Acute Care Committee
Agency Report
Adjusted Need Petition for Eight Burn ICU Beds in HSA I in the 2021 State Medical Facilities Plan

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Petitioner:
MH Mission Hospital, LLLP
d/b/a Mission Hospital
509 Biltmore Ave
Asheville, NC 28801

Contact:
Chad Patrick, CEO
Mission Hospital
Chad.Patrick@hcahealthcare.com
828-213-1266

Request:
MH Mission Hospital (Mission) requests "an adjusted need determination for eight new burn intensive care beds in HSA I in the *2021 State Medical Facilities Plan* (*SMFP*)."

Background Information:
Chapter Two of the *SMFP* provides that "[a]nyone who finds that the North Carolina State Medical Facilities Plan policies or methodologies, or the results of their application, are inappropriate may petition for changes or revisions. Such petitions are of two general types: those requesting changes in basic policies and methodologies, and those requesting adjustments to the need projections." The annual planning process and timeline allow for submission of petitions requesting adjustments to need projections during the comment period for the proposed *SMFP* in the summer. This includes petitions for adjustments based on a belief that "unique or special attributes of a particular geographic area or institution give rise to resource requirements that differ from those provided by application of the standard planning procedures and policies…." It should be noted that any person might submit a certificate of need (CON) application for a need determination in the Plan. The CON review could be competitive and there is no guarantee that the petitioner would be the approved applicant.

There are currently two burn intensive care units (ICUs) in North Carolina: a 21-bed unit at the University of North Carolina Hospital in Chapel Hill (UNC) and an eight-bed unit at North Carolina Baptist Hospital (Baptist) in Winston-Salem. In 2012, both hospitals each received CON approval to develop four new burn ICU beds. To date, these eight beds have not been developed.

The standard methodology in the *SMFP* determines a need for new burn intensive care services when the existing services (including CON-approved beds) have cumulatively "reported an

average annual occupancy rate of at least 80% during the last two reporting years." It is important to note that the Agency does not have access to patient origin data for burn ICU patients. As such, the need methodology calculation for burn ICU beds does not exclude utilization by out-of-state patients. As shown in the *Proposed 2021 SMFP*, utilization for the 37 beds in the planning inventory during the 2018 – 2019 reporting year was 73.2%; in the previous year, it was 68.0%. Over the past reporting years, UNC Hospital's utilization has been over 80% while Baptist Hospital's has ranged between 30.7% and 41.5%.

Analysis:

Need and Impact on Existing Services

The standard methodology has not determined a need for burn ICU beds since 2012. However, in response to this Petition, the Agency examined the number of burn beds that might be needed in HSA I. The NC Office of State Budget Management's most recent 2019 population estimates of the North Carolina population is 10,508,254. Literature on regionalization of burn care suggests that between 0.3 – 0.5 beds per 100,000 population are needed.[1,2] Thus, one estimate of the State's need is between 31 to 53 burn beds.

As demonstrated by utilization patterns at Baptist, there is sufficient capacity in the State. One concern is that a new unit will suppress utilization at Baptist. According to the Petitioner, from 2017 - 2019, Baptist Hospital served an average of about 25 burn patients from HSA I, and UNC served approximately six. The Petitioner estimates average length of stay (ALOS) for burn patients to be 15.33 days. However, IBM Watson Health Analytics data shared by UNC Hospital in their comments on this petition indicate that ALOS for burn patients from HSA I admitted to UNC from 2016 to 2019 is as low as 8.6 days. As shown in Table 1, the more conservative estimate is equivalent to an average daily census of 0.60 at Baptist and 0.15 at UNC for patients from HSA I.

Table 1. Estimated Average Daily Census for HSA I Burn Patients Served at Baptist and UNC Hospitals

	Total 2019 DOC* (A)	ALOS** (B)	Patients of HSA I Origin*** (C)	DOC Patients from HSA I (B x C)	Average Daily Census****
UNC	8,077	8.6	6.33	54.44	0.15
Baptist	1,821		25.33	217.84	0.60

* *2020 Hospital License Renewal Applications*

** IBM Watson Health Analytics data on burn patients from HSA I admitted to UNC Hospitals between July 2016 and June 2019. *UNC Hospital Comments in Opposition to Mission Hospital Petition for Special Need Adjustment for Burn Intensive Care Services in 2021 State Medical Facilities Plan, p. 3.*

*** IBM Watson Health Analytics data on burn patients from HSA I admitted to UNC Hospitals and NC Baptist Hospital, 2017-2019. *Petition for Special Need Adjustment for Burn Intensive Care Services in the Western North Carolina Region (HSA I), p. 8.*

****Based on 365.25 possible days of care

[1] Warden, G. D., & Heimbach, D. (2003). Regionalization of burn care--a concept whose time has come. *The journal of burn care & rehabilitation*, *24*(3), 173–174. https://doi.org/10.1097/01.BCR.0000066784.94077.C6

[2] Carmichael, H., Wiktor, A. J., McIntyre, R. C., Lambert Wagner, A., & Velopulos, C. G. (2019). Regional disparities in access to verified burn center care in the United States. *The journal of trauma and acute care surgery*, *87*(1), 111–116. https://doi.org/10.1097/TA.0000000000002259

The Agency calculated adjusted utilization for UNC and Baptist Hospitals if the DOC for patients from HSA I had been excluded from the *Proposed 2021 SMFP*. Based on an ALOS of 8.6 days, we estimate that HSA I burn patients accounted for 2.4% of utilization at UNC and 1.2% of utilization at Baptist. That is, the exclusion of HSA I patients, reduced UNC's utilization from 88.5% to 87.9%, and reduced Baptist's utilization from 41.5% to 36.6% (Table 2).

