It’s quite remarkable to think back to our humble beginnings ...

when a group of ambitious, young clinicians, not being satisfied with the services available to the public, relentlessly lobbied for a new hospital to better meet the needs of the community.
This building is not a private enterprise … It is a great, public compassion. Here is a living monument to the heart of the people.
Who We Are Today
MISSION:

TO IMPROVE HEALTH
ELEVATE HOPE
AND ADVANCE HEALING - FOR ALL

VISION:

TO BE THE FIRST AND BEST CHOICE FOR CARE
In One Day at Atrium Health

- 37,800 Patient Encounters (1 every 2 seconds)
- 25,000 Physician Visits
- 3,900 ED Visits
- 700 Home Health Visits
- 475 New Primary Care Patients
- 14,000 Virtual Care Encounters
- 91 Babies Delivered
- 635 Surgeries

$5.6 Million

Each day in uncompensated care and other benefits to our community.
Size & Scope

$11.1 Billion Net Operating Revenue

$2.9 Billion Invested into renovations, new care locations, equipment upgrades and other capital projects

69,800+ Teammates | 50 Hospitals

44 Urgent Care Locations | 45 EDs | 25 Cancer Care Locations

4,650+ Physicians | 17,000+ Nurses

*Includes Joint Venture and Affiliated Enterprises
FOR ALL
Local Problem: Reducing Sitter Utilization through Virtual Patient Observation
Why Virtual Patient Observation (VPO)?

Hospitals traditionally assigned staff or nonmedical personnel to sit at the bedside and observe patients at risk for:

- Falls
- Safety Concerns - Self-harm/harm to others
- Behavioral/Cognitive Deficiencies
- Eating Disorders
- Elopements

Other challenges:

- Majority of physical sitters unable to intervene with patient
- Limited training/expertise with interacting with population
- Resource challenged to meet immediate sitter needs
- Application of restraints required timely, detailed documentation

FY 2016 Atrium Health:

- Spent more than $4M in labor expenses
- Utilized more than 320,000 hours of sitters
Designing and Implementation of Virtual Patient Observer
Overview of Virtual Health at Atrium

**Vision:** To keep patients close to home, receiving timely access to high quality, safe, care through deployment of telecommunication technologies

**Guiding Principle:** Care is care

**Goal:** To establish virtual care delivery as a consistent care delivery model
### Virtual Health Structure

#### Clinical Offerings

<table>
<thead>
<tr>
<th>Continuing Care</th>
<th>Virtual Hospital</th>
<th>Ambulatory</th>
<th>Direct to Consumer</th>
<th>Community</th>
</tr>
</thead>
<tbody>
<tr>
<td>-RN Handoff</td>
<td>-Telepsychiatry</td>
<td>-vBHI</td>
<td>-Virtual Visits</td>
<td>- School based virtual program</td>
</tr>
<tr>
<td>-Heart Failure</td>
<td>-Telestroke</td>
<td>-Specialty</td>
<td>-eVisits</td>
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<td></td>
<td>-Teleneurology</td>
<td>-eConsults</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>-Virtual Critical Care</td>
<td>-Telegenetics</td>
<td></td>
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<td></td>
<td>-Infectious Disease</td>
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<tr>
<td></td>
<td>-Hospitalist</td>
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<td></td>
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</tr>
<tr>
<td></td>
<td>-Patient Observer</td>
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</tr>
</tbody>
</table>

**Physician & ACP Pool**

<table>
<thead>
<tr>
<th>Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government Relations</td>
</tr>
<tr>
<td>Revenue Cycle/Billing</td>
</tr>
<tr>
<td>Financial Analysis / Business Model Design</td>
</tr>
</tbody>
</table>

**Leadership & Oversight**

*And more... coming soon!*
Pilot Development

**Purpose:** To assist in workflow development for clinicians, sitters, and develop ROI use case.

**Site requirements:**
- Facilities with technology/power infrastructure readily available
- Strong facility nursing leadership
- A team excited to try something new!
- Impact on the IT/Support Staff
Pilot Selection: Carolinas Rehabilitation

