
CHAPTER 6 OPERATING ROOMS

Summary of Operating Room Inventory and Utilization

“Operating room” is defined in G.S. 131E-76(6a) as “...a room used for the performance of surgical procedures requiring one or more incisions and that is required to comply with all applicable licensure codes and standards for an operating room.” In the ~~fall~~ ~~spring~~ of ~~2016~~ ~~2017~~, the combined inventory of operating rooms in hospitals and ambulatory surgical facilities in North Carolina consisted of ~~152~~ ~~155~~ dedicated inpatient surgery rooms, including ~~95~~ ~~96~~ dedicated C-Section rooms, ~~296~~ ~~290~~ dedicated ambulatory surgery rooms and ~~914~~ ~~930~~ shared operating rooms. Data from the ~~2016~~ ~~2017~~ Hospital and Ambulatory Surgical Facility License Renewal Applications indicated that of the total reported surgical cases, excluding C-Section cases, ~~72.3~~ ~~72.4~~ percent of the cases were ambulatory cases and ~~27.7~~ ~~27.6~~ percent of the cases were inpatient cases.

Changes from the Previous Plan

~~Several~~ ~~One~~ substantive changes to the Operating Room methodology ~~has~~ ~~have~~ been incorporated into the North Carolina ~~Proposed 2018~~ ~~2017~~ State Medical Facilities Plan. ~~In accordance with Step 1, Delineation of Service Areas, the multicounty operating room service areas have been reviewed and updated as indicated by the data.~~ The changes are summarized below:

- ~~1. Caswell County will no longer be in a multi-county service area with Alamance County. Caswell County will be in the Guilford/Caswell Service Area. Alamance County will become a single-county service area.~~
 - ~~2. Hyde County will no longer be in a multi-county service area divided between Beaufort and Pitt Counties. Hyde County will be in the Pitt/Greene/Hyde/Tyrrell Service Area. Beaufort County will become a single-county service area.~~
 - ~~3. Tyrrell County will no longer be in a multi-county service area with Chowan County. Tyrrell County will be in the Pitt/Greene/Hyde/Tyrrell Service Area. Chowan County will become a single-county service area.~~
- Facilities are grouped by the total number of surgical hours derived from data reported on the License Renewal Application.
 - Operating room deficits and surpluses are calculated separately for each health system.
 - Availability and utilization assumptions are based on the group to which the facility is assigned.
 - Need determination calculations use case times reported by the facility, adjusted for outliers.
 - When a need is calculated, the minimum need determination is two operating rooms. The maximum operating room need determination in a single service area is six. These changes will be evaluated after the first year of implementation of the new methodology.

The inventory and case data have been updated and references to dates have been advanced by one year, as appropriate.

Assumptions of the Methodology

For the purposes of the operating room methodology, a “health system” includes all licensed health service facilities with operating rooms located in the same service area that are owned by:

1. the same legal entity (i.e., the same individual, trust or estate, partnership, corporation, hospital authority, or the State or political subdivision, agency or instrumentality of the State); or
2. the same parent corporation or holding company; or
3. a subsidiary of the same parent corporation or holding company; or
4. a joint venture in which one or more of the participants in the joint venture owns a licensed health service facility with operating rooms located in the same service area.

For the 2018 SMFP, when a need is calculated, the minimum need determination for operating rooms is set to two, after rounding. In addition, the maximum operating room need determination in a service area in a single year will not exceed six, regardless of the deficit calculated. The Agency will reevaluate these two adjustments in 2018 to recommend whether to continue them.

Certificate of Need applications for new operating rooms are not restricted to the entity(ies) that generated the deficits.

