Integrating Pediatric PROMIS® Measures into Clinical and Technology Operations

2019 HealthMeasures User Conference
Thursday, June 6, 2019 | 12:45 – 1:45 PM CST

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Shriners Hospitals for Children®
Abstract

Shriners Hospitals for Children (SHC) has integrated Pediatric PROMIS (Physical Function, Pain Intensity, Pain Interference, Peer Relationships, and Upper Extremity Function) measures into 12 SHC locations. PROMIS measures are a standard of care tool used in operational workflow and technologically integrated into the system’s electronic medical record. Across these 12 hospitals, we have captured over 82,000 PROMIS assessments and achieved a 93% completion rate during the period April 2017 through April 2019. Providers report PROMIS administration has increased patient-provider communication, given ability to uncover issues otherwise missed, and a way to quantifiably measure change in patients’ health-related quality of life.
Shriners Hospitals for Children (SHC)

Mission:

- Provide the highest **quality** care to children with neuromusculoskeletal conditions, burn injuries and other special healthcare needs within a compassionate, family-centered and collaborative care environment.

- Provide for the **education** of physicians and other healthcare professionals.

- Conduct **research** to discover new knowledge that improves the quality of care and quality of life of children and families.
About SHC

22 locations across US, Mexico, & Canada

Corporate Headquarters in Tampa, FL

Pediatric Orthopedics, Burn Care, Cleft Lip & Palate, Spinal Cord Injury
Patient-Reported Outcomes

PRO Stats

# Sites Live  # PROMIS Assessments Completed

Q4 2016 Q1 2017 Q2 2017 Q3 2017 Q4 2017 Q1 2018 Q2 2018 Q3 2018 Q4 2018 Q1 2019 Q2 2019

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
0 10,000 20,000 30,000 40,000 50,000 60,000 70,000 80,000 90,000

1 2 3 4 5 6 7,181 8 8 14,592 23,070 33,304 46,394 60,777 76,466 82,296
PROs: Completion Rates

SHC System-Wide PROMIS Completion Rates
PROMIS Assessments Completed = 55,825
Month over Month for past year

Date Range: May 01, 2018- April 30, 2019
Hospitals included: Salt Lake City, Greenville, Northern California, St. Louis, Lexington, Twin Cities, Portland, Chicago, Shreveport, Erie, Philadelphia, Houston
How it works at SHC

- PRO assessments are administered via iPad using the Tonic application.
How it works at SHC

**EMR Integration**

- Virtual Private Network (VPN) Connection
- Virtual Private Cloud (VPC) Connection
- ADT & ORU interface messages
- Device Procurement, Configuration, & Management
- Wi-Fi
- Cerner Build
How it works at SHC

Phase 1

- Pilot hospitals
- Outpatients
- ADT/ORU interface
- 4 PROMIS Profile Domains
  - PROMIS® Pediatric Item Bank v.2.0 - Mobility - Short Form 8a
  - PROMIS® Pediatric Item Bank v.2.0 - Pain Interference - SHC Custom Short Form 8a
  - PROMIS® Pediatric Item Bank v.2.0 - Peer Relationships - Short Form 8a
  - PROMIS® Pediatric Item Bank v.2.0 - Upper Extremity - Short Form 8a
Phase 2

- Roll-out to remaining hospitals
- Incorporate additional PROMIS® domains and outcomes tools:
  - PROMIS® Pediatric Numeric Rating Scale v1.0 – Pain Intensity 1a
  - PROMIS® Pediatric Item Bank v.1.1 – Anxiety - Short Form 8b
  - PROMIS® Pediatric Item Bank v.1.1 – Depressive Symptoms - Short Form 8b
  - Scoliosis Research Society (SRS) HrQoL questionnaire (SRS-22r)
  - Spinal Appearance Questionnaire (SAQ)
  - Burn Outcomes Questionnaire (BOQ)
Phase 2

- Enhancements
  - Scheduling Interface
    - Ability to send assessments to the patients ahead of the visit via text or email

- Tonic Inpatient Census Module
  - Allows for inpatient implementation
  - Currently only outpatient
How it works at SHC

Patient checks into Outpatient Clinic & data interfaces to Tonic

Clinic or Registration staff introduce PROMIS & gives iPad to patient/proxy

Patient/proxy completes PROMIS

Tonic calculates PROMIS scores & interfaces results into EMR in real-time

Nursing or Physician reviews PROMIS scores & addresses as necessary
How it works at SHC
How it works at SHC

Is the patient cognitively able to self-assess?

