

# A Framework for Improving Chronic Critical Illness Care

## *Adapting the Medical Home's Central Tenets*

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The current paradigm of the patient-centered medical home (PCMH) may not be appropriate for optimal care of chronically critically ill (CCI) patients. Evolving models for the PCMH, supported by US Congress' Patient Protection and Affordable Care Act,<sup>1</sup> focus on a nexus of coordination where the patient's primary care physician, or practice, coordinates patients' care and communication.<sup>2</sup> The PCMH model, including accountable care organization manifestations, uses enhanced communication and responsibility for patients as they are seen by specialists or experience transitions in care requiring accurate hand-offs between care givers.<sup>3</sup> This model has advanced because it can create safer, more efficient care-benefitting patients, families, and care providers.<sup>4</sup> But, the community-based primary care structure is not the correct fit for CCI patients.

The CCI patient is born of an iatrogenic process; modern medical care has devised ways to sustain life in the context of ongoing life threats.<sup>5</sup> The CCI patient has needs that span a multidisciplinary skill set including medical, nutritional, rehabilitative, and palliative approaches to care.<sup>5-7</sup> Deficits in care, coordination, and communication may accompany long, complex inpatient trajectories far from a patient's primary provider or medical home.<sup>7</sup> It may not be feasible for community-based providers to fulfill the obligation of care coordination, nor would it be appropriate, if the patients in question rarely reside in the community. Optimal care of the CCI patient has implications for health care spending,<sup>8</sup> health care quality outcomes,<sup>9</sup> and timely linking of patients to appropriate services that can include chronic illness management, episodic acute care, and palliative care.<sup>10</sup>

High-volume physicians have been shown to have better outcomes in HIV and cardiac care, for example.<sup>11,12</sup> Providers accustomed to acute care management, day in and day out, include hospitalists and inpatient nonphysician medical providers (NPMP) such as physician assistants and advanced practice registered nurses (APRNs). Comanagement of illness using hospitalists alongside other specialists has resulted in improved quality, cost-effectiveness (moderate volume service), and cost savings (large volume service).<sup>13</sup> Employment of hospitalists in enhanced coordination roles<sup>14</sup> offers promise for an inpatient-based nexus of coordination similar to a PCMH and is aligned with efforts to improve coordination of hospitalists' care transitions<sup>15</sup> and their coordination with other practitioners.<sup>16</sup> Facility care is a domain in which the community-based primary care provider, in comparison, has limited oversight and/or resources available to coordinate care.

NPMPs, working with hospitalists, to help lead and coordinate care is appropriate given their advanced training and scopes of practice emphasizing health care team collaboration.<sup>17-19</sup> NPMPs can expand the amount of care offered by physicians or health services<sup>20</sup> and at lower cost compared with physicians,<sup>21</sup> particularly in nonteaching

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hospitals where lower cost physician trainees are not employed. The nature of long-term hospitalization makes utilization of physician resident trainees in this role a challenge demanding, rather, the continuity of care provided by permanent medical staff.

Disease management programs for CCI patients discharging to community settings have shown reductions in cost, duration, and frequency of hospital readmissions<sup>22</sup> as well as mitigated family caregiver burden.<sup>23</sup> Borrowing from the PCMH model to care for the CCI patient during their prolonged institutional course could be a better way to meet both patients' complex health care needs as well as the providers' need for accurate information at hand-off. Indeed, the Society for Hospital Medicine opened the door for intra/interfacility coordination of care and utilization of NPMPs in their definition of hospital medicine.<sup>24</sup> Hospitalists and NPMPs currently practice beyond the hospital at postacute care and long-term acute care facilities, expanding their roles along the continuum of care for the CCI patient.<sup>25–27</sup> On the basis of the central tenets of the PCMH, what follows re-frames accountability for an adult population that spends considerable days away from home in health care facilities. The value of the hospitalist, working with NPMPs, as the nexus of care coordination is explored here.