Sources of Data

Data on the number of cases and procedures for the North Carolina ~~2017~~ **Proposed 2018** State Medical Facilities Plan were taken from the “~~2016~~ **2017** Hospital License Renewal Application” and the “~~2016~~ **2017** Ambulatory Surgical Facility License Renewal Application” as submitted to the Acute and Home Care Licensure and Certification Section of the Division of Health Service Regulation. *(Note: ~~While utilization data are reported on the annual license renewal applications for dedicated C-Section rooms, utilization data must be collected separately for the excluded Trauma Center and Burn Intensive Care Unit operating rooms described in Step 4.j. of the “Methodology for Projecting Operating Room Need.” For the North Carolina Proposed 2018 2017 State Medical Facilities Plan, one operating room for each Level I and Level II trauma center and one operating room for each designated burn intensive care unit are excluded in Table 6B. However, additional data on cases referred to excluded operating rooms by Level I or Level II trauma centers and burn intensive care units have not been collected because application of the methodology indicated that the Operating Room Service Areas with a Level I or Level II trauma center or burn intensive care unit all had surpluses of operating rooms. Excluding cases for service areas with projected surpluses would only increase the size of the projected surplus.~~)*

Inventory data for the North Carolina ~~2017~~ **Proposed 2018** State Medical Facilities Plan were compiled by staff based on License Renewal Applications, supplemented with data from the most recent licenses issued by the Acute and Home Care Licensure and Certification Section and with project approval letters from Certificate of Need.

Population data by county for ~~2015~~ **2016** and ~~2019~~ **2020** were obtained from the North Carolina Office of State Budget and Management.

Methodology for Projecting Operating Room Need

The following narrative describes the assumptions and methodology used in determining the operating room inventory and in projecting need for additional operating room capacity. The objective of the methodology is to arrive at a reasonable assessment of the adequacy of current resources for performing surgery, compared with an estimate of need for additional capacity.

Step 1 – Delineation of Service Areas (~~Column A, Table 6B~~)

Definitions:

Single county operating room service area: A county with at least one licensed facility with one or more operating rooms.

Multicounty operating room service area: A group of counties including:

- one or two counties with at least one licensed facility with at least one operating room **and**;
- one or more counties with no licensed facility with at least one operating room.

All counties are either single county operating room service areas or are part of a multicounty operating room service area. A multicounty operating room service area may consist of multiple counties with no licensed facility with at least one operating room grouped with either one or two counties, each of which has at least one licensed facility that includes at least one operating room.

The three most recent years of available surgical patient origin data are combined and used to create the multicounty operating room service areas. These data are updated and reviewed every three years. The operating room service areas are then updated, as indicated by the data. The first update occurred in the North Carolina 2011 State Medical Facilities Plan. The following decision rules are used to determine multicounty operating room service area groupings:

1a. Counties with no licensed facility with at least one operating room are grouped with the single county where the largest proportion of patients had surgery, as measured by number of surgical cases, unless:

- (1) Two counties with licensed facilities with at least one operating room each provided surgical services to at least 35 percent of the residents who received surgical services, as measured by number of surgical cases.

2b. If 1a. a(1) is true, then the county with no licensed facility with at least one operating room is grouped with both the counties which provided surgical services to at least 35 percent of the residents who received surgical services, as measured by number of surgical cases.

A county lacking a licensed facility with at least one operating room becomes a single county operating room service area upon licensure of a facility with at least one operating room in that county. If a certificate of need is issued for development of a facility with at least one operating room in a county lacking a facility with at least one operating room, the operating room(s) for which the certificate of need has been issued will be included in the inventory of operating rooms in that county's multicounty operating room service area until those operating rooms are licensed.

In 2006, in response to an adjusted need determination petition, the State Health Coordinating Council added Swain County to the Jackson-Graham multicounty operating room service area. This created a multicounty operating room service area that included two counties that have licensed facilities with at least one operating room and one county lacking a licensed facility with at least one operating room.

An operating room's service area is the operating room planning area in which the operating room is located. The operating room planning areas are the single and multicounty groupings shown in Figure 6.1.

