

# Improving Access to Care by Meeting Pediatric Patients and Their Caregivers Where They Are through Remote Patient Monitoring

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# Remote Patient Monitoring

- 1 Current State (10)
- 2 Program Development (20)
- 3 Equity and Quality Improvement (10)
- 4 Breakout (15)
- 5 Q & A (5)



## Remote Patient Monitoring (RPM)



- Form of telemedicine
- Submission of relevant health generated data
- Uses digital health technologies

## What is NOT RPM?



- Telemedicine visit
- Home health visit
- HIPAA-compliant messaging between provider and patient without health generated data

# Background

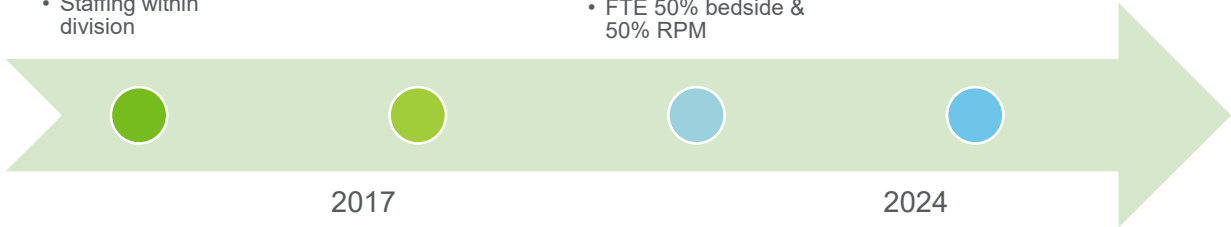


2016

- Pilots with 3 populations
- Multiple platforms used
- Staffing within division

2018

- Transition to centralized nursing team
- 4 RNs
- FTE 50% bedside & 50% RPM



2017

- One platform selected
- Staffing resided within division

2024

- 24 live programs
- 10 RNs
- 100% FTE RPM

# Staffing



- 1:80 nurse/patient ratio
- Centralized RN staffing model
  - RNs responsible for all patients
- Hybrid remote/in-person work
  - Patient management – remote
  - Patient enrollments, education – in-person

# Staffing



- RN leads for each division
  - Point person between division and RPM team
  - Consistent RNs for communication with patients
  - Lead for improvements to program

# Current Programs



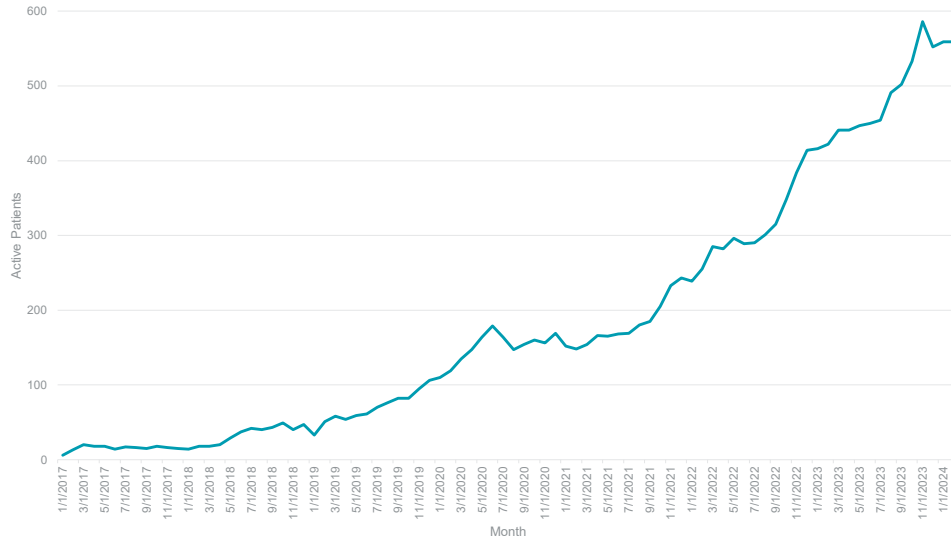
| Division   | Programs Offered  |
|--|---|
| Cardiology   | ACHD High Risk for Heart Failure, Cardiomyopathy, Cardiac Tube Weaning, Heart Tx, VAD                                 |
| Complex Care                                       | Failure to Thrive, RPM+ Feeding Intolerance   |
| Endocrinology                                      | Type 1 Diabetes Post DKA  |
| Genetics   | Cleft Infants   |
| Gen Peds, Foster Care Clinic, Community Pediatrics | Asthma, Failure to Thrive   |
| Gastroenterology                                   | Advanced Nutrition TPN, Failure to Thrive, Interdisciplinary Feeding Team, Short Gut Non-TPN, Short Gut TPN Dependent |
| Neonatology  | Feeding Tube Dependent, Concern for Inadequate Weight Gain, High Calorie Formula Dependent, Oxygen Dependent          |
| Nephrology   | Peritoneal Dialysis   |
| Neurology  | Ketogenic Diet Initiation   |
| Pain   | Post Op Knee/Shoulder Repair with Nerve Catheter, PostOp Pectus Excavatum Repair                                      |
| Pulmonology  | Cystic Fibrosis   |
| Transplant   | Liver Transplant  |



