC line
- All patients need 6 weeks of addiction rehab in the hospital, longer the better
- No payer source – insurance

## Opportunity

- Meet the clinical and social needs of these patients without requiring a 6-week admission
- Carilion has the best multidisciplinary team to solve this problem

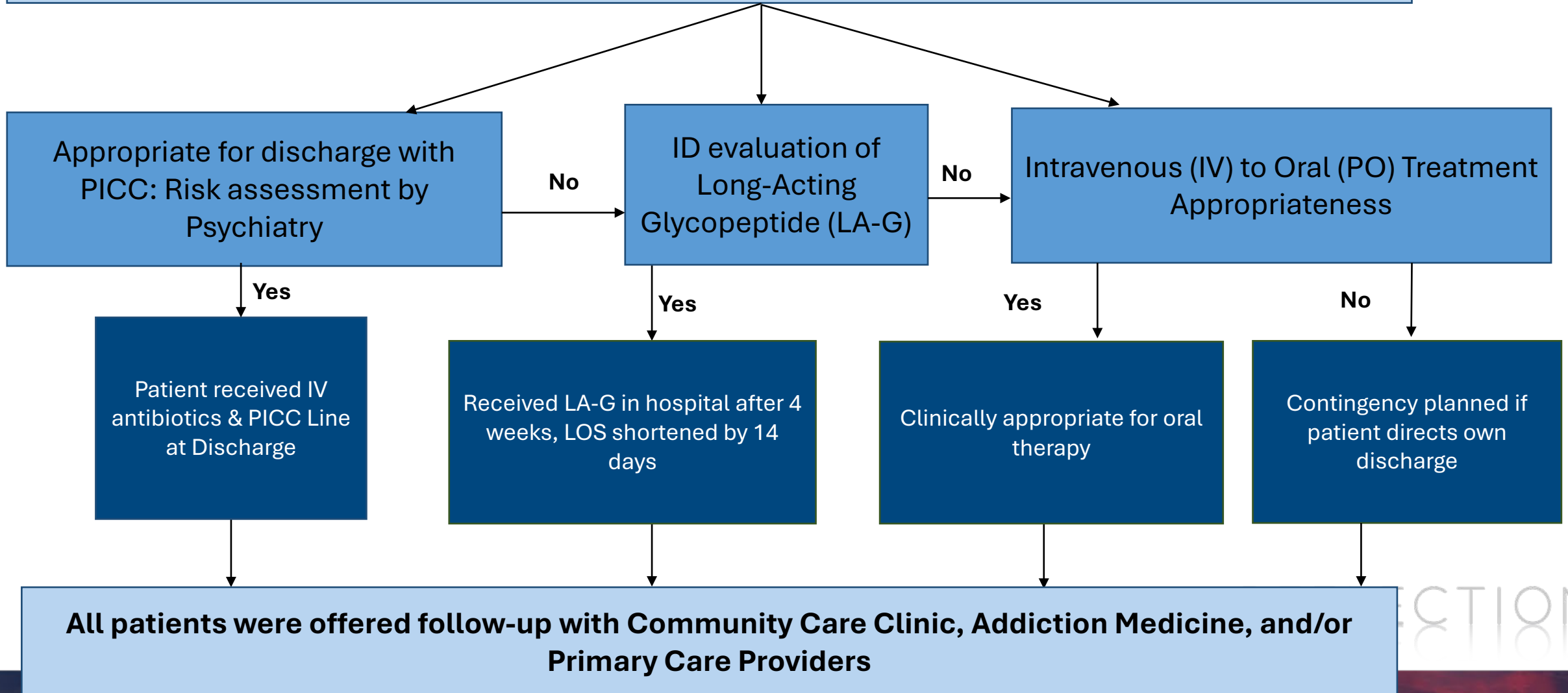
# How We Got Started

- Multidisciplinary group creation
- Identified and evaluated current evidence-based practices
- Development of 4 workgroup based on solution ideas



# PWID with high burden infections (endocarditis, osteomyelitis)

Multidisciplinary discussions between Hospitalists Medicine, Psychiatry, Infectious Diseases, Care Management, Nursing, Pharmacy & Home Health



# Interdisciplinary Pathways Rounds

Addiction  
Psychiatry

Hospitalist

Nursing Staff

Peer Recovery  
Specialist

Clinic Care  
Coordinator

Licensed  
Clinical Social  
Worker

Psychiatry  
Technician

Pain  
Management

- Holistic approach
- Addiction medicine support
- Collaboration daily on:
  - Medical needs
  - Medication assisted treatment
  - Best possible plan for discharge

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**PWID with high burden infections (endocarditis, osteomyelitis)**

Multidisciplinary discussions between Hospitalists Medicine, Psychiatry, Infectious Diseases, Care Management, Nursing, Pharmacy & Home Health

Appropriate for discharge with  
PICC: Risk assessment by  
Psychiatry

Patient received IV  
antibiotics & PICC Line  
at Discharge

**Home Health Nursing &  
Directors**

- Determine SAFE environment for IV administration post discharge

**All patients were offered follow-up with Community Care Clinic, Addiction Medicine, and/or Primary Care Providers**

# Discharged Home on IV Antibiotics

N = 14 patients, completed average of 4.4 weeks outpatient

Zero infection related readmissions 90 days post-discharge

Zero complications 90 days post-discharge

4 Readmissions for other reasons (28.5%)

433 Total Bed Days/\$641,201 in 12 months

**PWID with high burden infections (endocarditis, osteomyelitis)**

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ID evaluation of  
Long-Acting  
Glycopeptide  
(LA-G)