- History of high sitter utilization
- Utilized creative workarounds to fulfill sitter requests
- Patients clinical stable, alert/oriented; can be redirected
- **Willing and eager** to implement the technology; supportive leadership
- Close proximity to IAS team location
Pilot Facilities Overview – Carolinas Rehabilitation

Charlotte Locations:
- CR-Charlotte
- CR-Mount Holly
- CR-Cabarrus
- CR-Pineville

Atrium Health
Pilot Facilities Overview – Carolinas Rehabilitation

179 Beds and 6 units across 4 facilities:

- CR Main: 70 Beds
- CR Mount Holly: 40 Beds
- CR Cabarrus: 40 Beds
- CR Pineville: 29 Beds
- 3 inpatient rehabilitation hospitals
- 2 inpatient rehabilitation units
- 9 outpatient physician clinics
- 17 outpatient therapy locations
- Approximately 3,300 annual admissions
- Over 150,000 annual outpatient therapy visits
- Academic teaching hospital
Pilot Goals:

• Determine workflows
• Decrease physical sitter utilization/expense
• Maintain same level of falls (or reduce)
• Maintain same utilization of restraint and net bed (Posey Bed) or reduce

Parallel operational efforts:

• Review/revise and standardize processes, policies
• Develop standardized training/competency for Nursing Assistants/Healthcare Techs

A GOAL WITHOUT A PLAN IS JUST A DREAM.
Workflow Development

**Rounding:**
- Virtual Sitters located in the VPO room
- Two hour rounding/observation shifts:
  - 1 “rover” tech on floor, providing care
  - 1 tech performs observations

**Documentation:**
- Not required for any regulatory
- Needed to be short & sweet, so kept on paper (in development with Cerner) – converted to simple electronic format
- Could not be a distraction from observing

**Communication:**
- Observers have access to list of direct phone numbers, for quick access to RN / roving tech
- Updated every shift

**Patient / Family Engagement:**
- Permission included in consent for treatment
- Information also posted on mobile carts / in room
- When setting up, RN orients patient & family to VPO
Initiating VPO: Team collaboration & provider places an order

- Without 1 clear way to order, we found MULTIPLE ways providers were placing orders
  - In Nursing communications
  - In special instructions
- Difficult to pull statistics
- DON'T DO IT THIS WAY! 😊
Improved process:

- Order created for Virtual Patient Observer ONLY
- Less clicks
- Better reporting / statistics

Staff discuss daily, as to continue or not:
  - Did patient status change?
  - Is patient able to be re-directed?
  - Any concerns of patient/family?
  - Did any events occur?
Patient Bed Zone Configuration

- Easy drag & drop of bed/chair motion zones to define patient location
- Alerts when motion detected in the motion zone
- Single click for the observation technician to verbally redirect the patient

Motion zones alert with movement and are easily adjusted with drag and drop
Workflow

1:12 sitter to patient ratio

Setup requires:
- Computer
- Touch Screen
- High-Def TV
- 2 way Audio
Grid view

- Allows HD viewing of all patients in a larger window
  OR
- Focus only on the higher risk patients
Technology
Design Requirements

- System agnostic
- No EHR system pre-requisites
- No server infrastructure required
- Flexibility to move cameras from one location to another
Architecture

Kinect Camera -> Computer

Email Server

Network Router/Switch

Central Monitoring Computer

Network Storage

Log File Storage

CareAware

Device Connectivity

Millennium

Non-Millennium

Patient Observer Data Warehouse
Patient Observer Features

**Differentiation**
- Skeleton Tracking
  - Differentiates patient from caregiver
  - Joint specific to reduce false alerts
- 3D Camera capability
- Alert motion zones for patient safety
- Ability to integrates with iBus and alerting

**Features**
- Real-time patient observation
- Wide field of vision
- Built-in microphone for two way communication
  - *Multi-lingual communication*
- Infrared night vision
The Technology – Microsoft Kinect
• One camera sensor per patient bed
• Patient room is highlighted when alert is triggered for pre-configured patient changes
• Audio and visual alerts presented to the monitoring technician
• Two-way room communication available to assist with patient redirects and nurse intervention
Hardware Options: Cart or Wall Mount
Policy and Education
Standardized training