# Patient Growth



Active RPM Patients by Month



**Notable Launch Dates:**  
 12/18 – NFC  
 1/20 – FTT  
 9/20 – Liver Tx  
 1/21 – VAD  
 3/21 – Short Gut  
 1/22 – Cardiac Tube Weaning  
 11/21 – Postop Knee/Shoulder  
 1/23 – Postop Pectus  
 2/24 – RPM+

# Divisional Partnership



- Close partnership with interdisciplinary team members
  - Clinic and Bedside RN's
  - Registered Dietitians
  - Managing Providers
  - Social Workers
  - Care Managers

# Patient Experience



- Login on pre-determined check-in day and time
- Completes pathway
  - Pathway:
    - Includes vital signs and questionnaires
    - Unique to population & diagnosis
    - Customizable to patient (i.e., breastfeeding, feeding tube)

# Patient Experience – Check In



5:24

Cincinnati Children's

Weight

8kg

|   |   |   |
|---|---|---|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| . | 0 | ✕ |

NEXT

5:25

Cincinnati Children's

Please enter your child's current feed recipe: Include formula name, amount of water and/or breastmilk, and scoops of formula (ex. Similac sensitive, 105 ml water, 2 scoops formula)

Breastmilk + 3 scoops Enfamil Enficare

NEXT

"Enficare"

w e r t y u i o p  
a s d f g h j k l  
z x c v b n m  
123 space return

5:26

Cincinnati Children's

Has your child had an INCREASE in spit ups or vomiting today?

No Yes

NEXT

5:27

Cincinnati Children's

Are you having any problems related to your child's feeding tube today?

No problems with feeding tube

Skin irritation

Having problems keeping NG tube secure

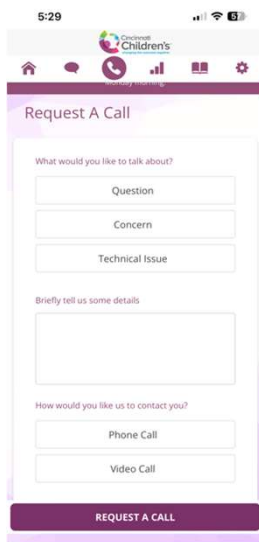
Problems attaching feed bag to NG tube

Problems with NG tube placement

NG tube is clogged/unable to pass feeds

NEXT

# Patient Experience - Additional Features



5:29

Request A Call

What would you like to talk about?

Question

Concern

Technical Issue

Briefly tell us some details

How would you like us to contact you?

Phone Call

Video Call

REQUEST A CALL



5:29

Monitoring hours are 7am-7pm Monday through Friday with varying hours on the weekend. For any Medical Emergency, please call 911. **IMMEDIATELY**. We hope to respond to all requests by end of day. Requests received on Friday afternoon may not be returned until Monday morning.