### CCI POPULATION

The definition of the CCI population has changed over time. Consensus was reached in 2014 and is used by the Centers for Medicare and Medicaid Services.<sup>28</sup> CCI patients have spent at least 8 days in a critical care unit and have at least one of the following: tracheostomy/prolonged mechanical ventilation, sepsis, or other severe infections, wounds, or multiple organ failure. Estimates of US prevalence of CCI patients note a total of 380,001 cases nationwide—with 107,880 hospital deaths—leading to \$26 billion in hospital-related costs.<sup>8</sup>

The CCI population is growing. Health care systems must address its complex needs and lengthy, but often necessary, facility stays. CMS 2009 data indicate CCI patients spend more time in hospitals and postacute facilities than non-CCI patients: <10 days (CCI, 10%; non-CCI, 79%), 10–19 days (CCI, 35%; non-CCI, 13%), 20–29 days (CCI, 19%; non-CCI, 4%), 30–39 days (CCI, 11%; non-CCI, 2%), and 40+ days (CCI, 23%; non-CCI, 2%).<sup>28</sup> A 1-year prospective cohort study of 126 patients at a major center indicated a median of 4 transitions of care per patient.<sup>29</sup> Patients spent an average of 74% of all days alive in the hospital, postacute care facility, or home health. At 1 year, 82 of the 126 patients had a “poor” outcome including 56 patient deaths.

Efforts to restructure care management for medically complex patients has demonstrated improvements in several challenge areas for CCI patients. Regarding prolonged mechanical ventilation, characteristic of many CCI patients, 1 hospital used a mobile team of APRNs who acted as “outcomes managers” in intensive care settings. This intervention succeeded in reducing mechanical ventilation days, length of stay, and mortality.<sup>30</sup> Special care units, as alternatives to intensive care, showed reductions in the cost of

care for medically complex patients.<sup>31</sup> However, this study did not focus on care transitions. CCI patients have benefited from wound-healing initiatives in multidisciplinary respiratory care units; it was suggested that APRNs, for example, could lead this care.<sup>32</sup> Care directed at complex CCI needs is promising. Challenges remain in how to optimize care coordination and patient/family-provider communication between levels of facility care.

### CHRONIC CRITICAL ILLNESS MEDICAL HOME

Deliberate CCI care approaches could be informed by 5 Agency for Healthcare Research and Quality PCMH domains: comprehensive care, patient-centered care, coordinated care, accessible services, and quality and safety.<sup>33</sup> These can be adapted for the CCI population and their inpatient settings.

#### Comprehensive Care

The CCI patient can be followed throughout institution-based levels of care by the hospitalist-led team. In cases where the patient does return to the community, even for a short time, a team representative (hospitalist or NPMP) would discuss the inpatient course with the community-based primary provider. Electronic health records that connect levels of care would allow communication between clinicians second only to a team meeting which may not be possible across care settings. Inpatients, especially complex CCI patients, tends to see many providers, but someone must coordinate the moving parts. A hospitalist, or their partnering NPMP, is well-suited to this role and certainly more so than a community-based provider.

One-year survival from CCI is between 40% and 50%.<sup>34</sup> Palliative care offers value in CCI and not just for those near the end of life.<sup>35</sup> Hospitalists should have low thresholds for consulting palliative specialists for symptom management and end-of-life care options. Early advance care planning should be part of comprehensive care for CCI.

#### Patient-centered Care

Patients' cultural, religious/spiritual, social, language, and decision-making needs should be addressed. Desired decision-making modes may involve close family or necessarily involve surrogate decision makers. Patient advocacy and effective surrogate decision making help to ensure care is consistent and aligned with patient wishes.<sup>36</sup> CCI patients may not be in a position to advocate well for themselves or even make informed decisions due to their complex illness or the cognitive effects of their medications. Losing the “patient” from patient-centered care is a particular concern in caring for the CCI. Hospitalists and NPMPs can use information learned about a CCI patient's relationships to individualize and deliver patient-centered care.<sup>37</sup>

#### Coordinated Care

The hospitalist service can most appropriately handle accountability for the CCI patient between levels and locations of facility care. Patients, families, and other providers should be able to attest to an effective coordination of care. Their perceptions should be sought. The hospitalist and

NPMP should undertake deliberate improvements if this perceptive assessment falls short of goals.