- Developed standardized curriculum to ensure expectations of the responsibilities (beyond VPO) across the system
- Developed standardized handoff processes between RN:tech and tech:tech
- Policies for sitters expanded to include Virtual Patient Observer
Value Derived - Measuring Success
Pilot Results
Carolinas Rehabilitation

- $276,019 Cost Savings obtained, ROI in < 10 months for Carolinas Rehab
- 50% ↓ in Patient Falls
- 60% ↓ in Use of Restraints/Net Beds (decreased need for additional restraint documentation)
- ↓ Triggering of Aggressive Behaviors in Patients
- ↑ Patient and Family Satisfaction
- ↑ Staff Satisfaction
Carolinas Rehabilitation Falls Rate
VPO Monitored vs Non-Monitored

FALLS RATE % - CAROLINAS REHABILITATION

Baseline  | VPO Non-Monitored | VPO Monitored

Graph showing the falls rate percentage for Carolinas Rehabilitation over time, comparing VPO monitored and non-monitored conditions.

Atrium Health
Value Derived

Allows a trained observation technician to monitor multiple patient rooms from a Central Monitoring Station

Improves Patient Safety

• Helps to reduce the facility fall rate*, elopements and other adverse hospital events.
• Reduces risk of patient falls with injury
• Able to monitor more patients
• Real time two way communication for immediate intervention

Reduces Facility Costs

• Lowers the overall labor costs associated with 1:1 sitters
• Reduces the hospital/facility costs due to Adverse events
• Allows for more efficient staffing adjustments

Rates of falls in US hospitals range from 3.3 to 11.5 falls per 1,000 patient days (Falls among Adult Patients Hospitalized in the United States: Prevalence and Trends) J Patient Saf. Author manuscript; available in PMC 2014 March 1.*
What’s Next?

Continued rollout and expansion throughout system

• Expansion of team, shift in alignment with Resource Team

• Rollout continued throughout Atrium
  • Medical – surgical units
  • Required co-horting of patients for larger facilities
  • Unable to provide alternating shifts for off-site locations

• New partners – Navicent – monitoring patients in Georgia

• Use Case Development – Behavioral Health, Skilled Nursing, Infection Prevention

• Virtual Health services continue to expand and develop
  • Pilot process in development for roll of Pharmacy Tech, for medication reconciliation processes
Lessons Learned and Next Steps
Launch
- Carolinas Rehab selected as pilot location
- Sitter/Runner model utilized

Development
- Partnered with Cerner to develop Patient Observer pilot
- Home-grown device developed for testing in Atrium
- Cerner engineered device created

New Use Case
- Expanded services to pediatric population

Growth
- Enterprise expansion approved March 2019
- Centralized vSitter bunker development
- Use case expansion to Infection Prevention
- LCH expansion to JGCH

Looking Ahead
- Expand to Georgia with Macon partner
- Complete enterprise expansion Q4 2019
- New use case development with Behavioral, SNF and Infection Prevention
Lessons Learned

• New technology can be scary – requires teamwork!

• Take your time and start small, but agile to spread quickly

• May be challenging to forecast

• Workflow development
  • Create one but adapt to a second!
  • Not a one size fits all for patients / workflows
Expansion of the Virtual Sitter Bunker
But wait, there’s more….. Pediatrics!

• Local Problem: Sitter needs continued expanding for our Pediatric population
LCH Video Patient Observation (VPO) Timeline

- **VPO deployed**
  - Algorithm developed for sitter decision making
  - Education provided to nurses and providers

- **Sitter algorithm updated**
  - Eating disorders and NAT criteria adjusted
  - Ongoing review of care events

**Timeline:**
- **Nov 2017**
  - LCH VPO pilot begins
    - Surge pool HCTs trained by Information & Analytics
    - LCH 7A opened

- **Jan-May 2018**
  - VPO deployed

- **May-Aug 2018**
  - Dual sitter audits
    - Deployed live and video sitters to same patients to do audits
    - Separated care events as to live versus video sitter

- **Sep-Oct 2018**
  - Sitter algorithm updated

- **Dec 2018**
  - Annual review of VPO program
    - Identified cost savings
    - Identified next steps
**Algorithm for Sitter Decision Making**

