Care Zones Staffing Model: Solving Workflow Barriers to Improve Patient and Nurse Outcomes

Emory University Hospital
Atlanta, Georgia
Learning Outcomes

I. Review Care Delivery Model Framework
II. Identify Problems
III. Discuss Design of Care Zones Assignment
IV. Discuss Benefits and Outcomes of Care Zones Assignment
V. Review Care Zones Applications & Implementation
Setting

- 24 Bed General Medicine Unit
- High Acuity Complex Patients
- High Volume Patient Turnover
- Nurse/Patient Ratio 1:4 or 1:3
- Nurse Tech Patient Ratio 1:8-1:12
- 2 Hospital Medicine Teaching Service Teams Rotate Monthly
Accountable Care Unit (ACU™)

A geographic inpatient area consistently responsible for the clinical, service, and cost outcomes it produces.

ACU Features:

- Unit-Based Patient Teams
- Structured Interdisciplinary Bedside Rounds (SIBR™)
- Unit-Level Performance Reporting
- Unit-Level Nurse and Physician Co-Leadership
Synergy Model

The Synergy Model represents a patient’s needs based on the patient’s characteristics, matched with and a nurse’s practice competencies thus producing optimal patient outcomes (Curley, 1998).
Problems Identified

- RN patient assignments for the on-coming shift were based on synergy acuity that had negative staff feedback. RN staff raised concerns about “unfair” and/or “inconsistent” assignments by charge nurses.

- Staff members not geographically located near assigned patients.

- RN’s reporting off at shift change to multiple staff members.

- Staff members unnecessarily crossing paths throughout shift.

- Inter-professional team rounding crossed multiple paths.
<table>
<thead>
<tr>
<th>RN 1</th>
<th>RN 2</th>
<th>RN 3</th>
<th>RN 4</th>
<th>RN 5</th>
<th>RN 6</th>
<th>RN 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>31</td>
<td>32</td>
<td>33</td>
<td>34</td>
<td>37</td>
<td>44</td>
</tr>
<tr>
<td>46</td>
<td>38</td>
<td>35</td>
<td>36</td>
<td>50</td>
<td>42</td>
<td>51</td>
</tr>
<tr>
<td>49</td>
<td>48</td>
<td>52</td>
<td>47</td>
<td>56</td>
<td>54</td>
<td>53</td>
</tr>
<tr>
<td>55</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Typical Shift Assignment Pattern**

Spaghetti Diagram
Typical Shift Assignment Pattern

Spaghetti Diagram
A Closer Look into a Nurse’s Assignment
Leading to Patient Impact
Goal

Promote an efficient staffing assignment model that produces favorable outcomes.
<table>
<thead>
<tr>
<th>The University Of Michigan Health System</th>
<th>University of Pittsburgh Medical Center Shadyside</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased nurse satisfaction</td>
<td>Patient satisfaction with nurses keeping them informed</td>
</tr>
<tr>
<td>Increased patient satisfaction</td>
<td>Increase promptness responding to patient calls and attention to patient/personal needs</td>
</tr>
<tr>
<td>Decreased call lights</td>
<td></td>
</tr>
<tr>
<td>Decreased patient falls</td>
<td></td>
</tr>
<tr>
<td>Decreased incremental overtime</td>
<td></td>
</tr>
</tbody>
</table>

(Friese et al., 2014)  
(Donahue, 2009)
**Definition**

*Care Zones* are staff assignments that are made based on patient geography, acuity, and skills required of the nursing care team to achieve optimal patient outcomes.
Flexible & Fluid movement within the Care Zones
Flexible & Fluid movement within the Care Zones
Synergistic Approach in Care Zones

Care Zone 1
Acuity Weight = 12

Care Zone 3
Acuity Weight = 17

Care Zone 2
Acuity Weight = 12

2 Nurses 631-637
3 Nurses 649-658

Staff Level Change 7 Nurses Day Shift

Care Zone 1

RN 1
RN 2
Total Acuity 7
Total Acuity 6

Acuity Weight = 13

Care Zone 2

RN 3
RN 4
Total Acuity 7
Total Acuity 7

Care Zone 3

Acuity Weight = 14

2 Nurses 631-638 (8 patients)

2 Nurses 651-658 (8 patients)

2 Nurses 640-650 (8 patients)
### Staff Level Change 7 Nurses Night Shift

**Care Zone 1**
- Acuity Weight: 12
- Charge Nurse takes 2 patients in Zone 3

**Care Zone 2**
- Acuity Weight: 12

**Care Zone 3**
- Acuity Weight: 17

**Total Acuity**
- Zone 1: 6
- Zone 2: 7
- Zone 3: 7

**Staff Level Change**
- 7 Nurses Night Shift

---

### Acuity Distribution

<table>
<thead>
<tr>
<th>Care Zone 1</th>
<th>Acuity Weight</th>
<th>Nurses 631-637</th>
</tr>
</thead>
<tbody>
<tr>
<td>31 32 33 34 35 36 37</td>
<td>2 2 2 2 1 2 1</td>
<td>2</td>
</tr>
</tbody>
</table>

