## **Process to determine adequacy of the health workforce**

**Step 1:** In potential Basic EmONC facilities (i.e., non-surgical sites), at the end of each shift during a monitoring period (e.g., the last month of every quarter) the responsible individual records the number of birth attendants and complementary health professionals present to provide care on the shift in the maternity unit (labor, delivery, and postpartum/postnatal rooms or wards), using the sample Basic EmONC data collection form provided in Figure 3. In a potential Comprehensive EmONC facility (i.e., surgical site), the same process is followed and expanded to account for the number of obstetric surgical teams (immediately available), blood transfusion teams (in the facility), and neonatal nurses (in the inpatient newborn care unit unless no sick or small newborns are receiving care, in which case they must be immediately available), using the sample data collection form provided in Figure 1. The number of newborns in the inpatient newborn care unit in non-CPAP and CPAP small or sick newborn (SSN) beds should also be noted for each shift. For potential Intensive EmONC facilities, the Comprehensive EmONC form should be used to assess staffing levels, while recognizing that additional providers are likely needed based on acuity of patients receiving treatment at that level. Note that at this time, there is no minimum staffing level for intensive care units / newborn intensive care units being recommended.

**Step 2:** At the end of a monitoring period, the number of birth attendants across all shifts should be added and then divided by the number of shifts for which data were collected. The same should be done for the rest of the columns in the data collection form. This provides the per shift averages for each staffing category in the facility for that monitoring period. These averages are entered into the final row on Figure 1 (for Basic EmONC facilities) or Figure 2 (for Comprehensive EmONC and Intensive EmONC facilities).

**Step 3:** Figure 3 presents a recommended number of birth attendants and complementary health professionals needed to provide quality Basic EmONC services for facilities using either 8- or 12-hour staffing patterns. These numbers are consistent with FIGO recommendations.([[1]](#endnote-1)) Figure 4 presents the corresponding recommendations for Comprehensive EmONC / Intensive EmONC facilities, as well as the recommended number of obstetric surgical and blood transfusion teams. Figure 4a presents the recommended Newborn Norms bed nurse ratio for inpatient SNCUs.([[2]](#endnote-2)) Based on the facility’s annual caseload and number of shifts, use Figures 3 or 4 to determine the recommended minimum number of birth attendants, complementary health professionals, and obstetric surgical and blood transfusion teams needed per shift. (See ‘Calculations for adequate staffing per shift for caseload’ at the end of this document to learn more about the assumptions that were used to produce these recommendations.) For inpatient SNCUs at Comprehensive EmONC / Intensive EmONC facilities, and based on the average number of newborns requiring CPAP, use Figure 4a to determine the recommended minimum number of neonatal nurses needed per shift.

**Step 4:** Each facility should compare its health personnel per shift averages (calculated in step 2) with the recommended numbers identified in step 3. For Basic EmONC facilities, if the average number of birth attendants and complementary health professionals (Figure 1) reach the recommended minimum numbers (Figure 3), that facility meets the standard set for adequate Basic EmONC staffing. Comprehensive EmONC / Intensive EmONC facilities do the same: comparing averages for skilled health personnel, neonatal nurses and complete teams (Figure 2) with recommended minimum numbers (Figures 4 and 4a). If the average number of birth attendants, complementary health professionals, neonatal nurses and complete obstetric surgical and blood transfusion teams reach the recommended minimum numbers, that facility meets the standard set for adequate Comprehensive EmONC / Intensive EmONC staffing.

**Step 5:** Tally the number of Basic EmONC, Comprehensive EmONC and Intensive EmONC facilities that meet the recommended minimum number of nationally qualified health personnel. This number is the numerator for Indicator 4 - Health workforce adequate for caseload.