**VPO/Video Patient Observation** = Continual, interactive remote observation of 1 to 12 patients per shift within a central monitoring console area

**IPO/In-person Patient Observation** = 1 bedside PSA per patient room providing constant observation of one patient per shift
VPO Intervention Algorithm
Provider Education: Presentation at Pediatric Grand Rounds (Jan. 2018)

E-Sitter Adaptation & Transition Plan

- Reasons to use E-Sitters
  - Monitor patient for safety
    - Falls
    - Prevention of abuse (NAT)
    - Elopement risks
    - Eating disorders (exercising, eating) *live sitter during day, E-Sitter at night initially
  - Depression
  - Autism (will need individual assessment)
  - Behavioral Health (after cleared by psychiatrist)
### Provider Education: Decision making support

#### What groups need a sitter?

<table>
<thead>
<tr>
<th>1:1 IPO (live sitter)</th>
<th>VPO (e-sitter)</th>
<th>No Sitter</th>
</tr>
</thead>
</table>
| • All Behavioral health (BH) pts during first 24hrs of admission, pending evaluation | • Pts deemed flight risk  
• Pts deemed fall risk  
• BH pt with atypical development in which an IPO sitter may contribute to overall behavioral issues  
• BH pt determined no risk of harm to self  
• Non-accidental trauma after initial 24hr evaluation by med, social work, dss teams  
• Pt pulling at lines/drains etc...  
• Pts with Delirium  
• Pts with withdrawal requiring observation  
• pts on eating disorder protocol during night shifts  
• Other as determined by provider | • Clearance by psychiatric and medical teams  
• Non-accidental trauma patients w/out visitations/ persons in room (ie in custody of DSS)  
• Behavioral Health Patients admitted for non-BH issues & not meeting criteria listed in IPO/VPO.  
• Patients w/out parents or visitors in the room (i.e. services cannot be used for babysitting-please consider volunteer services for these patients) |

- Active Suicidality  
- Active Homicidality  
- Pts w/risk of self-harm  
- Pts w/risk of equipment harm  
- All eating disorder patients (ED) pts during daytime hours  
- All ED patients that have failed night time VPO program  
- Pts in police custody  
  (first line is police personnel)
Nursing Education

PROCESS CHANGE ALERT: Initiation of Virtual Patient Observation ("e-sitters") for select pediatric patients in LCH
December, 2017

Levine Children’s Hospital

What?
LCH is initiating the use of Virtual Patient Observation (VPO) to increase patient safety.

Why?
To provide an alternative method of continuous monitoring of patient behaviors.

Impact on Nursing?
VPO may be initiated throughout LCH utilizing mobile monitoring cameras. Requests for and initiation of VPO should be relayed through the LCH Administrative Charge Nurse: 704-381-0341.

The VPO team consists of a Virtual Sitter Monitor (VSM), a Virtual Sitter Runner (VSR) and the Bedside Nurse. The VSM continuously observes the patient and can speak to/re-direct the patient as needed. The VSR rounds hourly on patients and assists with direct patient needs as identified by the VSM. The role of the Bedside Nurse is to:

- Review the Virtual Sitter process with the patient and/or caregiver and document this in the ETR.
- Promptly respond to all Ascom calls to ensure the VSM can reach them in the event that urgent patient assistance is needed.
- Be prepared to sit with the patient immediately in the event there is a software outage or glitch.

Key Contact Information:
LCH Administrative Charge Nurse: 1-0341
Virtual Sitter Monitor: 1-5345
Virtual Sitter Runner: 1-5346
IS Support: 704-780-7679

Performance Checklist: Virtual Patient Observation ("e-sitters") in LCH

I confirm that I have met all the below requirements of participation in Virtual Patient Observation in LCH:

<table>
<thead>
<tr>
<th>Performance Criteria</th>
<th>Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have received and reviewed education regarding the e-sitter process at Levine Children’s Hospital.</td>
<td></td>
</tr>
<tr>
<td>I have read the LCH Policy “Assignment and Use of Virtual Sitter” and understand my role in the e-sitter process.</td>
<td></td>
</tr>
<tr>
<td>I understand how to educate patients and family members regarding the e-sitter process and how to document this education in the Education Teaching Record (ETR).</td>
<td></td>
</tr>
<tr>
<td>I understand what to do in the event the family refuses a Virtual Sitter and the need to document this in Notifications.</td>
<td></td>
</tr>
<tr>
<td>I understand that I should not move the camera or adjust its position. I will contact the Virtual Patient Monitor if I have concerns about the camera's location in the room.</td>
<td></td>
</tr>
<tr>
<td>I understand the need to document in Notifications whenever I am notified by the virtual sitter monitor (VSM) or virtual sitter runner (VSR) of the need for patient intervention.</td>
<td></td>
</tr>
<tr>
<td>I understand the need to promptly respond to all Ascom calls to ensure the virtual sitter monitor can reach me in the event that urgent patient assistance is needed.</td>
<td></td>
</tr>
<tr>
<td>I understand that I, or a designee, may need to sit with the patient immediately in the event of a software outage or glitch until the monitoring system is restored.</td>
<td></td>
</tr>
</tbody>
</table>
Nursing Policy

Nursing personnel will utilize the Virtual Sitter process to increase patient safety through non-nurse monitoring, which ensures to improve recognition and response to changes in patient behavior.

I. POLICY

Nursing personnel will utilize the Virtual Sitter process to increase patient safety through non-nurse monitoring, which ensures to improve recognition and response to changes in patient behavior.

II. EXCLUSION CRITERIA

a. Actively suicidal or homicidal patients will be excluded and receive a bedside sitter.

III. PERFORMED BY

Nurse Aide 1, Nurse Aide 2, HCT, Registered Nurse, Clinical Supervisor, or the on-call Administrative Charge Nurse.

IV. DEFINITIONS

VPO = Virtual Patient Observation

VPO Area = consists of a computer station with virtual sitter software and viewing system, staffed continuously by nursing personnel.

Virtual Sitter Monitor (VSM) = nursing personnel who staffs VPO Area.

Virtual Sitter Planner (VSP) = nursing personnel who is assigned to assist with direct patient needs as identified by the VSM.

Designated for VSP = typically the Primary Nurse Aide, HCT, or RN who is on the unit.

V. EQUIPMENT

Virtual Camera Monitoring System:

- Patient Room: camera mounted via wall bracket on a portable stand strategically placed within the room by the VSM.

- VPO Area: computer with monitor (and/or TV screen) observation software with linked monitors of VSM and VSP.

VI. INTERVENTION

a. Identify patients as per ‘Patient Observation Decision Tree’ Sitter Algorithm (Appendix A).

b. Obtain provider order.

c. Communicate the need for a virtual sitter with the on-call Administrative Charge Nurse per sitter algorithm (Appendix A).

VII. Documentation

a. Nurse will document that they were notified by the VSM/VSP when an event occurs requiring nursing intervention or provider notification - documentation should be in EMR, continuous/progress notation.

b. VSM documentation should be by execution.

c. VSP documentation should be on icare/other核查 report during each time the patient is noted, or, minimally, every 90 minutes.

VIII. Medication

a. Nurses will document if a sitter is in use in the EMR, continuous/progress notation.

b. Should a patient or family refuse the v-sitter, a live sitter will be closed into the patient room unit on request.

