

**Supplementary Appendix 1: Definitions used in analysis**

<b>Indicator</b>	<b>Definition and classification</b>
<b>Childbirth care utilisation (unit of analysis = births)</b>	
Facility birth	<ul style="list-style-type: none"> <li>• Yes: Public hospital, public health centre, public health post, public health hut/other public facility, private facility</li> <li>• No: home/other</li> </ul>
Skilled birth attendant	<ul style="list-style-type: none"> <li>• Yes: doctor, midwife, nurse</li> <li>• No: matrone, traditional birth attendant (TBA), relative/other, no one</li> </ul>
<b>Emergency obstetric and newborn care capacity (unit of analysis = facilities)</b>	
Parenteral antibiotics	<ul style="list-style-type: none"> <li>• Ever provided in facility</li> </ul> AND <ul style="list-style-type: none"> <li>• Availability of at least one non-expired injectable antibiotic</li> </ul>
Parenteral oxytocin	<ul style="list-style-type: none"> <li>• Ever provided in facility</li> </ul> AND <ul style="list-style-type: none"> <li>• Availability of at least one non-expired injectable uterotonic</li> </ul>
Parenteral anticonvulsants	<ul style="list-style-type: none"> <li>• Ever provided in facility</li> </ul> AND <ul style="list-style-type: none"> <li>• Availability non-expired magnesium sulfate</li> </ul>
Manual removal of placenta	<ul style="list-style-type: none"> <li>• Ever performed in facility</li> </ul>
Removal of retained products of conception	<ul style="list-style-type: none"> <li>• Ever provided in facility</li> </ul> AND <ul style="list-style-type: none"> <li>• Availability of either manual vacuum aspirator or dilation &amp; curettage kit</li> </ul>
Neonatal resuscitation	<ul style="list-style-type: none"> <li>• Ever provided in facility</li> </ul> AND <ul style="list-style-type: none"> <li>• Availability of bag and mask</li> </ul>
Blood transfusion	<ul style="list-style-type: none"> <li>• Facility reports services as available</li> </ul>
Caesarean section	<ul style="list-style-type: none"> <li>• Facility reports services as available</li> </ul>
BEmONC-1 capacity	<ul style="list-style-type: none"> <li>• Capacity for all 6 BEmONC functions (parenteral antibiotics, oxytocin, anticonvulsants, manual removal of placenta, removal of retained products, and neonatal resuscitation)</li> </ul> [Assisted vaginal delivery not included due to data quality concerns for this signal function]
CEmONC capacity	<ul style="list-style-type: none"> <li>• BEmONC-1 capacity</li> </ul> AND <ul style="list-style-type: none"> <li>• Capacity for two comprehensive functions (blood transfusion and caesarean section)</li> </ul>
<b>Routine care capacity and basic infrastructure (unit of analysis = facility)</b>	
Infection prevention	<ul style="list-style-type: none"> <li>• Piped water into facility or facility grounds</li> </ul> AND <ul style="list-style-type: none"> <li>• Availability of soap on maternity ward</li> </ul> AND <ul style="list-style-type: none"> <li>• Availability of latex gloves on maternity ward</li> </ul>
Routine partograph use	<ul style="list-style-type: none"> <li>• Reported routine use of partograph</li> </ul> AND <ul style="list-style-type: none"> <li>• Availability of blank partographs</li> </ul>
24hr childbirth care	<ul style="list-style-type: none"> <li>• Observed 24hr call or presence provider schedule</li> </ul>
Continuous electricity	<ul style="list-style-type: none"> <li>• Connection to national grid with no outage lasting more than 2 hours in the previous 7 days</li> </ul> OR <ul style="list-style-type: none"> <li>• Functional generator with fuel or charged battery</li> </ul>
Water supply	<ul style="list-style-type: none"> <li>• Water pipe or tap available within 500m of facility</li> </ul>
<b>Emergency referral capacity</b>	
Telephone availability	<ul style="list-style-type: none"> <li>• Landline or mobile telephone paid for by facility</li> </ul>
Vehicle access	<ul style="list-style-type: none"> <li>• Vehicle for patient transport stationed on-site or at other facility</li> </ul>

Adequate referral capacity	<ul style="list-style-type: none"><li>• Vehicle for referral available on-site</li></ul> OR <ul style="list-style-type: none"><li>• Vehicle for referral available at other facility and telephone available</li></ul>
Safe childbirth care	<ul style="list-style-type: none"><li>• BEmONC-1 and CEmONC capacity</li></ul> OR <ul style="list-style-type: none"><li>• BEmONC-1 and adequate referral capacity</li></ul>