##### **Figure 1.** Sample Basic EmONC data collection form

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Facility name:** | | | | | | | | | |
| **# Prior year births:** | | | | | | | | | |
| **Shift pattern per 24 hours (circle one): Three 8-hour shifts Two 12-hour shifts** | | | | | | | | | |
| **Date** | **Collector initials** | **Shift**  **D=Day**  **E=Evening**  **N=Night** | | | **Day of the week**  **WD=Weekday**  **WE=Weekend**  **H=Holiday** | | | **Number of nationally qualified skilled health personnel** | |
| **Birth attendants1** | **Complementary health professionals2** |
|  |  | D | E | N | WD | WE | H |  |  |
|  |  | D | E | N | WD | WE | H |  |  |
|  |  | D | E | N | WD | WE | H |  |  |
|  |  | D | E | N | WD | WE | H |  |  |
|  |  | D | E | N | WD | WE | H |  |  |
|  |  | D | E | N | WD | WE | H |  |  |
| **Skilled health personnel average (per shift)**  *For each column (birth attendant and complementary health professionals), add up staffing for all shifts and then divide by the number of shifts that data were collected for.* | | | | | | | |  |  |
| 1 In this country, **birth attendants** include the following cadres: [TO BE COMPLETED BY COUNTRY].  To be considered ‘present’ for the shift, they must be on the maternity unit (labor, delivery, and postpartum/postnatal rooms or wards) providing care through the shift. | | | | | | | | | |
| 2 In this country, **complementary health professionals** include the following cadres: [TO BE COMPLETED BY COUNTRY].  To be considered ‘present’ for the shift, they must be on the maternity unit (labor, delivery, and postpartum/postnatal rooms or wards) providing care through the shift. | | | | | | | | | |

##### **Figure 2.** Sample Comprehensive EmONC / Intensive EmONC data collection form

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Facility name:** | | | | | | | | | | | | | | | | | |
| **# Prior year births:** | | | | | | | | | | | | | | | | | |
| **Shift pattern per 24 hours (circle one): Three 8-hour shifts Two 12-hour shifts** | | | | | | | | | | | | | | | | | |
| **Date** | **Collector initials** | **Shift**  D=Day  E=Evening  N=Night | | | **Day of the week**  WD=Weekday  WE=Weekend  H=Holiday | | | **Number of nationally qualified skilled health personnel, complete teams, and neonatal nurses** | | | | | | | | |
| **Birth attendants1** | | **Complementary health professionals2** | **Obstetric surgical teams3** | **Blood transfusion teams4** | **Inpatient newborn care unit** | | |
| **No. neonatal nurses5** | **No. newborns in non-CPAP SSN beds** | **No. newborns in CPAP SSN beds** |
|  |  | D | E | N | WD | WE | H |  | |  |  |  |  |  |  |
|  |  | D | E | N | WD | WE | H |  | |  |  |  |  |  |  |
|  |  | D | E | N | WD | WE | H |  | |  |  |  |  |  |  |
|  |  | D | E | N | WD | WE | H |  | |  |  |  |  |  |  |
|  |  | D | E | N | WD | WE | H |  | |  |  |  |  |  |  |
|  |  | D | E | N | WD | WE | H |  | |  |  |  |  |  |  |
| **Skilled health personnel, complete team, and neonatal nurse average (per shift)**  *For each column, add up staffing for all shifts and then divide by the number of shifts that data were collected for.* | | | | | | | | |  |  |  |  |  |  |  |
| 1 In this country, **birth attendants** include the following cadres: [TO BE COMPLETED BY COUNTRY].  To be considered ‘present’ for the shift, they must be on the maternity unit (labor, delivery, and postpartum/postnatal rooms or wards) providing care through the shift. | | | | | | | | | | | | | | | | | |
| 2 In this country, **complementary health professionals** include the following cadres: [TO BE COMPLETED BY COUNTRY].  To be considered ‘present’ for the shift, they must be on the maternity unit (labor, delivery, and postpartum/postnatal rooms or wards) providing care through the shift. | | | | | | | | | | | | | | | | | |
| 3 In this country, a complete **obstetric surgical team** includes the following cadres/component roles: [TO BE COMPLETED BY COUNTRY].  To be considered ‘present’ for the shift, they must be immediately available. | | | | | | | | | | | | | | | | | |
| 4 In this country, a complete **blood transfusion team** includes the following cadres/component roles: [TO BE COMPLETED BY COUNTRY].  To be considered ‘present’ for the shift, they must be in the facility. | | | | | | | | | | | | | | | | | |
| 5 In this country, **neonatal nurses** include the following cadres: [TO BE COMPLETED BY COUNTRY].  To be considered ‘present’ for the shift, they must be in the inpatient newborn care unit unless no sick or small newborns are receiving care, in which case they must be immediately available. | | | | | | | | | | | | | | | | | |