IX. REFERENCE

## LCH Sitter Education:

### Observation of Patients Admitted with Eating Disorders

<table>
<thead>
<tr>
<th>Reason for Admission</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients with eating disorders are admitted to the acute care hospital because their current weight has caused them to be medically unstable. They are kept in the hospital until their vital signs (blood pressure and heart rate) and weight are closer to normal and they are safe enough to be cared for at either a specialized outpatient facility or another unit specializing in Eating Disorders. It is important to know that patients with an eating disorder such as anorexia nervosa have a high mortality rate (10%) and for that reason, must be monitored very carefully.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>During Hospitalization Monitor for...</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hiding or getting rid of food in usual places or ways: In underwear, napkins (excessive wiping of mouth), sheets or pillow case, trash can, the shower or sink, excessive spilling of calorific beverages, drooling/dribbling food, messy eating.</td>
<td></td>
</tr>
<tr>
<td>Obsessive exercise or “habits” after eating: Jumping jacks in the bathroom, walking laps/pacing around the room, frequent leg or arm motion while lying in bed, playing video games excessively or aggressively, running in place in the shower, sit-ups and push-ups, yoga, dancing, lifting food or water bottles like they are free weights.</td>
<td></td>
</tr>
<tr>
<td>Ways that manipulate or increase daily morning weights: Adding clothes (must remain in a hospital gown only), keeping shoes on, drinking a lot of fluid before being weighed and not going to the bathroom, eating breakfast first, hiding objects (e.g. coins or rocks) or food while being weighed (must be weighed in a hospital gown only).</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Important Key Points to Remember</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients are not allowed to be unsupervised while eating. NO food should be left on the tray (not even 1 bite or condiment). Don’t allow patient to hide food as outlined above.</td>
<td></td>
</tr>
<tr>
<td>Patient is required to finish all meals within 30 minutes. If patient refuses or is unable to complete 100% of the dietary tray (meaning every bite &amp; condiment), then he/she must drink a supplement approved by the physician &amp; dietician.</td>
<td></td>
</tr>
<tr>
<td>Patient is not allowed to use the bathroom or leave the room for at least one hour after each snack/meal.</td>
<td></td>
</tr>
<tr>
<td>Patients are not allowed to take excessively long showers or trips to the bathroom (no more then 15 minutes).</td>
<td></td>
</tr>
<tr>
<td>Patients are not allowed to walk in the hallways or utilize wheelchair prior to medical team approval.</td>
<td></td>
</tr>
</tbody>
</table>

Notify Virtual Sitter Runner or RN on unit for:
- Notify Virtual Sitter Runner and/or RN on unit for:
  - Any of the above noted activities such as hiding food, subtle or obvious exercising.
  - Meals or snacks that are not fully consumed
  - All patient requests to use the bathroom - bedside sitter must be present and bathroom door left open
  - Outside meals, clothes or other items that are brought into the room
  - Other unusual or concerning activities.

For more information on Pediatric Eating Disorders you can visit—→ [https://www.adolescenthealth.org/Resources/Clinical-Care-Resources/Eating-Disorders.aspx](https://www.adolescenthealth.org/Resources/Clinical-Care-Resources/Eating-Disorders.aspx)
## Observation of Patients Admitted with Autism

### Reason for Admission
- A child is not admitted for a diagnosis of autism. The two most common reasons are mental health and neurological problems. *Autism is a spectrum disorder and each child will present differently.*

### During Hospitalization Monitor for...
- Triggers (staff entering room, loud noises, vital signs)
- Early warning signs of agitation; change in baseline functioning
- Physical aggression
- Self-injurious behaviors (biting, hitting, hair pulling, head hitting, slapping, chewing on thumb). These behaviors are often in response to stress in an attempt to self-soothe
- Identify their stressor and remove/decrease stressor
- Make sure no items in room could cause harm
- Physical restraint should be last resort when other less restrictive and alternative interventions are not effective or safe as it can have negative physical and emotional consequences
- Expectations can be communicated through picture or written schedule and should alternate preferred and less preferred activity as children with autism may have difficulty understanding verbal instructions

### Important Key Points to Remember
- Be patient in your approach
- If possible, consult patient’s caregiver to obtain the following child’s preferences of food, objects, activities; effective calming techniques; identify triggers to behavioral changes
- Be kind in seeking information from the child and be patient in learning how to communicate with them. Not being able to appropriately request wants and needs is one of the most common reasons people with autism engage in problem behavior
- Look for opportunities to teach and praise child
- Introduce tasks and assignments in small parts or steps
- It is not that the patient “won’t or refuses to,” it’s a matter that he doesn’t have the skills or ability to do in that moment
- Patients on the Spectrum may not be able to:
  - Respond to their name
  - Point at objects or things of interest
  - Play “pretend” games
  - Be willing/able to give eye contact
- Nonverbal does not mean the child can not or is not communicating
- In midst of crisis situation, remain as calm as possible
- Remind child of what he can do rather than what he can’t

