Clinical Safety & Effectiveness
Cohort # 22
Team 2

Clean in, Clean out:
Hand Hygiene Compliance

Educating for Quality Improvement & Patient Safety
THE TEAM

We Represent Every Part Of The Process

• **CS&E Participants**
  - Aprilynn Agpalo, BSN, RN, CPN
  - Lorraine Bonilla, BSN, RN, CPN
  - Monica Narvaez, RN
  - Madeline Petri, BS
  - Becky Rodriguez, MSN, RN, CPN
  - Ted Wu, MD

• **Sponsor Department**
  - Emily Volk, MD
  - Greg Abrahamian, MD

• **Team Facilitator**
  - Sherry Martin, Health Care Quality Management Consultant

• **Extended Team – Hospital Collaborators**
  - Annierose Abogadie, MSN, RN, NE-BC, CCRN-K, RN-BC
  - Sara Collins, BSN, RN, CPN
  - Kelsey Sherburne, MD Pediatric Hospitalist
  - Michelle Arandes, MD Pediatric Residency Director
  - Lillian Liao, MD Pediatric Trauma
  - Timothy McEvoy, MD Pediatric ENT
  - Isabela Tarasiewicz, MD Pediatric Neurosurgery
  - Mark Nadeau, MD Family Practice Residency Director
  - Sekinat McCormick, MD Pediatric Orthopedics

• **Environmental Services**
• **UTHSCSA Division of Pediatric Critical Care Physicians & UTHSCSA Pediatric Residents**
The Team

We Represent Every Part Of The Process
Aim Statement

To increase hand hygiene compliance of anyone entering patient rooms of the PICU and PIMU at UHS from 80% to greater than 95% compliance by June 1st, 2018.
Background Material
Why Is Hand Hygiene Important?

• Two million health care–associated infections (HAIs) occur across the United States health care system each year.*
• Many transmitted by health care personnel
• JCAHO require healthcare organizations to implement a hand hygiene program
• Set goals for improving compliance with the program
• Monitor the success of those plans
• Steadily improve the results through appropriate actions

• Effective January 1, 2018, for all accreditation programs
• Any observation by surveyors of individual failure to perform hand hygiene in the process of direct patient care will be cited
• “The [organization] uses standard precautions, including the use of personal protective equipment, to reduce the risk of infection.”

Background Material

The Improvement Imperative with Hospital Acquired Condition (HAC) Penalty Changes for 2017: MRSA and C Diff rates become part of the penalty calculation.

MANDATORY IMPROVEMENT:

With significant cuts to reimbursement fees ($94B by 2022) and penalties for poor quality (CMS Penalties), continuous improvement is mandatory. When 100% of hand hygiene events are captured, compliance can improve, risk of infections and penalties are reduced and costs are avoided.
Flow Diagram

Entering Patient Room

Perform Hand Hygiene

Leaving Room

Yes

Perform Hand Hygiene

Done

No

Continue in Room

Leave Room

Yes

Leave Room

No

Hand Hygiene Not Required at this Time

Done

Yes

No
Baseline Data - PICU

PICU Hand Hygiene Compliance Baseline

- Upper Control Limit (UCL) 1.00
- Center Line (CL)
- Lower Control Limit (LCL) 0.71

Hand Hygiene Compliance by Month:
- Aug-17: 0.72
- Sep-17: 0.75
- Oct-17: 0.94
- Nov-17: 0.96
- Dec-17: 0.86
- Jan-18: 0.60

Date Range: Aug-17 to Jan-18
Baseline Data - PIMU

PIMU Hand Hygiene Compliance Baseline

- UCL: 1.00
- CL: 0.90
- LCL: 0.67

Dates:
- Aug-17
- Sep-17
- Oct-17
- Nov-17
- Dec-17
- Jan-18
Fishbone Diagram

**Environment**
- Dispensers are not located consistently where needed
- Nowhere to set supplies down to perform hand hygiene before going into room

**Process, Policies, Procedures**
- 2 processes for responsibility of dispenser maintenance
  - No consistency with EVS personnel or monitor (for unit)
  - Do not know who to call when dispenser is empty
  - EVS takes too long when refill requested

**Equipment, Machines**
- No sanitizer easily available (close proximity) to replace empty dispensers
  - Non-functioning sanitizers (broken, dead battery)
  - Batteries are on another floor
  - Sanitizer supply not replenished
  - EVS does not have supply readily available