Hello, welcome to Remote Patient Monitoring (or Remote Care)! Our office hours are Monday-Friday 7am-7pm and we are not open on major holidays. As a reminder, we are not an emergency service, so if you are experiencing an emergent situation, please call 911. We look forward to working with you!

Haley, RN 5:29 PM

Type a message SEND



5:30

Coronavirus Mythbusters 14 RESOURCES

Coronavirus Resources 2 RESOURCES

FTT 2 RESOURCES

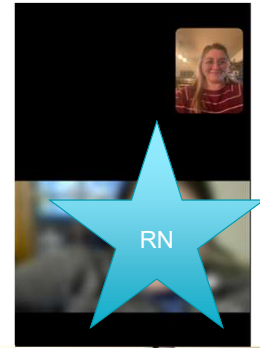
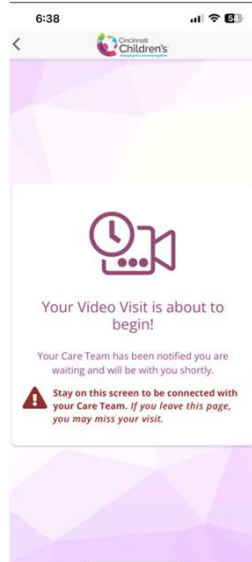
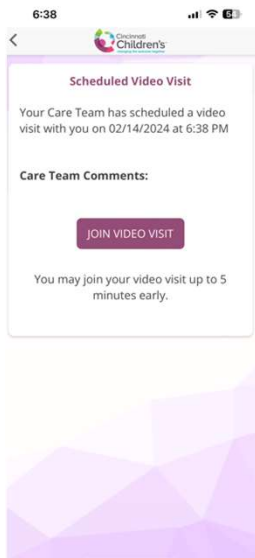
NG Tube Placement/Care 1 RESOURCES

GT Care 1 RESOURCES

My Agreements 2 AGREEMENTS

- On demand video call
- On demand HIPAA-compliant messaging
- Education resources

# Patient Experience - Video call




# Outcomes



**Patient Demographics**

- Gender
- Race
- Patient zip
- Preferred language




**PFE**

- % 9 or 10 out of 10
- Overall Experience
- RN Communication
- Ease of Technology



**Clinical/Utilization**

- Inpatient length of stay
- Readmission
- ED/Urgent Care visits
- Relevant ambulatory visits
- Population specific outcomes



**Operational**

- Successful graduation vs discharge
- Patients enrolled
- Median program length
- Median enrollment age
- Median completion age