### Notify Virtual Sitter Runner or RN on unit for:
- Increased agitation
- Self-injurious behaviors
- Harm to self or others
- For more information on caring for children with autism, you can visit [www.autismspeaks.org](http://www.autismspeaks.org)
Dual Sitter Trial
(In-person patient observer & virtual patient observer)

BE PREPARED TO SEE MORE THAN YOU EXPECT
Results/Outcomes: Dual Sitter Audits

IPO Observation
- Watching Patient: 54%
- Not Watching Patient: 46%

VPO Observation
- Watching Patient: 28%
- Not Watching Patient: 72%
Results/Outcomes: Staff Response Times to VPO Notifications

VPO Incident Response Times

- 87% Less than 15 seconds
- 13% Greater than 15 seconds
Once the efficacy of VPO was established, we implemented its sole use for selected patient populations and broadened our initial inclusion criteria:

Which patients need a sitter?

### 1:1 IPO (live sitter)
- Patients admitted with Suicide Ideation (SI)
- Patients admitted with Homicide Ideation (HI)
- Behavioral Health Patients with Risk of Self-harm or Harm to Others/Property pending evaluation by psychiatry
- Patients in Police Custody (first line is police personnel)

### VPO (e-sitter)
- Patients with Flight Risk
- Patients with Fall Risk
- Behavioral Health Patients with atypical development (e.g. Autism) in which an IPO sitter may contribute to overall behavioral issues
- Eating Disorder Patients
- Patients admitted for Non-Accidental Trauma
- Pt pulling at lines, drains, tubes, etc.
- Pts with Delirium
- Pts with Withdrawal
- Other indications as determined by provider

### No Sitter
- Clearance by psychiatric and medical teams
- Non-accidental trauma patients in DSS custody with restricted visitation in place
- Behavioral Health Patients admitted for non-BH issues & not meeting criteria listed in IPO/VPO.
- Children without parents or caregivers in the room - i.e. sitters cannot be used for babysitting! Consider utilizing volunteer services for these patients.
Results/Outcomes: Cost & Labor Savings
Pediatrics – 1 yr.

**Blended Model with IPO & VPO:** 460 sitters used for 922 patients = 11,040 sitter hours

**Traditional Model with IPO Only:** 922 sitters for 922 patients = 22,128 sitter hours

**Labor Savings incorporating VPO:** 11,088 hours, or 5.33 FTEs

**Cost Savings incorporating VPO:** $169,424.64 (using an average hourly wage of $15.28 charged to our sitter cost center)

---

Estimated average salary dollars per patient PSA need:

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Patients Observed (n)</th>
<th>Blended Model</th>
<th>Traditional Model</th>
<th>PSA Hourly Rate</th>
<th>Program Cost</th>
<th>Cost Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Staff # Hours</td>
<td>Staff # Hours</td>
<td></td>
<td>Blended Program</td>
<td>Traditional Program</td>
</tr>
<tr>
<td>2018</td>
<td>922</td>
<td>460 11040</td>
<td>922 22128</td>
<td>$15.28</td>
<td>$168,691.20</td>
<td>$338,115.84</td>
</tr>
</tbody>
</table>
Summary

• Despite the substantial initial investment to purchase video monitoring equipment and a 3-month trial period during which VPO was utilized *in conjunction* with bedside sitters, our 1st year cost analysis still yielded a positive ROI.

• Future use and spread of a VPO program has the potential to substantially reduce sitter related costs and improve patient and staff safety.
In Summary

• **Local problem:** Virtual Patient Observation can be used to lower costs, in person sitter utilization and improve patient safety.

• **Design and Implementation:** The focus on the reducing utilization required the coordination of a “people, process, and technology” approach to ensure clinical workflows were aligned with technical requirements. An observation technician at the central monitoring station acts as a virtual room sitter to watch for and proactively alert nurses and other care givers if the following potential adverse events are about to occur.

• **Healthcare IT:** The technology included the use of Microsoft Kinect cameras with the unique ability to see in 3D, track human skeletons, recognize verbal commands, and send video streams to a central monitoring station. Orders are entered into the EHR, and workflows are driven by the patient’s response to the re-directions of the staff.