**People**
- Nurses did not know or how to order Hand Hygiene videos for patients/families
- Staff hands occupied (i.e., carrying supplies)
- No location to set
- Laziness/lack of awareness

**Aim Statement**
To increase hand hygiene compliance of anyone entering patients rooms of the PICU and PIMU at UHS from 80% to greater than 95% compliance by June 1st, 2018.
## Driver Diagram

<table>
<thead>
<tr>
<th>Goal</th>
<th>Primary Drivers</th>
<th>Interventions</th>
<th>Measure</th>
<th>Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>To increase hand hygiene compliance of anyone entering patients' rooms of the PICU and PIMU at UHS from 83% to greater than 95% compliance by June 1st, 2018.</td>
<td>Lack of Consistency and Effectiveness of Resource Carts</td>
<td>Change the process to stock the carts prior to coming onto the Pedi floors (RS 3)</td>
<td>Number of properly stocked carts per week (Observational audits)</td>
<td>EVS</td>
</tr>
<tr>
<td></td>
<td>Lack of Consistency and Effectiveness of Resource Carts</td>
<td>Modify existing process to avoid use of PAR SKY</td>
<td>Number of times PAR SKY used per week</td>
<td>EVS</td>
</tr>
<tr>
<td></td>
<td>Non-functioning Equipment</td>
<td>Change sanitizers to manual, non-battery operated stations (RS 4)</td>
<td>Number of operational sanitizers</td>
<td>Becky and team</td>
</tr>
<tr>
<td></td>
<td>Labelling Sanitizer stations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lack of Hand Hygiene Awareness</td>
<td>Develop and deliver education to staff and families (2)</td>
<td>Number of individuals trained</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Change auditing process using Phone app (4)</td>
<td>Percent compliance by group</td>
<td>Initials and date on observation audits</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Develop an educational video for training (RS 2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Improve access to sanitizer supply</td>
<td>Modify inventory process to place supplies in commonly known areas (RS 3)</td>
<td>Number of operational sanitizers</td>
<td>Central Supply</td>
</tr>
</tbody>
</table>

### Interventions:
- **Change the process to stock the carts prior to coming onto the Pedi floors (RS 3)**
- **Modify existing process to avoid use of PAR SKY**
- **Change sanitizers to manual, non-battery operated stations (RS 4)**
- **Labelling Sanitizer stations**
- **Develop and deliver education to staff and families (2)**
- **Change auditing process using Phone app (4)**
- **Develop an educational video for training (RS 2)**
- **Modify inventory process to place supplies in commonly known areas (RS 3)**

### Measure:
- Number of properly stocked carts per week (Observational audits)
- Number of times PAR SKY used per week
- Number of operational sanitizers
- Percent compliance by group
- Number of individuals trained

### Responsible:
- EVS
- Becky and team
- Central Supply
Pareto Chart of Barriers to Hand Hygiene

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment</td>
<td>10</td>
<td>24.4%</td>
</tr>
<tr>
<td>Process / Procedure</td>
<td>8</td>
<td>21.1%</td>
</tr>
<tr>
<td>People / EVS Consistency</td>
<td>7</td>
<td>19.4%</td>
</tr>
<tr>
<td>Location / Proximity</td>
<td>5</td>
<td>13.6%</td>
</tr>
<tr>
<td>Emergency Situation</td>
<td>4</td>
<td>10.8%</td>
</tr>
<tr>
<td>Hands are Full</td>
<td>3</td>
<td>8.2%</td>
</tr>
<tr>
<td>No Intent to Touch Patient</td>
<td>2</td>
<td>5.4%</td>
</tr>
<tr>
<td>Timing Between Rooms</td>
<td>2</td>
<td>5.4%</td>
</tr>
</tbody>
</table>

Cumulative Percentage
Improvement Metrics

\[ \text{Percent Compliance} = \frac{(No.\text{Compliant})}{(No.\text{Observations})} \times 100 \]

• Our metric measures the hand hygiene compliance in the PICU and PIMU
• Record observation audits through two versions of the paper form and an innovative reporting app
### Hand Hygiene Observation Form #1

**Hand Hygiene Observation Tool**
Due on the 12th for the previous month, by entering into the online data collection tool.