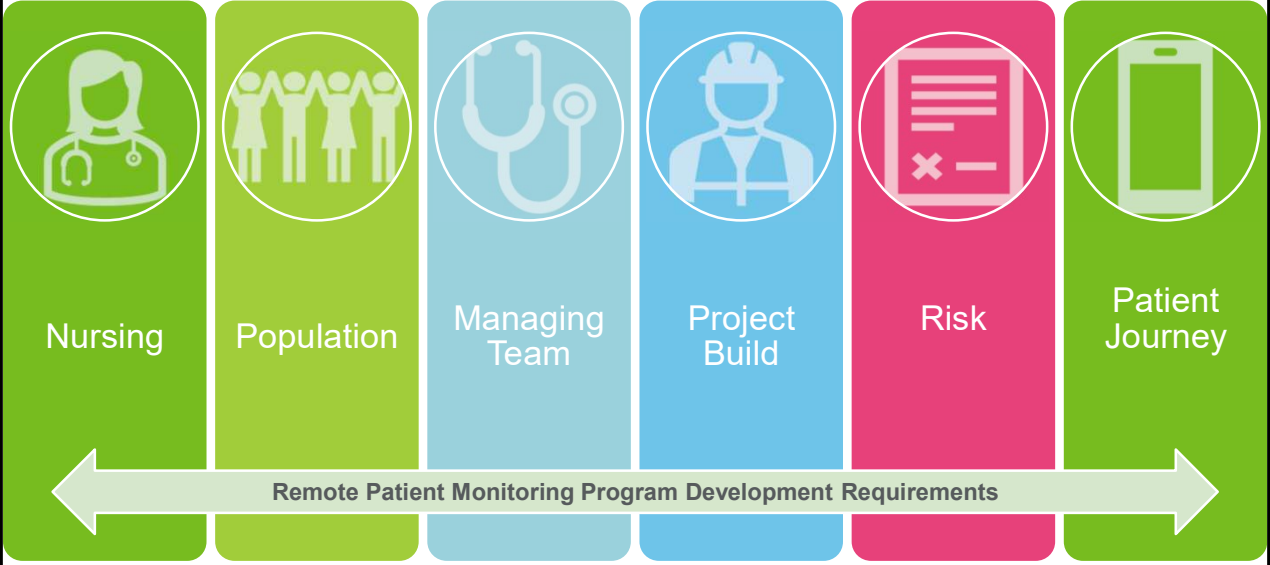
# New Program Development

Nursing, Population, Managing Team, Risk,  
Project Build, Patient Experience





# New Programs



# Nursing



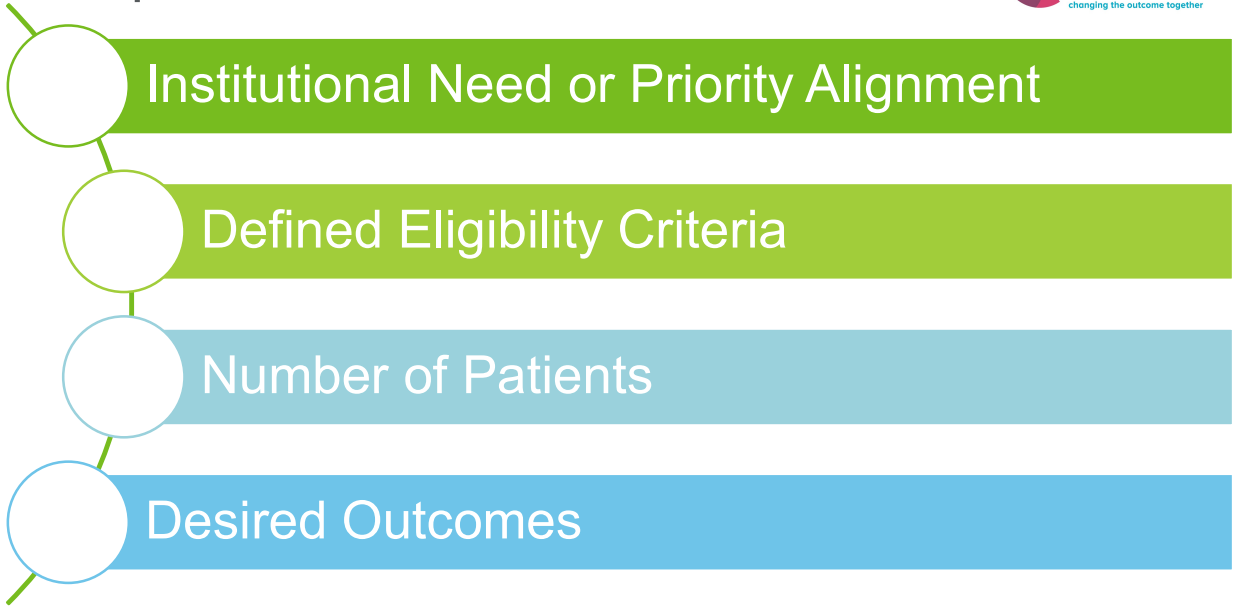
- Licensing
  - Required to be licensed in the state the patient is located
- Education
  - Population specific assessments, interventions, and education

## Nursing Example (NICU NG)



- Licensing
  - Ohio, Kentucky, Indiana, West Virginia
- Education
  - NG placement
  - Bowel management
  - Feed tolerance/management