Yes

Received LA-G in hospital after 4  
weeks, LOS shortened by 14  
days

- Consult to Case management sent > 72 hours before planned discharge

All patients were offered follow-up with Community Care Clinic, Addiction Medicine, and/or Primary Care Providers

# Institution Criteria for Long-Acting Glycopeptide (LA-G)



## Inclusion

- ≥ 18 years of age
- Staphylococcus*, *Streptococcus*, or *Enterococcus* species, susceptible to vancomycin
- Clearance of bacteremia within 7 days
- Adequate source control
- Minimum of 4 weeks of IV therapy
- Medical stable patient, not requiring further inpatient care

## Exclusion

- Retained source or metastatic site of infection
- Evidence of epidural abscess and/or central nervous system infection
- Pregnancy

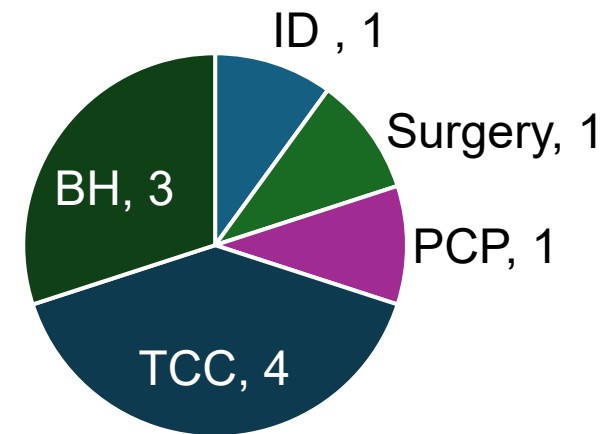


- Standardized SmartPhrase documentation by Infectious Diseases
- Eligibility for Expedited Discharge Assessment: The patient may meet criteria for long-acting glycopeptide use if continued clinical improvement is noted and a minimum of 4 weeks of active IV antibiotic therapy is completed from date of either bacteremia clearance or source control.
- Earliest eligible date for LA-G administration, \*\*\*/\*\*\*/\*\*\*.  
Reassessment of eligibility during week 3 of therapy is needed, \*\*\*.

# LA-G Treated Patients

Patient Characteristics	LA-G (N=17)
Age, median [IQR]	32 [32-38]
Male sex, n (%)	10 (58.8%)
Length of Stay, days, median [IQR]	29 [20-34]
Homeless, n (%)	5 (29.5%)
Indication, n (%)	
Endocarditis	7 (41.2%)
Osteomyelitis	6 (35.3%)
Septic arthritis	4 (23.5%)
Epidural Abscess	1 (5.9%)
Substance Abuse, n (%)	17 (100%)
Hepatitis C Infection, n (%)	8 (47.1%)
Received outpatient follow up visit*, n (%)	10 (58.8%)
Non-Infection Related 90-day readmission, n (%)	1 (5.9%)

**No Infection-Related Readmission**  
**No Relapse in Infection**  
**No Mortality**



ID: Infectious Disease  
 BH: Behavioral Health  
 TCC: Community Care Clinic  
 PCP: Primary Care Provider

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- ID consult to communicate via note documentation
- Consult to Case management to determine prescription coverage

Intravenous (IV) to Oral (PO) Treatment Appropriateness

Yes

No

Clinically appropriate for oral therapy

Contingency planned if patient directs own discharge

All patients were offered follow-up with Community Care Clinic, Addiction Medicine, and/or Primary Care Providers

# Patients Receiving Oral Antibiotic Therapy



Infection	Discharge Disposition	Bed Days Saved	90d Readmission
Bone/joint	Comprehensive treatment facility	20	No
Bone/joint	Unhoused/Rescue Mission	20	No
Bacteremia/abscess	Comprehensive treatment facility	14	No
Endocarditis	Contingency plan offered	0	Yes
Bone/joint	Contingency plan offered	15	No
Bone/joint	Contingency plan offered	28	No
Bone/joint	Home	14	No
Endocarditis	Contingency plan offered	18	No
Endocarditis	Contingency plan offered	7	No
Bone/joint	Contingency plan offered	0	Yes
Bone/joint	Contingency plan offered	0	Yes

**136 Total Bed Days Saved**  
**Fiscal Impact: \$201,280**

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# Financial Results – 12 months

Subgroups	Total Bed Days Saved	Financial Impact
IV Antibiotics with Home Health	433	\$641,201
Long-Acting Glycopeptide	238	\$352,196
PO Antibiotics	136	\$201,280
<b>Total Bed Days Saved: 807</b>		
<b>Financial Impact: \$1,194,677</b>		

- A multidisciplinary team approach is essential to breaking barriers and adapting to evolving practice
- Staff turnover or unfamiliarity with the process may limit success
  - Future planned nursing driven algorithm document
- Documentation practices are essential to providing standardized care
- Embedded guidelines in electronic health record when possible

# Key Takeaways



Patient centered and evidence-based practice changes



Reduced patient's LOS and received quality care in the convenience of their homes



Saved 807 patient days in 12 months



Carilion was able to provide care for an extra 146 patients



Financial impact of \$1,194,677 positive revenue in 12 months

Questions?



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