**Charge Nurse takes 2 patients in Zone 3**

<table>
<thead>
<tr>
<th>Care Zone 2</th>
<th>Acuity Weight</th>
<th>Nurses 631-637</th>
</tr>
</thead>
<tbody>
<tr>
<td>38 40 42 44 46</td>
<td>1 2 2 3 1</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Care Zone 3</th>
<th>Acuity Weight</th>
<th>Nurses 649-658</th>
</tr>
</thead>
<tbody>
<tr>
<td>31 32 33 34 35 36 37</td>
<td>2 2 2 2 1 2 1</td>
<td>2</td>
</tr>
</tbody>
</table>

**Total Acuity**
- RN 1: 6
- RN 2: 6
- RN 3: 5
- RN 4: 6
- RN 5: 7
- RN 6: 7
- CHG Nurse: 7

---

**Patient Distribution**

<table>
<thead>
<tr>
<th>Patient ID</th>
<th>Care Zone 1</th>
<th>Care Zone 2</th>
<th>Care Zone 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>58</td>
<td>31 32 33</td>
<td>38 40 42</td>
<td>58 57 56</td>
</tr>
<tr>
<td>55</td>
<td>34 35 36</td>
<td>40 42 44</td>
<td>55 54 53</td>
</tr>
<tr>
<td>54</td>
<td>37 2</td>
<td>42 44 46</td>
<td>54 53 52</td>
</tr>
<tr>
<td>53</td>
<td>34 35 36</td>
<td></td>
<td>53 52 51</td>
</tr>
<tr>
<td>52</td>
<td>37 2</td>
<td></td>
<td>52 51 50</td>
</tr>
<tr>
<td>51</td>
<td>34 35 36</td>
<td></td>
<td>51 50 49</td>
</tr>
<tr>
<td>50</td>
<td>37 2</td>
<td></td>
<td>50 49 48</td>
</tr>
<tr>
<td>49</td>
<td>37 2</td>
<td></td>
<td>49 48 47</td>
</tr>
</tbody>
</table>

---

**Note:** The diagram represents the allocation of nurses and patients across different care zones with acuity weights and total acuity counts.
Staff Level Change 6 Nurses Night Shift

Care Zone 1
- Acuity Weight = 13
- RN 1: Total Acuity 7
- RN 2: Total Acuity 6
- Charge Nurse 6
- Total Acuity 8
- 31 32 33 34 35 36 37 38
- 2 2 2 2 1 2 1 1

Charge Nurse takes 2 patients in Zone 3

Care Zone 2
- Acuity Weight = 15
- RN 3: Total Acuity 7
- RN 4: Total Acuity 8
- Total Acuity 6
- 40 42 44 46
- 2 2 3 1

Care Zone 3
- Acuity Weight = 14
- RN 5: Total Acuity 6
- RN 6: Total Acuity 5
- Total Acuity 8
- 58 57 56 55 54 53 52
- 3 1 2 1 1 2 2

2 Nurses 631-638 (8 patients)
2 Nurses 640-650 (9 patients)
2 Nurses 651-658 (7 patients)
Care Zones Flip Chart
Designed to assist charge nurses in making assignments with varying staffing levels
# Care Zones Nurse Assignment Sheet

### 7A-7P

<table>
<thead>
<tr>
<th>Care Zone 1</th>
<th>Care Zone 1</th>
<th>Care Zone 2</th>
<th>Care Zone 2</th>
<th>Care Zone 3</th>
<th>Care Zone 3</th>
<th>Care Zone 3</th>
<th>Care Zone 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>NURSE</td>
<td>NURSE</td>
<td>NURSE</td>
<td>NURSE</td>
<td>NURSE</td>
<td>NURSE</td>
<td>NURSE</td>
<td>NURSE</td>
</tr>
<tr>
<td>PL NAME</td>
<td>PL NAME</td>
<td>PL NAME</td>
<td>PL NAME</td>
<td>PL NAME</td>
<td>PL NAME</td>
<td>PL NAME</td>
<td>PL NAME</td>
</tr>
<tr>
<td>7P-7A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BUDDY</td>
<td>BUDDY</td>
<td>BUDDY</td>
<td>BUDDY</td>
<td>BUDDY</td>
<td>BUDDY</td>
<td>BUDDY</td>
<td>BUDDY</td>
</tr>
</tbody>
</table>