# Population



# Population Example (NICU NG)



**Institutional Need or Priority Alignment**

- Wildly Important Goal – Access!
- Improve access to high acuity inpatient beds by reducing length of stay

**Defined Eligibility Criteria**

- Admitted to NICU
- Managed outpatient by NICU Follow Up Clinic
- NG tube dependent

**Number of Patients**

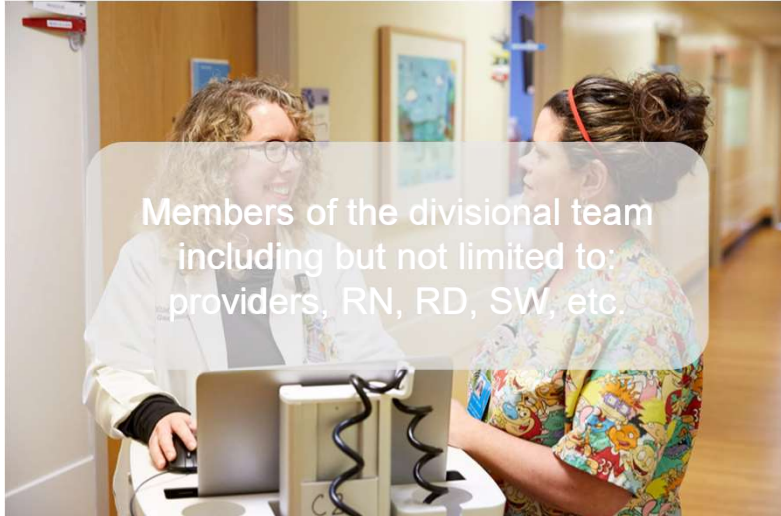
- Test of Change Phase 1: 5 patients
- Test of Change Phase 2: 50 patients
- Test of Change Phase 3: All eligible patients

**Desired Outcomes**

- Eliminate need for in-person weight checks
- Reduce length of NG tube dependence
- Improve time to goal weight gain (g/d)



# Managing Team



Members of the divisional team including but not limited to: providers, RN, RD, SW, etc.

## Responsibilities:

- Pathway and response plan collaboration
- Quality improvement lead
- Messaging to remaining divisional team

## Managing Team Example (NICU NG)



- Provider: NICU Follow Up Clinic Medical Director
- NICU Follow Up Clinic RN
- NICU Follow Up Clinic RD
- Inpatient Care Managers

# Project Build



- Pathways
  - Frequency
  - Vital sign data/equipment
  - Qualitative questions to support assessment
- Education resources
- EHR build





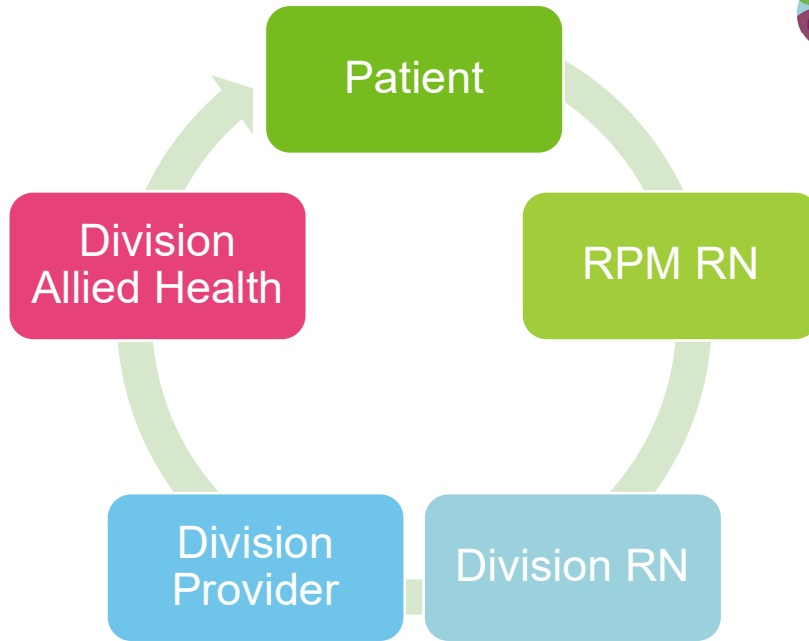
## Project Build (NICU NG)