Step 2 – Inventory of Operating Rooms (*Columns D through J, Table 6A*)

- a. In each operating room service area, list the number of operating rooms by type, and sum them for each health system in each operating room service area by summing the following for all licensed hospitals and ambulatory surgery surgical facilities:
 - (1) Number of Inpatient Operating Rooms (*Column D*)
 - (2) Number of Ambulatory Operating Rooms (*Column E*)

- (3) Number of Shared Operating Rooms (*Column F*)
- b. For each ~~facility operating room service area~~
- (1) ~~e~~Exclude the number of dedicated C-Section operating rooms as summed from the Hospital License Renewal Application. (*Column G*)
 - (2) ~~For each operating room service area e~~Exclude one operating room for each Level I and Level II Trauma Center and one additional operating room for each designated Burn Intensive Care Unit. (*Column H*)
 - (3) ~~For each operating room service area, add~~List the number of ~~additional~~ operating rooms (*Column I*) and C-Section operating rooms (*Column J*) for which certificates of need have been issued or settlement agreements signed but ~~the operating rooms are not yet~~ were not licensed/delicensed as of September 30 of the reporting year. (*Columns ~~RI~~ and J*)
- c. Enter placeholders for ~~as well as any~~ need determinations from previous plans that are pending certificate of need review. (*Column I and/or Column J*)

Step 3 – Determine Each Facility’s Adjusted Case Times

- a. For each facility, compare the “Average ‘Case Time’ in Minutes” for inpatient and ambulatory cases on the annual License Renewal Application to its average case time used in the methodology in the previous year’s SMFP. (*Note: For the 2018 SMFP only, compare the case time reported on the 2017 License Renewal Application to the case time reported on the 2016 License Renewal Application.*)
- (1) If either the inpatient or ambulatory case time is more than 10% longer than the previous year’s case time, then the “Adjusted Case Time” is the reported case time plus 10%.
 - (2) If either the inpatient or ambulatory case time is more than 20% shorter than the previous year’s case time, then the “Adjusted Case Time” is the reported case time minus 20%.
 - (3) If neither of the above situations occurs, then the “Adjusted Case Time” is the average case time(s) reported on the License Renewal Application.

Step 4 – Group Facilities

- a. For each hospital, multiply the total inpatient surgical cases reported in the “Surgical Cases by Specialty Area” table on the annual Hospital License Renewal Application by the inpatient average case time from Step 3. Then divide by 60 to obtain the total inpatient surgical hours.
- b. For each facility, multiply the total ambulatory cases reported in the “Surgical Cases by Specialty Area” table on the annual License Renewal Application by the ambulatory average case time from Step 3. Then divide by 60 to obtain the total ambulatory surgical hours.
- c. Add the total inpatient and ambulatory surgical hours together to obtain each facility’s “Total Surgical Hours for Grouping.” (*Column K, Table 6A*)

- d. Assign each facility to a group based on the following criteria (*Column L, Table 6A*):

Group	Facility Type
1:	Academic Medical Center Teaching Hospitals
2:	Hospitals reporting more than 40,000 surgical hours
3:	Hospitals reporting 15,000 to 40,000 surgical hours
4:	Hospitals reporting less than 15,000 surgical hours
5:	Separately licensed ambulatory surgical facilities that perform at least 50% of their procedures in either ophthalmology or otolaryngology, or a combination of the two specialties.
6:	All separately licensed ambulatory surgical facilities not in group 5.

- e. For purposes of the State Medical Facilities Plan, the average operating room is anticipated to be staffed based on its group membership nine hours a day, for 260 days per year, and utilized at least 80 75 percent of the available time. The standard number of hours per operating room per year based on these assumptions is 1,872 hours. (*Column K: 9 hours x 260 days x 0.8 = 1,872 hours per operating room per year*). Assumptions regarding hours per day and days per year of availability are shown in the table below. Multiply the Hours per Day by the Days Per Year. Then multiply by 75% to obtain the Standard Hours per Operating Room per Year. (*Column M, Table 6A*)

Group	Hours per Day	Days per Year	Standard Hours per Operating Room per Year
1	10	260	1,950.0
2	10	260	1,950.0
3	9	260	1,755.0
4	8	250	1,500.0
5	7	250	1,312.5
6	7	250	1,312.5

Step 2 – Estimate Total Surgery Hours for the Previous Year (Columns B through H, Table 6B)

Estimate the total number of surgery hours performed during the previous fiscal year based on reported cases by type from Annual License Renewal Applications, as follows:

- a. ~~Multiply Sum the number of inpatient surgical cases reported in the Inpatient Cases column of the “Surgical Cases by Specialty Area” table on the annual Hospital License Renewal Applications for all licensed facilities within the operating room service area. (Note: Cases performed in Dedicated C Section rooms; cases reported as “Trauma Cases” by Level I or II Trauma Centers; and cases reported by designated “Burn Intensive Care Units” are excluded for purposes of these need projections.) Multiply the total number of inpatient cases by three hours to estimate the number of hours utilized for inpatient cases. (Column B x Column C = Column D)~~
- b. ~~Sum the number of ambulatory surgical cases reported in the Ambulatory Cases column of the “Surgical Cases by Specialty Area” table on the annual Hospital License Renewal Applications and the number of surgical cases reported on the annual Ambulatory Surgical Facility License Renewal Applications for all licensed facilities within the operating room service area. Multiply the total number of ambulatory cases by 1.5 hours to estimate the number of hours utilized for ambulatory cases. (Column E x Column F = Column G)~~

- ~~e. Sum the totals from Step 2.a. and 2.b. to determine the “Total Estimated Hours” reported during the previous fiscal year. (Column D + Column G = Column H)~~

Step 3 5 – Project Future Operating Room Requirements Based on Growth of Operating Room Hours (Columns D through K, Table 6B)

- a. Determine the utilization rate for each licensed facility providing surgical services and exclude from all further calculations ~~Step 5 – “Determination of Need”~~ the operating rooms and corresponding procedures in chronically underutilized licensed facilities located in operating room service areas with more than one licensed facility. Do not exclude ~~from Step 5~~ operating rooms in facilities located in service areas where all facilities are chronically underutilized. Chronically underutilized licensed facilities are defined as licensed facilities operating at less than 40 percent utilization for the past two fiscal years, which have been licensed long enough to submit at least three License Renewal Applications to the Division of Health Service Regulation.
- b. For Groups 2 through 6, use the “Adjusted Case Time” (Step 3) to calculate the average (mean) inpatient and ambulatory case times for each group. If this average exceeds one standard deviation above the mean case time for its group, substitute the value equivalent to the mean plus one standard deviation of the “Adjusted Case Time” to obtain the “Final Inpatient Case Time” (Column E) and/or “Final Ambulatory Case Time” (Column G), as applicable. Otherwise use the “Adjusted Case Time” from Step 3. Facilities that perform no surgical procedures in the category being calculated are excluded from the calculations. For the Proposed 2018 State Medical Facilities Plan, the average Final Inpatient and Ambulatory Case Times for each group are as follows:

Group	Average Final Inpatient Case Time in Minutes	Average Final Ambulatory Case Time in Minutes
1	230.8	131.3
2	173.3	106.7
3	173.9	103.2
4	106.0	70.5
5	--	43.0
6	--	66.9

- c. For each facility, multiply the inpatient surgical cases reported on the License Renewal Application by the average inpatient case time from Step 5-b, and multiply the ambulatory surgical cases reported on the License Renewal Application by the average ambulatory case time from Step 5-b. Sum these amounts for each facility to obtain the “Total Estimated Surgical Hours.” (Column H)
- d. For purposes of these need projections, the number of surgical hours is anticipated to increase or decrease in direct proportion to the change in the general population of the operating room service area. Calculate the A “Growth Factor” based on each service area’s projected population change between the “data year” (2015 2016) and the “target year” for need projections (2019 2020) ~~is calculated based on~~ using population figures from the North Carolina Office of State Budget and Management. (Column I: Growth Factor = 2019 2020 Service Area Population minus 2015 2016 Service Area Population, then divided by the 2015 2016 Service Area Population.)