<table>
<thead>
<tr>
<th>Date of Observation</th>
<th>Unit/Clinic</th>
<th>Facility</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Time</th>
<th>Professional Observed</th>
<th>Name or Person Observed</th>
<th>Hand Hygiene Process</th>
<th>If Non-compliant, please indicate one of the following:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RN/LVN, Med. Assist/Med. Surg Tech</td>
<td>BL/ND/PA</td>
<td>Completed</td>
<td>Did not perform any hand hygiene</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tech (morning)</td>
<td></td>
<td>Did not perform any hand hygiene</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Respiratory Therapy</td>
<td></td>
<td>Did not perform any hand hygiene</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other</td>
<td></td>
<td>Did not perform any hand hygiene</td>
</tr>
<tr>
<td>2</td>
<td>RN/LVN, Med. Assist/Med. Surg Tech</td>
<td>BL/ND/PA</td>
<td>Completed</td>
<td>Did not perform any hand hygiene</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tech (morning)</td>
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<td>Did not perform any hand hygiene</td>
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<tr>
<td></td>
<td></td>
<td>Respiratory Therapy</td>
<td></td>
<td>Did not perform any hand hygiene</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other</td>
<td></td>
<td>Did not perform any hand hygiene</td>
</tr>
<tr>
<td>3</td>
<td>RN/LVN, Med. Assist/Med. Surg Tech</td>
<td>BL/ND/PA</td>
<td>Completed</td>
<td>Did not perform any hand hygiene</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tech (morning)</td>
<td></td>
<td>Did not perform any hand hygiene</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Respiratory Therapy</td>
<td></td>
<td>Did not perform any hand hygiene</td>
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<tr>
<td></td>
<td></td>
<td>Other</td>
<td></td>
<td>Did not perform any hand hygiene</td>
</tr>
<tr>
<td>4</td>
<td>RN/LVN, Med. Assist/Med. Surg Tech</td>
<td>BL/ND/PA</td>
<td>Completed</td>
<td>Did not perform any hand hygiene</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>Did not perform any hand hygiene</td>
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<tr>
<td></td>
<td></td>
<td>Other</td>
<td></td>
<td>Did not perform any hand hygiene</td>
</tr>
<tr>
<td>5</td>
<td>RN/LVN, Med. Assist/Med. Surg Tech</td>
<td>BL/ND/PA</td>
<td>Completed</td>
<td>Did not perform any hand hygiene</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tech (morning)</td>
<td></td>
<td>Did not perform any hand hygiene</td>
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<tr>
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<td>Respiratory Therapy</td>
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<td>Did not perform any hand hygiene</td>
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<td></td>
<td>Other</td>
<td></td>
<td>Did not perform any hand hygiene</td>
</tr>
<tr>
<td>6</td>
<td>RN/LVN, Med. Assist/Med. Surg Tech</td>
<td>BL/ND/PA</td>
<td>Completed</td>
<td>Did not perform any hand hygiene</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tech (morning)</td>
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<td>Did not perform any hand hygiene</td>
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<td>Respiratory Therapy</td>
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<td>Did not perform any hand hygiene</td>
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<td>Other</td>
<td></td>
<td>Did not perform any hand hygiene</td>
</tr>
</tbody>
</table>

*Other includes non-nurse, non-physician staff, such as transporters, pharmacists, case managers, OR/ASC staff, dietary, lab, central core, CVC, diet and therapy, occupational therapy, administration, clerical staff, and anyone else who works for USF and should participate in Hand Hygiene but is not supervised by the unit administrator.

**Observer:**

*Ext 358*

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### Hand Hygiene Observation Form #2

**Hand Hygiene Observation Tool**

**Instructions:**
- **IMPORTANT!** Feedback is a key component of sustaining hand hygiene compliance – please complete this feedback column (complete/needs improvement) so we can understand the role of this feedback in sustaining compliance and develop strategies for improving the delivery of feedback.
- Complete at least 5 observations (rows in table below) in a single location.
- In each row, circle one selection in each column.
- All staff must clean hands immediately before or upon entering a patient’s room or space.
- An observation of staff who clean hands as they exit one room and enter the next room/pace should be included as only one observation of compliance (either in or out of the room/pace).

Thank you for being a part of this important effort!
Please submit the observations you make below to the Infection Control and Prevention Intranet home page under the ACSAP Hand Hygiene Data Entry tab. If you have any questions, please contact Infection Control and Prevention at infectioncontrol@usfca.edu or 210-358-2927.