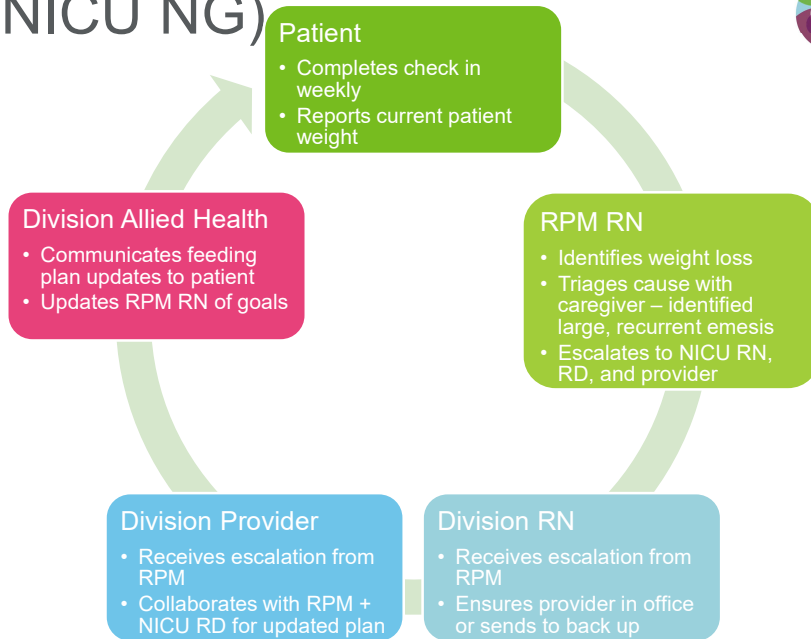
- Pathways
  - Weekly
  - Weight – infant scale
  - Feeding tolerance, issues with NG, PO
- Education resources
  - How to place NG, NG care
- EHR build
  - Weight gain flowsheet, growth curve



# Risk



# Risk (NICU NG)



# Patient Journey



## Enrollment

- Location
- Enrollment needs

## Active Monitoring

- Check in requirements
- RPM resources – HIPAA compliant messaging, on-demand video calls

## Graduation

- Graduation criteria
- Clinical goal measurement and updates

# Patient Journey (NICU NG)



## Enrollment

- Inpatient NICU prior to discharge
- Teach & validate scale
- Run through questionnaire

## Active Monitoring

- Weekly check in
- Messaging with RN + RD
- Video call for feeding tube assessment + education

## Graduation

- Weight gain at goal (g/d) x8 weeks
- Full PO feeds

# Equity and Quality Improvement

Eligible Enrollments, Adherence, Dashboard



# Equity and Quality Improvement



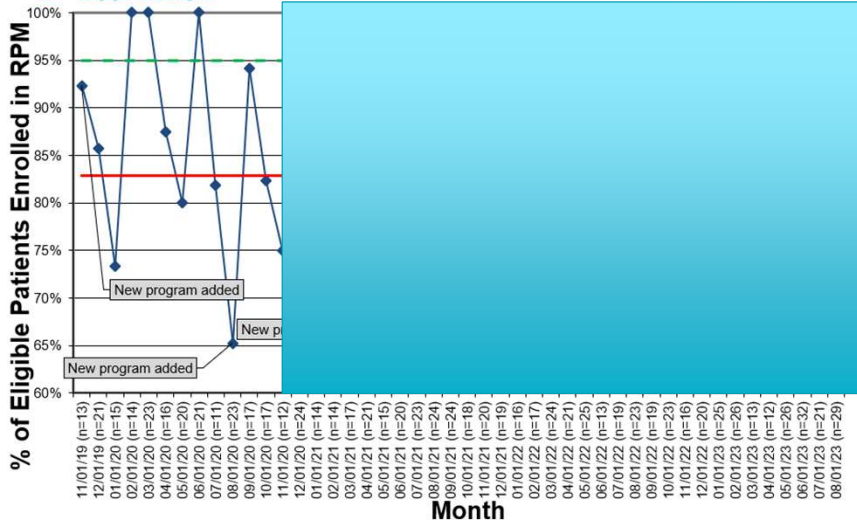
- Lens on equity and improving experience
- Formal QI group formed
  - RPM clinical manager
  - HM provider
  - Data analyst
  - QI analyst
  - Project manager
  - Population leads
  - **CAREGIVERS!**