##### **Figure 3.** Recommended number of nationally qualified skilled health personnel required in BEmONC facilities per shift

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Number of births | | Number of nationally qualified skilled health personnel required per shift | | | |
| **12-hour shifts** | | **8-hour shifts** | |
| Per year | Per day  (approx.) | Birth attendants (midwife, OBGYN, other) | Complementary health professionals (nurses, other) | Birth attendants (midwife, OBGYN, other) | Complementary health professionals (nurses, other) |
| Up to 1000 | Up to 3 | 1 | 1 | 1 | 1 |
| 1001-2000 | 3-6 | 2 | 1-2 | 1 | 1-2 |
| 2001-3000 | 6-8 | 2 | 2-3 | 2 | 2-3 |
| 3001-4000 | 8-11 | 3 | 2-3 | 2 | 2-3 |

##### **Figure 4.** Recommended number of nationally qualified skilled health personnel and complete teams required in Comprehensive EmONC / Intensive EmONC facilities per shift

| Number of births | | Number of nationally qualified skilled health personnel, obstetric surgical and blood transfusion teams required per shift | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **12-hour shifts** | | | | **8-hour shifts** | | | |
| Individuals | | Teams | | Individuals | | Teams | |
| Per year | Per day  (approx.) | BA | Comp HP | Surg | BT | BA | Comp HP | Surg | BT |
| Up to 1000 | Up to 3 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 1 |
| 1001-2000 | 3-6 | 2 | 2 | 1 | 1 | 1-2 | 2 | 1 | 1 |
| 2001-3000 | 6-8 | 2-3 | 3-4 | 1 | 1 | 2 | 3 | 1 | 1 |
| 3001-4000 | 8-11 | 3 | 3-4 | 1 | 1 | 2 | 3-4 | 1 | 1 |
| 4001-5000 | 11-14 | 3-4 | 4-5 | 1-2 | 2 | 3 | 3-4 | 1 | 2 |
| 5001-6000 | 14-16 | 4-5 | 4-5 | 2 | 2 | 3 | 3-4 | 1-2 | 2 |
| 6001-7000 | 16-19 | 4-5 | 5 | 2-3 | 2-3 | 3 | 4-5 | 2 | 2 |

##### **Figure 4a.** Recommended number of nationally qualified neonatal nurses required in Comprehensive EmONC / Intensive EmONC facilities per shift(2)

| **Number of newborns admitted to inpatient newborn care unit** | **Minimum number of nurses recommended** |
| --- | --- |
| **In non-CPAP beds:** |  |
| 1-4 | 1 |
| 5-8 | 2 |
| 9-12 | 3 |
| 13-16 | 4 |
| 17-20 | 5 |
| 21-24 | 6 |
| 25-28 | 7 |
|  |  |
| **In CPAP beds:** |  |
| 1-2 | 1 |
| 3-4 | 2 |
| 5-6 | 3 |
| 7-8 | 4 |
| 9-10 | 5 |
| 11-12 | 6 |
| 13-14 | 7 |
| 15-16 | 8 |
| 17-18 | 9 |
| 19-20 | 10 |
| 21-22 | 11 |
| 23-24 | 12 |
| 25-26 | 13 |
| 27-28 | 14 |

*Example 1 – BEmONC:*

A health center had 1,200 births during the last calendar year and anticipates a similar number of births in the current year. The health center operates using two 12-hour shifts in a 24-hour period. Teams are comprised primarily of nurse-midwives with the occasional presence of an OBGYN or clinical officer, all of whom are nationally prepared and authorized to perform most BEmONC services. The health center also relies on specialty trained maternity nurses and midwifery technicians that provide important complementary care to women and newborns.