Yes  No

Do you depend on a wheelchair for mobility 100% of the time?

Yes  No
How it works at SHC
How it works at SHC

- Once the survey has been successfully completed, the iPad will lock to comply with HIPAA regulations
- Users must log back into Tonic before selecting a new patient from the patient list
- If left idle, the iPad will timeout and require staff sign-in to resume
How it works at SHC

Cerner mPages: Nursing & Physician

Cerner ResultsReview

<table>
<thead>
<tr>
<th>PROMIS Score</th>
<th>06/02/17 13:02 EDT</th>
<th>06/15/17 07:34 EDT</th>
<th>07/17/17 14:30 EDT</th>
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<tbody>
<tr>
<td>PROMIS Mobility Score - child</td>
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<td>31</td>
<td>42.8</td>
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<tr>
<td>PROMIS Upper Extremity Score - child</td>
<td>41</td>
<td>34.1</td>
<td>40.4</td>
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<tr>
<td>PROMIS Pain Interference Score - child</td>
<td>72</td>
<td>65.4</td>
<td>44.3</td>
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<tr>
<td>PROMIS Peer Relationships Score - child</td>
<td>67</td>
<td>46.7</td>
<td>54.49</td>
</tr>
</tbody>
</table>

PROMIS Child Questions Pain Interference

- I had trouble sleeping when I had pain: 0 - Never
- I felt angry when I had pain: 1 - Almost Never
- Trouble doing schoolwork when I had pain: 0 - Never
- Hard to pay attention when I had pain: 1 - Almost Never
- Was hard for me to run when I had pain: 0 - Never
- Hard to walk one block when I had pain: 1 - Almost Never
- It was hard to have fun when I had pain: 0 - Never
- Hard to stay standing when I had pain: 1 - Almost Never

PROMIS Child Questions Peer Relationship

- I felt accepted by other kids my age: 3 - Often
- I was able to count on my friends: 4 - Almost Always
- To talk about everything with my friends: 3 - Often
- I was good at making friends: 4 - Almost Always
- My friends and I helped each other out: 3 - Often
- Other kids wanted to be my friend: 4 - Almost Always
- Other kids wanted to be with me: 4 - Almost Always
- Other kids wanted to talk to me: 4 - Almost Always
How it works at SHC
**Physician Feedback**

"Physician Feedback"

"PROMIS results give me a good idea of how a patient is doing before I enter the room... I have noticed that adolescents are more willing to tell an iPad that they are struggling with peer relationships than to volunteer this information in response to in-person questioning. PROMIS has helped me uncover issues that I would have otherwise missed. I look forward to using PROMIS to better understand surgical indications and outcomes. I'm proud that Shriners is on the cutting edge of using this tool for children."

-Dr. Michelle James, Northern Cal

"A significant number of postoperative patients have a transient decline in upper extremity function after AIS surgery. The upper extremity domain is essential."

-Dr. Luhmann, St. Louis

"The PROMIS Pain Interference Assessment may be a valuable tool to assist meeting Joint Commission Pain Management Standards."

-Dr. Moore, St. Louis

"PROMIS has stimulated me to have more in-depth conversations with my patients, the tool is helping me become a better doctor. I also find that I am ordering more OT consults. I believe it is improving the care of the whole child."

—Dr. Mielke, Twin Cities"
How it works at SHC

- Completion time is approximately 3-5 min
- No significant increases in clinic time
- Most assessments complete prior to provider entering room
- Physicians use results for clinical decisions and improved care
- Severe domain scores lead to specialty consults
  - Upper Extremity → Occupational Therapy
  - Peer Relationships → Social Work
- Data being used for research
PROMIS Instruments Currently In Use:

- PROMIS® Parent Proxy Item Bank v2.0 - Mobility Short Form 8a
- PROMIS® Parent Proxy Item Bank v2.0 - Pain Interference Short Form 8a
- PROMIS® Parent Proxy Item Bank v2.0 - Peer Relationships Short Form 7a
- PROMIS® Parent Proxy Item Bank v2.0 - Upper Extremity Short Form 8a
- PROMIS® Pediatric Item Bank v.2.0 - Mobility - Short Form 8a
- PROMIS® Pediatric Item Bank v.2.0 - Pain Interference – SHC Custom Short Form 8a
- PROMIS® Pediatric Item Bank v.2.0 - Peer Relationships - Short Form 8a
- PROMIS® Pediatric Item Bank v.2.0 - Upper Extremity - Short Form 8a

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