#### Date:

**Location of Observations:**

**Observer Name:**

**Observer Employee Number:**

<table>
<thead>
<tr>
<th>Job Classification (Circle One in Each Row)</th>
<th>Hand Hygiene (either clean in or out of patient’s Health)</th>
<th>Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dietary Transport</td>
<td>Yes or No</td>
<td>Complain</td>
</tr>
<tr>
<td>RT</td>
<td>Yes or No</td>
<td>Reminder</td>
</tr>
<tr>
<td>Radiology</td>
<td>Yes or No</td>
<td>None</td>
</tr>
<tr>
<td>EVS</td>
<td>Yes or No</td>
<td>Complain</td>
</tr>
<tr>
<td>PT/OT/SLP</td>
<td>Yes or No</td>
<td>Reminder</td>
</tr>
<tr>
<td>Lab</td>
<td>Yes or No</td>
<td>None</td>
</tr>
</tbody>
</table>

**Legend:**
- RN/LVN: Nursing
- MD/PA/IP: Physician
- Physician Assistant
- Tech: Medical/Surg. Tech
- RT: Respiratory Therapy
- Radiology: Radiology Tech, EVS-ESRT, PT/OT/SLP, Physical Therapy
- Speech/Lang: Speech/Language Pathologist, Dietary/Dietary Nutrition and Food Services, Transport/Patient Transports, SW/CAM: Social Workers/Care Managers
- MA: Medical Assistant
- Stadist: Stadist, Lab/Phlebotomy
- All other health system personnel

**Feedback Scripting:**

*After observation of compliance:* I am concluding hand hygiene observation and observed that you performed hand hygiene appropriately, likely you have followed the patient’s room/pace leaving the patient’s room. Thank you for keeping our patient safe with your clean hands.

*After observation of non-compliance:* I am concluding hand hygiene observation and observed that you did not clean your hands. Before you entered the patient's room, please observe the proper hand hygiene. It is necessary to wash your hands before entering the patient’s room. Please be sure to do this every time you enter and exit the room to prevent the spread of infections.

*When you receive immediate feedback, your response must be:* "Thank you for the reminder."
Speedy Audit App

SpeedyAudit

Auditor: Aprilynn Apaun

New Session

My Data

Report

Info & Help

Version 3.6.1 Updated on 2018/02/27

SpeedyAudit

Location: University Hospital - Sky 7 ICU

Dietary
Environmental Services (EVS)
Lab/Phlebotomy
MD/NP/PA
Med/Surg Tech
Medical Assistant (MA)
Nurse (RN/LVN)
Other
Patient Transporter
Radiology
Respiratory Therapy (RT)
Social Work/Case Management
Student

Opportunity

Location: University Hospital - Sky 7 ICU
Profession: Nurse (RN/LVN)

In
Out

Missed
Wash
Rub

Opportunity

Location: University Hospital - Sky 7 ICU
Profession: Nurse (RN/LVN)

Notes
Nails, Rings, Bracelets

Comments

Add a Quick Comment

Feedback: Compliment
Feedback: Reminder

Session Duration: 00:09  0 Opportunities - 0 Indications
Culture of Safety

“Sense of confidence that the team will not embarrass, reject, or punish someone for speaking up”

(Edmondson, 1999)
Implementing The Change

https://app.frame.io/f/79e81292-36ce-4c08-ac96-7a8ad69cb874
Interventions

• Equipment Correction
  – Communication with EVS
  – Increase the supplies EVS stocks up in PICU and PIMU
    • Specifically for the stations inside patient rooms

•Changing the culture
  – Incorporating feedback (compliments/reminders) for patient safety
  – Video with example conversation

• Education
  – Proper use of PPE
Switch From Old To New Stations
Relocation Of Sanitizing Stations
# Station Functionality

## Sanitizing Stations Observation Sheet

| Sanitizing Station Number | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
|---------------------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Station is in the PICU    |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Station is in the PIMU    |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Station is inside a patient room | | | | | | | | | |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Station is outside a patient room | | | | | | | | | |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Station is working properly | | | | | | | | | |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Station battery is red/blinkiing | | | | | | | | | |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Station battery is dead    | | | | | | | | | |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Station dispenser is almost empty | | | | | | | | | |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Station dispenser is empty  | | | | | | | | | |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |

<table>
<thead>
<tr>
<th>Sanitizing Station Number</th>
<th>27</th>
<th>28</th>
<th>29</th>
<th>30</th>
<th>31</th>
<th>32</th>
<th>33</th>
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<th>46</th>
<th>47</th>
<th>48</th>
<th>49</th>
<th>50</th>
<th>51</th>
</tr>
</thead>
<tbody>
<tr>
<td>Station is in the PICU</td>
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<td>Station is in the PIMU</td>
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<tr>
<td>Station is inside a patient room</td>
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<td>Station is outside a patient room</td>
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<tr>
<td>Station is working properly</td>
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<tr>
<td>Station battery is red/blinkiing</td>
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<tr>
<td>Station battery is dead</td>
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</tr>
<tr>
<td>Station dispenser is almost empty</td>
<td></td>
<td></td>
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Numbering Sanitizing Stations and Tracking Functionality
Sanitizing Stations Functionality Reports