Responsible use of resources in the delivery of better care to achieve improved health outcomes is congruent with the Triple Aim strategy of care adopted at the national level. The Triple Aims are: improving patients' experience of care, improving the health of populations, and reducing per capita costs of health care. Coordinated care gets us closer to the Triple Aim in the challenging CCI population. For example, population-based informatics categorizing chronic care needs of elderly patients allowed 1 health care organization to improve care transitions by addressing cost, quality, and rehospitalizations for patients similar to CCI patients.<sup>38</sup>

Admittedly, rural areas may pose a greater challenge for coordination due to geographic distance between the acute hospital and the long-term acute care facility. Telemedicine can offer patient care management, including aspects of physical examination.<sup>39,40</sup> Hospitalists at an acute care facility can help manage patients' care supported by NPMPs and trained nursing staff in patients' subacute settings.

### Accessible Services

Optimal patient-provider and provider-provider communication, staff education on CCI patient needs, and enhanced reimbursement for CCI care will make this model of care most accessible. Noting deficits in care continuity, team work, and staff perceptions of futile care, 1 study indicated that health care staff would benefit from more professional development related to the CCI population.<sup>41</sup> On the job workforce education in this regard could contribute to early recognition and management of CCI patients. Anticipating needs of CCI patients is best handled by onsite specialists in acute hospital medicine rather than community-based primary care providers. Applying triggers or flags to electronic medical charting (eg, length of stay or ventilator days greater than a certain number of days) could assist early recognition by the hospitalist service of impending CCI. Lack of reimbursement for CCI care coordination continues to be a barrier to care for this population.<sup>28</sup> Medicare reimbursement for chronic care management that began January 2015, while not focused on CCI patients, may motivate better access to services for chronic conditions in general.<sup>42</sup>

### Quality and Safety

CCI patients are unique in their complex needs; their medical status can change rapidly. Onsite hospitalists and NPMPs, acting as the early warning system for safety/quality concerns, can direct care appropriately. Data sharing between organizations caring for CCI populations could provide insights for quality improvement at the bedside. Evidence-based practice, while the gold standard for care delivery, should be integrated with successful practice-based evidence for an emerging CCI population.

Applying tenets of the medical home model to the CCI population requires a cultural shift in the way inpatient hospitalists and NPMPs practice. However, if CCI care is to be patient-centered then the industry needs to respond in kind. Patient care comanagement service agreements and group practice coverage can formalize hand-off communi-

cation, close gaps in care, and define the conduct of care transitions.<sup>13,43</sup> Balanced score cards can act as tools to keep providers attuned to a service's quality improvement goals.<sup>44</sup> Recognizing, and capitalizing on, the role the electronic health record plays in the organization of patients' multiple chronic conditions is integral.<sup>45,46</sup>

### CONCLUSIONS

As it is currently discussed, the PCMH model does not deliberately consider CCI patients and their complex care settings removed from the purview of community-based providers. An adaption of core PCMH tenets for CCI has not yet been demonstrated. A hospital quality improvement project involving a hospitalist service with NPMPs and serving an identified CCI population could be the next step. It would be important to measure length/nature of unit stays, acute intervention type, and care team composition. Patient, family, and provider interviews/surveys assessing perceptions of quality and effectiveness of care and communication should be conducted. These findings would arguably be important indicators of success. An approach borrowing from PCMH tenets and using hospitalists partnered with physician assistants or advance practice nurses could improve facility-based care transitions, patient outcomes, and patient/family satisfaction with care.

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