The nurse-midwife in charge of each shift on the maternity unit completes the form presented in Figure 3. Specifically, at the end of the shift she or he records her or his initials, designates whether the shift is day/night and weekday/weekend/holiday, and counts the number of BAs and complementary health professionals that have been present working on the unit for the duration of the shift. For example, at the end of a 12-hour shift being recorded there were 2 midwives and 1 nurse that had provided care for the duration of that shift.

At the end of the quarter, the person in charge of maternity services in the health center gathers all forms (Figure 3) and calculates the average number of BAs and complementary health professionals. In this particular quarter the average number of nurse midwives and other BAs present on the unit was 2.1. The average number of nurses and other complementary health professionals was 0.6. The in charge uses the table presented in Figure 5 and finds that the number of BAs was sufficient, but the number of complementary health professionals was insufficient. Therefore, the facility did not meet the adequate staffing standard for that quarter. The district health planners are alerted so that action can be taken, such as increasing the number of nurses deployed or decreasing the caseload. Planners also use these calculations to determine the aggregated proportion of facilities meeting and not meeting the standard.

#### *Calculations for adequate staffing per shift for caseload*

The table below presents the calculations behind the recommended minimum number of nationally qualified skilled health personnel and complete teams required in Basic EmONC and Comprehensive EmONC facilities per shift.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Caseload** | **Births per shift** | | **Basic EmONC staffing requirements** | | | | **Cesareans per shift (20% rate)** | | **Obstetric surgical teams required \*** | | **Obstetric surgical team staffing requirements \*\*** | | **Total Comprehensive EmONC staffing requirement \*\*\*** | | | |
| **8 Hr** | **12 Hr** | **8 Hr** | | **12 Hr** | | **8 Hr** | **12 Hr** | **8 Hr** | **12 Hr** | BA | Comp HP | **8 Hr** | | **12 Hr** | |
| BA | Comp HP | BA | Comp HP | BA | Comp HP | BA | Comp HP |
| 1000 | 0.91 | 1.37 | 1 | 1 | 1 | 1 | 0.18 | 0.27 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 2 |
| 2000 | 1.83 | 2.74 | 1 | 1 | 2 | 1 | 0.37 | 0.55 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 2 |
| 3000 | 2.7 | 4.11 | 2 | 2 | 2 | 2 | 0.54 | 0.82 | 1 | 1 | 1 | 2 | 2 | 3 | 2 | 3 |
| 4000 | 3.7 | 5.48 | 2 | 2 | 3 | 2 | 0.73 | 1.1 | 1 | 1 | 1 | 2 | 2 | 3 | 3 | 3 |
| 5000 | 4.6 | 6.85 | 2 | 2 | 3 | 3 | 0.91 | 1.37 | 1 | 1 | 1 | 2 | 3 | 3 | 3 | 4 |
| 6000 | 5.5 | 8.22 | 3 | 2 | 3 | 3 | 1.1 | 1.64 | 1 | 2 | 1 | 2 | 3 | 3 | 4 | 4 |
| 7000 | 6.4 | 9.59 | 3 | 2 | 4 | 4 | 1.28 | 1.92 | 2 | 2 | 1 | 2 | 3 | 4 | 4 | 5 |
| \* Note there is a minimal possibility of multiple surgeries occurring that would require special attention. Nevertheless, one team is being recommended at this time. | | | | | | | | | | | | | | | | |
| \*\* OBGYNs and midwives may be called upon as surgeon or surgical first assistant. Nurses and other complementary health professionals may be called upon as scrub or circulator. | | | | | | | | | | | | | | | | |
| \*\*\* These are raw estimates based on assumed need to draw birth attendants and complementary health professionals to the surgical theatre and taking them away from the labor unit. This will need expert consensus. | | | | | | | | | | | | | | | | |

#### *References*

1. #### () Stones W, Visser GHA, Theron G; FIGO Safe Motherhood and Newborn Health Committee. FIGO Statement: Staffing requirements for delivery care, with special reference to low- and middle-income countries. Int J Gynaecol Obstet. 2019 Jul;146(1):3-7. doi: 10.1002/ijgo.12815. Epub 2019 Apr 12. PMID: 30927443.

   [↑](#endnote-ref-1)
2. () WHO, UNICEF. Norms for care of small and sick newborns. Forthcoming. [↑](#endnote-ref-2)