**PICU Stations**
- Before: 79%
- After: 95%
- Working Properly: 95%
- Red/Blinking: 3%
- Dead Battery: 2%
- Almost Empty: 13%
- Empty Dispenser: 3%

**PIMU Stations**
- Before: 86%
- After: 96%
- Working Properly: 96%
- Red/Blinking: 5%
- Dead Battery: 2%
- Almost Empty: 7%
- Empty Dispenser: 4%

**Inside Patient Rooms**
- Before: 79%
- After: 92%
- Working Properly: 92%
- Red/Blinking: 6%
- Dead Battery: 2%
- Almost Empty: 12%
- Empty Dispenser: 2%

**Outside Patient Rooms**
- Before: 84%
- After: 100%
- Working Properly: 100%
- Red/Blinking: 2%
- Dead Battery: 2%
- Almost Empty: 8%
- Empty Dispenser: 1%
Began Recording Additional Data

Going In or Out

- Feb-18: 92% (Entering), 90% (Exiting)
- Mar-18: 87% (Entering), 90% (Exiting)
- Apr-18: 91% (Entering), 86% (Exiting)
- May-18: 89% (Entering), 91% (Exiting)

Numbers are for PICU and PIMU combined
Result Data - PICU

PICU Hand Hygiene Compliance Rate

Hand Hygiene Compliance

Date


0.72  0.75  0.60  0.71  0.90  0.96  0.98  0.94  0.94  0.90  0.98  0.96  0.94  0.86  0.87  0.78  0.87  0.76

UCL  CL  LCL

1.00  0.94  0.96  1.00  0.90  0.96  0.98  0.87  0.88  0.94  0.89  0.87  0.86  0.90  0.94  0.87  0.87  0.76
Result Data - PIMU

PIMU Hand Hygiene Compliance

Hand Hygiene Compliance

Date

Aug 17, 2017
Sep 17, 2017
Oct 17, 2017
Nov 17, 2017
Dec 17, 2017
Jan 18, 2018
2/14/2018
2/21/2018
2/25/2018
3/4/2018
3/8/2018
3/11/2018
3/15/2018
3/18/2018
3/22/2018
3/25/2018
4/1/2018
4/15/2018
4/18/2018
4/22/2018
4/25/2018
5/1/2018
5/15/2018
5/18/2018
5/21/2018
5/25/2018
5/29/2018
5/31/2018

UCL
1.00
0.97
1.00
0.97
0.97
1.00
0.99
1.00
0.92
0.83

CL
1.00
0.90
0.79
0.67
0.60

LCL
0.83
0.89
0.91
0.90
0.92
0.81
0.85
0.92
0.83
Return On Investment

Variables

• Cost of filming video – Corporate Communications
• Manual Sanitizers – Free installation
• Speedy Audit App – 3 month free trial and annual fee

• Healthcare-associated infections (HAIs)
  – CAUTI, CLABSI, and C.Diff
Return On Investment

Year 2017 – 14 HAIs Cases

Based on APR-DRG, if all the same → $1,222,249 cost
549 days LOS

Based on APR-DRG with HAI → $1,393,916 cost
652 days LOS

HAIs Increase Direct Costs → $171,667 cost
+ 103 days LOS
Return On Investment

Our Results

For every 1% increase of hand hygiene compliance, healthcare-associated infections decrease by 0.6%.

Aim Statement Goal is to increase from 80% to 95%

Achieved Combined 97% Compliance

↑ 17% Compliance = ↓ 10.2% HAIs
Sustainability

• Educate & Increase Use of Speedy Audit app
• Educational Videos
  – Hand hygiene – Assign yearly
  – Feedback process
  – Patient and family Skylight to Speak Up
• Manual sanitizer stations hospital wide
• Pedi Hand Hygiene Steering Committee
  – Expand to all 5 PEDI units
  – Maintain meetings twice a month
  – Include more stakeholders and individuals at meetings
Acknowledgements

• Facilitators and Speakers of CS&E Cohort 22
• University of Texas Health San Antonio
• University Hospital
Thank you!

Questions?

Educating for Quality Improvement & Patient Safety