### 7P-7A

<table>
<thead>
<tr>
<th>Care Zone 1</th>
<th>Care Zone 1</th>
<th>Care Zone 2</th>
<th>Care Zone 2</th>
<th>Care Zone 3</th>
<th>Care Zone 3</th>
<th>Care Zone 3</th>
<th>Care Zone 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>NURSE</td>
<td>NURSE</td>
<td>NURSE</td>
<td>NURSE</td>
<td>NURSE</td>
<td>NURSE</td>
<td>NURSE</td>
<td>NURSE</td>
</tr>
<tr>
<td>PL NAME</td>
<td>PL NAME</td>
<td>PL NAME</td>
<td>PL NAME</td>
<td>PL NAME</td>
<td>PL NAME</td>
<td>PL NAME</td>
<td>PL NAME</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BUDDY</td>
<td>BUDDY</td>
<td>BUDDY</td>
<td>BUDDY</td>
<td>BUDDY</td>
<td>BUDDY</td>
<td>BUDDY</td>
<td>BUDDY</td>
</tr>
</tbody>
</table>
## SIBR Rounds Sheet

### Geographic SIBR® Rounds Map

<table>
<thead>
<tr>
<th>RN</th>
<th>Phone</th>
<th>Patient</th>
<th>Patient</th>
<th>Patient</th>
<th>Patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>404-111-2132</td>
<td>31</td>
<td>33</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>404-111-2133</td>
<td>32</td>
<td>34</td>
<td>35</td>
<td>36</td>
</tr>
<tr>
<td>3</td>
<td>404-111-2134</td>
<td>38</td>
<td>40</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>404-111-2135</td>
<td>42</td>
<td>44</td>
<td>47</td>
<td>48</td>
</tr>
<tr>
<td>5</td>
<td>404-111-2136</td>
<td>49</td>
<td>50</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>404-111-2137</td>
<td>51</td>
<td>53</td>
<td>55</td>
<td>58</td>
</tr>
<tr>
<td>7</td>
<td>404-111-2138</td>
<td>54</td>
<td>56</td>
<td>57</td>
<td></td>
</tr>
</tbody>
</table>

### SIBR® Debriefing

- Discharges
- Transfers
- Other:

---

SG SIBR developed 6-27-2015
Outcome Measurement Data

- RN satisfaction with patient assignments and workflow
- Patient falls
- Call light volume
- Late clock outs due to hand off process
- Distance traveled during a shift
Incremental Overtime

- Before Care Zones Implementation: 20
- After Care Zones Implementation: 12

40% reduction
Distance traveled per nurse per 12 hour shift

- Pre Care Zones: 5.78 miles
- 3 months post implementation: 4.26 miles (1.6 miles less)
- 18 months post implementation: 4.3 miles (1.55 miles less)
2 week Call Light Data Comparison

- June 2014 2 week data 7a-11p
- May 2015 2 week data 7a-11p
- August 2016 2 weeks 7a-11p

Number of calls

- Pre Care Zones Average Calls per day 89
- 3 months post Care Zones Average calls per day 45
- 18 months post Care Zones Average calls per day 51