Table 2. 2018-2019 Adjusted Utilization, Burn ICU Beds

	Licensed Beds	Adjustments for CONs	Total Beds	2018-2019 DOC	2018-2019 Utilization (%)	Adjusted DOC	Total Possible DOC	Adjusted 2018-2019 Utilization (%)
UNC	21	4	25	8,077	88.5	8,022.6*	9,131.3	87.9
Baptist	8	4	12	1,821	41.5	1,603.2**	4,383.0	36.6
Total	29	8	37	9,898	73.2	9,625.8	13,514.3	71.2

* Adjusted DOC calculated by subtracting from 2018 – 2019 DOC the number of DOC for 6.33 patients with an ALOS of 8.6.
** DOC adjusted by subtracting from 2018-2019 DOC the number of DOC for 25.33 patients with an ALOS of 8.6.

Service Volume

One concern regarding the addition of burn ICU beds is potentially low service volume. The Petitioners expect that a burn unit at Mission will be accessed by patients who currently would have to travel over 100 miles to a burn unit, and many will be those who reside near the borders of NC in Kentucky, South Carolina, Tennessee, and Virginia ("four-state area"). While the Agency recognizes the needs of North Carolina to be paramount, it also acknowledges that all health services regulated by the Agency are accessed by non-residents. The Agency does not collect data on the patient origin of burn ICU patients. However, according to the Petition, patient origin data acquired from IBM Watson Health Analytics indicate that from 2017 – 2019, over 400 patients each year from the four-state area traveled more than 100 miles for services. During that same period, between 20 and 29 patients from HSA I sought burn care outside of NC annually.

Regional Characteristics

The Petitioner indicates that 54 North Carolinians from HSA I accessed burn center services in 2019. Half traveled to Doctor's Hospital of Augusta (DHA) in Georgia for this care. This occurred although DHA is 40 miles further away from Asheville than Baptist Hospital. The Agency presumes this is because Mission is a point of access for burn patients from HSA I. Both Mission and DHA are HCA Healthcare affiliates, and thus, it is reasonable that coordination of care of burn patients would occur between the two hospitals. However, as described in the Petition, western NC's terrain and weather conditions can create longer and more hazardous ambulance and helicopter travel, not only to arrive in Georgia, but for travel 100 to 200 miles to NC's central region where existing burn centers are located.

The Agency acknowledges research that suggests medical outcomes (i.e., mortality, length of stay, number of operations and hospital charge) may not be statistically different for burn patients who are directly admitted to burn centers and those who are transferred from primary care facilities. However, the Agency recognizes that lengthy travel times present strains on health resources,

family support efforts, and follow-up care. Nationally, there is wide variation in access to verified burn centers by ground transport. In a 2019 study, the southern region of the US was found to have the highest rates of low access to care, with more than a third of the population having low access.[3] Other research has shown that in the South, the percentage of residents who would need to travel more than two hours to access these centers is much higher than national estimates. In fact, over more than three-quarters of North Carolina's residents live more than two hours away from a burn center. As discussed above, the Petitioner refers to potential access of a new burn center by residents from surrounding states. Thus, it is noteworthy that one study found in South Carolina and Tennessee, less than 0.1% of residents are located less than two hours from a verified burn center. In Kentucky, South Carolina, Tennessee, and Virginia between 45.7% - 99.2% of each state's residents are located over four hours away from a center.[4]

Table 3. Percentage of Population by Hours by Ground Transport to Verified Burn Certified Centers (n=51)[4]

Region	≤ 1 hours	≤ 2 hours	≤ 4 hours
United States	25.1	46.3	67.7
West	51.6	54.3	71.1
Northeast	40.2	72.7	94.1
Midwest	28.7	52.1	76
South	10.7	23.5	46.2
North Carolina	4.4	21.4	67.2
Tennessee	0.0	0.0	7.6
South Carolina	0.0	0.0	0.8
Kentucky	7.0	9.9	54.3
Virginia	12.0	28	56.1

Agency Recommendation:

The Petitioner has requested a need adjustment for eight new burn intensive care beds in HSA I. The State has adequate capacity to provide burn services. However, existing services are located centrally within the state, and geographical characteristics of the western region may strain access. Further, we project that the addition of these beds will have minimal impact on the utilization of existing services. Thus, given available information and comments submitted by the August 8, 2019 deadline, and in consideration of factors discussed above, the Agency recommends approval of the Petition for an adjusted need determination of eight new burn intensive care beds in HSA I in the *2021 SMFP*.

[3] Carmichael, H., Wiktor, A. J., McIntyre, R. C., Lambert Wagner, A., & Velopulos, C. G. (2019). Regional disparities in access to verified burn center care in the United States. *The journal of trauma and acute care surgery*, *87*(1), 111–116. https://doi.org/10.1097/TA.0000000000002259

[4] Klein, M. B., Kramer, C. B., Nelson, J., Rivara, F. P., Gibran, N. S., & Concannon, T. (2009). Geographic access to burn center hospitals. *JAMA*, *302*(16), 1774–1781. https://doi.org/10.1001/jama.2009.1548