# Enrollments



**% of Eligible Patients Enrolled in RPM**



- Identify eligibility criteria for each program
- Run report monthly to ensure all eligible patients were enrolled
- If not enrolled, determine and track reason why



## Enrollments – Top Failures



### Language Other than English

- Application restraints

### Preconceived non-adherence

- Not offered RPM due to being non-adherent with other care

### Eligibility missed by care team

- Rotating providers
- Lack of standard provider education

### Caregiver declined

# Enrollments - Actions



## Language Other than English

- Working with internal Language Access Services to find solution to message translation
- Working with vendor to ensure seamless pathway translation and app experience

## Preconceived non-adherence

- Partnered with providers to show outcomes on adherence, benefits of program, etc.
- Emphasized need to offer to all eligible patients for equity to all care team members

## Eligibility missed by care team

- Defined eligibility criteria for all programs
- Created handouts for care team members that outlined eligibility
- Care team members added to discharge checklist, note smartphrases, order sets, and WOWs

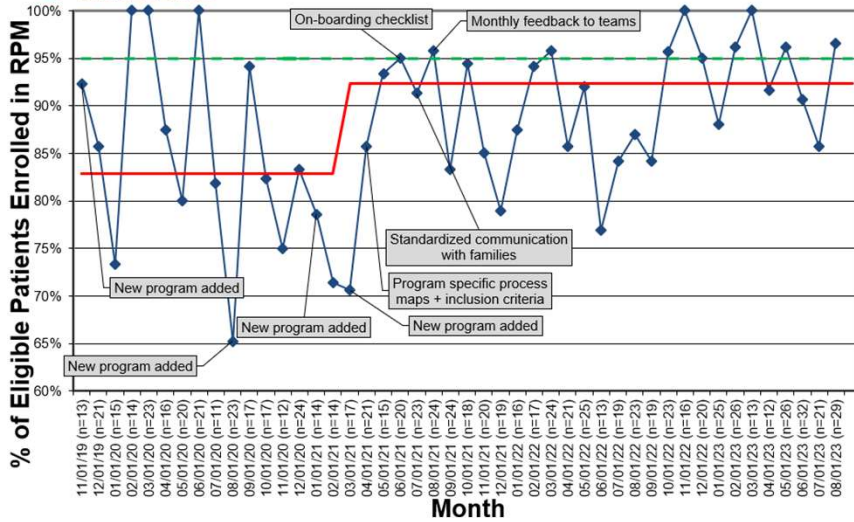
## Caregiver declined

- Created handout for caregivers highlighting benefits
- Care teams introduce RPM before RPM RN meets with family