2 weeks
## Patient Fall Data

### Unit Nursing Quality Index: 6G (Medical)

<table>
<thead>
<tr>
<th></th>
<th>FY13</th>
<th>FY14</th>
<th>FY15</th>
<th>Q4-FY13</th>
<th>Q1-FY14</th>
<th>Q2-FY14</th>
<th>Q3-FY14</th>
<th>Q4-FY14</th>
<th>Q1-FY15</th>
<th>Q2-FY15</th>
<th>Q3-FY15</th>
<th>8-Qtr Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pt Sat: Overall Nurses</strong></td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>82</td>
<td>26</td>
<td>11</td>
<td>71</td>
<td>92</td>
<td>9</td>
<td>95</td>
<td>99</td>
</tr>
<tr>
<td><strong>Pt Sat: Nurse Kept You Informed</strong></td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>53</td>
<td>51</td>
<td>25</td>
<td>78</td>
<td>95</td>
<td>9</td>
<td>92</td>
<td>99</td>
</tr>
<tr>
<td><strong>Pt Sat: How Pain Was Controlled</strong></td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>89</td>
<td>14</td>
<td>4</td>
<td>84</td>
<td>65</td>
<td>91</td>
<td>41</td>
<td>46</td>
</tr>
<tr>
<td><strong>Pt Sat: Promptness Responding to Call</strong></td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>93</td>
<td>24</td>
<td>21</td>
<td>88</td>
<td>73</td>
<td>4</td>
<td>99</td>
<td>99</td>
</tr>
<tr>
<td><strong>Pt Sat: Attention Special/Personal Needs</strong></td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>93</td>
<td>18</td>
<td>17</td>
<td>39</td>
<td>82</td>
<td>35</td>
<td>77</td>
<td>99</td>
</tr>
<tr>
<td><strong>Pt Sat: Friendliness / Courtesy of Nurses</strong></td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>77</td>
<td>39</td>
<td>16</td>
<td>55</td>
<td>98</td>
<td>33</td>
<td>83</td>
<td>97</td>
</tr>
<tr>
<td><strong>Pt Sat: Nurses’ Attitude toward Requests</strong></td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>84</td>
<td>17</td>
<td>12</td>
<td>73</td>
<td>96</td>
<td>8</td>
<td>98</td>
<td>99</td>
</tr>
<tr>
<td><strong>Falls per 1,000 Patient Days</strong></td>
<td>2.75</td>
<td>2.60</td>
<td>2.50</td>
<td>2.31</td>
<td>3.91</td>
<td>4.36</td>
<td>3.74</td>
<td>5.16</td>
<td>3.73</td>
<td>4.72</td>
<td>1.87</td>
<td>2 of 8</td>
</tr>
<tr>
<td><strong>Falls w/ Injury per 1,000 Patient Days</strong></td>
<td>0.52</td>
<td>0.46</td>
<td>0.41</td>
<td>0.46</td>
<td>0.49</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.93</td>
<td>0.47</td>
<td>0.00</td>
<td>5 of 8</td>
</tr>
</tbody>
</table>

### Unit Nursing Quality Index: 6G (Medical)

<table>
<thead>
<tr>
<th></th>
<th>FY13</th>
<th>FY14</th>
<th>FY15</th>
<th>Q1-FY14</th>
<th>Q2-FY14</th>
<th>Q3-FY14</th>
<th>Q4-FY14</th>
<th>Q1-FY15</th>
<th>Q2-FY15</th>
<th>Q3-FY15</th>
<th>8-Qtr Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Falls per 1,000 Patient Days</strong></td>
<td>2.75</td>
<td>2.60</td>
<td>2.50</td>
<td>3.91</td>
<td>4.36</td>
<td>3.74</td>
<td>5.16</td>
<td>3.73</td>
<td>4.72</td>
<td>1.87</td>
<td>1.92</td>
</tr>
</tbody>
</table>
Patient Fall Data Continued

Care Zones Implemented March 2015

Fall trend
Nurse Satisfaction

- Do zone assignments improve your ability to complete patient care tasks timelier?
  - 97% at 3 months, 95% at 18 Months

- Overall, do zone assignments enhance your workflow?
  - 80% at 3 months, 78% at 18 Months

- During your shift do the zone assignments benefit you by limiting the distance you travel between patients?
  - 68% at 3 months, 60% at 18 Months

- Percentage of staff response
  - 64% at 3 months, 72% at 18 Months
Benefits of Care Zones Assignment

- Minimize the impact of subjectivity in staff assignments
- Optimize Bedside Shift Report (BSR) process
- Provide a strong support system and safety net for patients and staff
- Care team is geographically close to assigned patients
- Promote team collaboration between staff members
- Increase patient safety and staff efficiencies in workflow
Future Care Zones Expansion at Emory

- Easily Replicable and Adaptable to Other Inpatient Settings
- Supports Inpatient Units of Varied Patient Populations
- The New Hospital Tower will utilize the Care Zones Assignment Model
- Other System Entities are Considering Adoption of Care Zones Assignment Model
Leadership Support: Plan Foundation for Success

- Assess the Culture, Identify Strengths, and Stakeholders Needed for Successful Implementation and Sustainment
- Prepare the Team’s Mindset to Demonstrate Dedication and Commitment to the Project’s Success
- Enlist the Informal Leaders to Help Advocate, Role Model and Lead the Change
- Shape Your Stakeholders to Instill Commitment, Adherence, and Application
Needs Assessment

- Readiness Assessment Survey
- Examine Workflow Patterns
- Timeline and Check Points for Rapid Cycle Improvement and Celebrate Milestones
- Utilize the Comfort Level of Staff as a Leverage Point
- Educate to the Cause and Elicit the Buy In


Contact Information

Greg Kingsley-Mota, MSN, RN, NEA-BC
Transition Facilitator
Emory University Hospital
1364 Clifton Road
Atlanta, GA. 30322

Barbara Hill, MSN, APRN, AGCNS-BC, ACCNS-AG, CCRN
Clinical Nurse Specialist
Emory University Hospital
1364 Clifton Road
Atlanta, GA. 30322