- e. Multiply each facility's the "Total Estimated Surgical Hours" (*Column H*) for the most recent fiscal year by each service area's the "Growth Factor" (*Column I*). ~~for each operating room service area. Then~~ add the product to the Total Estimated Surgical Hours to determine the "Projected Surgical Hours for Anticipated in 2019 2020." ($[Column H \times Column I] + Column H = Column J$)
- f. Divide each facility's the "Projected Surgical Hours for Anticipated in 2019 2020" by the "Standard Hours per Operating Room per Year" (based on group assignment) to determine the "Projected Surgical Operating Rooms Required in by the year 2019 2020." ($Column J \div Column K = Column L$) (*Column J, Table 6B \div Column M, Table 6A = Column K, Table 6B*)

Step 5 6 – Determination of Health System Deficit/Surplus (Columns L - M, Table 6B)

- a. ~~For each operating room service area,~~ Sum the "~~Initial Adjusted Inventory~~" operating rooms, adjustments, and exclusions for each facility to obtain the "Adjusted Planning Inventory." (*Column L*)
- b. Subtract the "Adjusted Planning Inventory" from the "Projected Surgical Operating Rooms Required in 2020" to obtain the surpluses and deficits for each facility. (*Note: In Column EM, projected deficits surpluses will appear as positive negative numbers indicating that there are more operating rooms in the Adjusted Planning Inventory than the methodology projects will be needed by 2019) the methodology projects that more operating rooms will be needed in 2020 than are in the current inventory.*) Then sum the deficits and surpluses for each facility in each health system to arrive at the "Projected Operating Room Deficit or Surplus." ($Column K - Column L = Column M$)

Step 7 – Determination of Service Area Operating Room Need (Column N, Table 6B)

- a. Round the health system deficits according to the rounding rules, below:

~~If a health system located in an For each operating room service area with more than 10 operating rooms in the "Adjusted Planning Inventory" has and a projected fractional deficit of 0.50 or greater, round the deficit to the "Operating Room Need Determination" is equal to the "Projected Operating Room Deficit" rounded to the next highest whole number. (In this step, fractions of 0.50 or greater are rounded to the next highest whole number.) For each health system in an operating room service area with more than 10 operating rooms and a projected deficit that is less than 0.50 or in which there is a projected surplus, there is no need. the Operating Room Need Determination is zero. (Column U)~~

~~If a health system located in an For each operating room service area with six to 10 operating rooms in the "Adjusted Planning Inventory" has and a projected fractional deficit of 0.30 or greater, round the deficit to the "Operating Room Need Determination" is equal to the "Projected Operating Room Deficit" rounded to the next highest whole number. (In this step, fractions of 0.30 or greater are rounded to the next highest whole number.) For each health system in an operating room service area with six to 10 operating rooms and a projected deficit that is less than 0.30 or in which there is a projected surplus, there is no need. the Operating Room Need Determination is zero. (Column U)~~

If a health system located in an operating room service area with five or fewer operating rooms in the “Adjusted Planning Inventory” has a projected fractional deficit of 0.20 or greater, round the deficit to the “Operating Room Need Determination” is equal to the “Projected Operating Room Deficit” rounded to the next highest whole number. (In this step, fractions of 0.20 or greater are rounded to the next highest whole number.) For each health system in an operating room service area with five or fewer operating rooms and a projected deficit that is less than 0.20 or in which there is a projected surplus, there is no need. the Operating Room Need Determination is zero. (Column U)

- b. Add all rounded health systems deficits. Then adjust for any placeholders for need determinations in previous SMFPs to calculate the “Service Area Need.” (Column N)
- c. For the 2018 SMFP, the “Service Area Need” must be at least two to show an Operating Room Need Determination in Table 6C. If the “Service Area Need” is greater than six, then the Operating Room Need Determination is equal to six.

NOTE: “Dedicated C-Section Operating Rooms” and associated cases are excluded from the calculation of need for additional “operating rooms” by the standard methodology; therefore, hospitals proposing to add a new operating room for use as a “Dedicated C-Section Operating Room” shall apply for a certificate of need without regard to the need determinations in Chapter 6 of this Plan. There are no other operating room exclusions for which this protocol is applicable.

A “Dedicated C-Section Operating Room” shall only be used to perform Cesarean Sections and other procedures performed on the patient in the same visit to the C-Section Operating Room, such that a patient receiving another procedure at the same time as the Cesarean Section would not need to be moved to a different operating room for the second procedure.