# Enrollments



**% of Eligible Patients Enrolled in RPM**



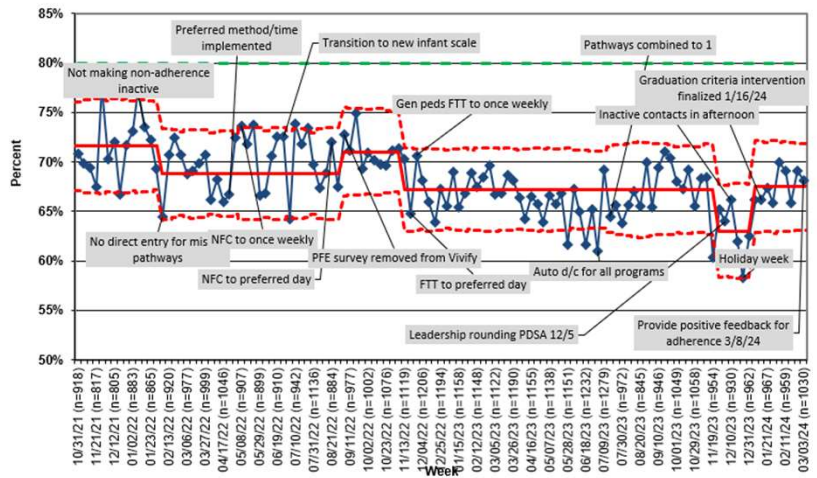
- Identify eligibility criteria for each program
- Run report monthly to ensure all eligible patients were enrolled
- If not enrolled, determine and track reason why

# Adherence

- Worked with caregivers to identify gaps in adherence
- Targeted interventions to meet caregiver needs/suggestions
- Goal: no added burden to caregivers while obtaining enough data to manage from home



Roll Up RPM Adherence



## Adherence - Actions



- Implemented easier to use infant scales
- Optimized required check-in frequency
- Preferred day and time of check-in
- Preferred contact method
- Virtual leadership rounding
- Encouraging message after pathway completion

# Dashboard



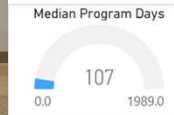
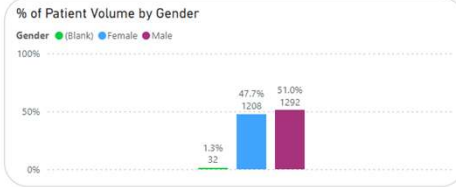
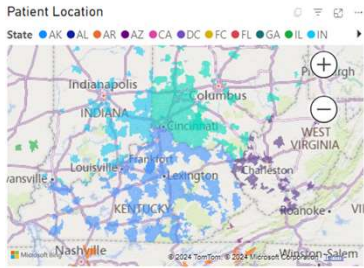
## Remote Patient Monitoring Dashboard

RPM Program: All  
 Program Group: All  
 Current Status: All  
 Division: All

**24**  
No. of Active Programs

**11**  
No. of Active Divisions

**2532**  
No. of Patients



Overall PFE Score: 83.1%  
 RN Communication Score: 94.4%  
 Tech Ease of Use Score: 66.5%

**Patient Feedback**  
*"I find it very helpful it keeps me on top of what I have to do and the communication is what I expected I'm happy I have a team that really cares."*



## Patient story



- 2-month-old presented to ED from West Virginia
- Birth weight 1.65 kg - in ED, weight 1.45 kg
- Diagnosed with FTT
- Managed by outpatient craniofacial center; enrolled in RPM

## Patient Story



- RPM weights collected weekly
  - Continued to fall farther off curve post discharge
- RPM identified mixing formula with mason jar
- Provided family with blender bottle for proper mixing
- Weight increased to 5<sup>th</sup> percentile



## Breakout session

# Create your own RPM Program!



## Consider your patient population:

- Age considerations
- Patient diagnosis
- Risk factors (ex. Social)
- Common concerns
- Equipment needs
- Nursing triage/response to common concerns

## Now time to create your own questions and response plan!

- Create 4 unique questions pertinent to assessing your patient needs/concerns
- Create a nursing triage/response plan for each question and response

## Example



Have you been able to follow the recommended feeding plan?

- Yes – continue to pathway
- No – additional cause questions asked

Response/Triage

- RPM RN contact caregiver to triage and resolve concerns
- Route to appropriate EHR pool, provider, and SW with appropriate level of follow up
- Call clinic with immediate concerns

Your turn!!



# Q&A



Thank you for listening!

Please contact  
[Kylee.Denker@cchmc.org](mailto:Kylee.Denker@cchmc.org) or  
[Haley.Edwards@cchmc.org](mailto:Haley.Edwards@cchmc.org)  
with questions