• **Value derived:** There is a significant financial and safety ROI. Sitter costs were drastically reduced, falls were decreased, the utilization of restraints decreased, staff and patient satisfaction was positive; pediatrics patients have been added as a new use case.
Contacts:

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Becky.fox@atriumhealth.org

Alex Obert
IAS Manager Virtual Health
Alex.Obert@atriumhealth.org
When performing purposeful hourly rounding on the patient with VPO in the room, document “virtual monitoring” in the Environmental Safety Implemented portion of the Patient Rounding band.
## Sitter Metrics before VPO

<table>
<thead>
<tr>
<th><strong>Carolinas Rehab Pilot Unit</strong>*</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4.33 Falls</td>
<td>1015 Patient Days</td>
</tr>
<tr>
<td>$8500  Net Bed Expense</td>
<td>8.11 FTE Usage</td>
</tr>
<tr>
<td><strong>$8200  In Sitter Expenses</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Average per month
### Carolinas Rehab Pilot Unit*

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Falls</td>
<td>4.33</td>
</tr>
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*Average per month
# 90 Day Pilot Results – CR Main

**Carolinas Rehab Pilot Unit***

<table>
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<tr>
<th>Metric</th>
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<tbody>
<tr>
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*Average per month
## 90 Day Pilot Results – CR Main

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<tr>
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<tbody>
<tr>
<td><strong>4.33 Falls</strong></td>
</tr>
<tr>
<td><strong>1 Fall</strong></td>
</tr>
<tr>
<td><strong>1015 Patient Days</strong></td>
</tr>
<tr>
<td><strong>2847 Patient Days</strong></td>
</tr>
<tr>
<td><strong>$8500 Net Bed Expense</strong></td>
</tr>
<tr>
<td><strong>60% Reduction in Netbeds</strong></td>
</tr>
<tr>
<td><strong>8.11 FTE Usage</strong></td>
</tr>
<tr>
<td><strong>Avoided 12.3+ FTEs</strong></td>
</tr>
</tbody>
</table>

$85,000 Avoided in Sitter expenses

10x More Patients

*Average per month
## Pilot Expansion – CR All Facilities

<table>
<thead>
<tr>
<th><strong>Carolinas Rehab All Facilities</strong>*</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>3.49</strong> Fall Rate</td>
<td><strong>4629</strong> Patient Days</td>
</tr>
<tr>
<td><strong>$8500</strong> Net Bed Expense</td>
<td><strong>8.75</strong> FTE Usage</td>
</tr>
<tr>
<td><strong>$19,492</strong> In Sitter Expenses</td>
<td></td>
</tr>
</tbody>
</table>

*Average per month
## Pilot Expansion - CR All Facilities

<table>
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<tr>
<td>3.49 Fall Rate</td>
</tr>
<tr>
<td>2.53 Fall Rate</td>
</tr>
<tr>
<td>4629 Patient Days</td>
</tr>
<tr>
<td>3,561 Patient Days</td>
</tr>
<tr>
<td>$8500 Net Bed Expense</td>
</tr>
<tr>
<td>60% Reduction in Netbeds</td>
</tr>
<tr>
<td>8.75 FTE Usage</td>
</tr>
<tr>
<td>Avoided 18.85 FTEs</td>
</tr>
</tbody>
</table>

$276,019 in 1,464 Patients in total

*Average per month
Results/Outcomes: Equipment and Training Costs

**Pediatrics**

VPO Equipment Expenses/12 cameras: $83,000

VPO Training-related Expenses/20 Trainees:

- 2-hour training session by Information & Analytics Application Specialist to learn video equipment set-up and use
- 2-hour mandatory education session: Maintaining Professional Boundaries and Population-Specific Education
- 20 trainees X 4 hours X $15.28/hour = $1222.40

Equipment + Training Costs = $84,222.40
Results/Outcomes: Return on Investment

Pediatrics

- **1st Year Net Profit:** $169,424.64 - $84,222.40 = $85,202.24
- **1st Year Total Investment:** Equipment + Training Costs = $84,222.40
- **1st Year Return on Investment:** Net Profit ÷ Total Investment X 100

**ROI:** $85,202.24 ÷ $84,222.40 = 1.01 X 100 = 101%