FISTULA CARE

Indications for Cesarean Delivery: Key Findings and Recommendations From A Multicenter Retrospective Record Review

November 2012

Revised







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Executive Summary

The provision of quality and timely cesarean delivery services is an essential component of emergency obstetric care. A timely cesarean can help prevent maternal and fetal death, as well as morbidity such as the development of fistula, one of the most debilitating types of maternal morbidity. Fistula Care works with facilities to strengthen the quality of cesarean delivery performance and increase access to emergency obstetric care as part of its four pronged focus on fistula prevention. The other three focus areas for prevention are family planning, promotion of correct and consistent use of the partograph, and immediate catheterization for women after prolonged or obstructed labor to prevent fistula and/or to treat "fresh" fistula. At the community level, the focus of our work is to increase awareness, reduce stigma, and promote antenatal care, use of birth plans, and skilled attendance at delivery.

At the start of the project in 2007, Fistula Care, in consultation with USAID, identified three facility-oriented indicators for monitoring fistula prevention:

- 1. The percentage of all labors at fistula-supported sites for which partographs are correctly completed and managed according to protocol
- 2. The institutional cesarean delivery rate
- 3. The number/percentage of cesarean deliveries that were the result of obstructed labor

We did not know how feasible it would be collect routine or periodic data for the third indicator (cesareans performed for obstructed labor) nor whether the sites we work with routinely review and report on the number of cesarean deliveries, including review of indications. Although more data about cesarean rates are now available from many countries, there has been little information published on trends in the reported indications for cesareans. A group of international experts attending a Immpact/FIGO consultative meeting put forward recommendations on how indications for cesarean might be categorized (Stanton & Ronsmans, 2008) for the purposes of encouraging standardized and routine reporting in national health information systems to monitor trends. Categorization includes absolute maternal indications and nonabsolute indications, such as maternal, fetal, and psychosocial indications.

To determine if cesarean indications could easily be extracted from patient records for periodic review and whether a simple indication classification system such as the one proposed by the Immpact/FIGO group to track trends would be useful for hospitals we support, Fistula Care carried out a retrospective record review study. The objectives of the study were to:

- 1. Identify the indications for a sample of cesareans, specifically to determine if obstructed labor and other related indications were recorded in client files.
- 2. Identify other key details about the cesarean delivery (e.g., timing of cesarean, use of the partograph, cadre of provider who performed the cesarean), using a standard data collection tool, to identify areas for improvement.
- 3. Review data reporting procedures to identify any challenges to recording and reporting quality data on cesarean indications at facilities.
- 4. Assess providers' perspectives about the organization of cesarean services and data management.

5. Determine the feasibility of using an indication-based classification system for periodic review of trends in cesarean deliveries (i.e., the Immpact/FIGO proposed classification).

The study was carried out between 2009 and 2011 at nine facilities in five countries where Fistula Care was working to implement fistula prevention activities: Bangladesh, Guinea, Mali, Niger, and Uganda.

Findings

At all study sites staff did a good job of recording indications in client records, while other key aspects of patient care were not as well documented: correct and consistent use of the partograph ranged from < 1% to 65%; timing of key events such as decision to do the cesarean, < 1% to 51%; birth outcomes data were missing in many records (<1% to 40%); documentation of informed consent for surgery was not found in patient files at five sites; and documented administration of prophylactic antibiotics ranged from 64% to 99%.

Documented use of any cesarean classification system, while accepted as necessary, was not the norm at any of the study sites. Staff at the study sites were unanimous about the need for each cesarean client record to include a clearly documented, standardized indication to facilitate clinical audit and improve clinical practice. However, there was a wide range of terminology utilized by providers across sites and countries included in this review to describe obstructed labor and prolonged labor. This lack of standardized terminology is evidence of the plethora of classification systems and the lack of adoption of a standardized system at any level.

We applied the Immpact/FIGO classification of absolute maternal and nonabsolute categories to the primary indication data found in the records. Overall, 51% of all cesareans at the nine sites were done for absolute maternal indications, 43% were done for nonabsolute indications, and 6% were classified as other. While most providers at the study sites thought this simple system for periodic review of indication trends seemed reasonable, terms need to be used consistently to ensure that reviews are conducted in an efficient manner. If sites are going to routinely review indications, the development and use of tools to facilitate data extraction and aggregation using standardized definitions needs to be balanced against the need not to sacrifice space in client records and record-keeping systems for capturing individual-level clinical information. We would recommend that a review of indications be part of ongoing periodic quality audits and be conducted, minimally, at least once per year.

Background

At the start of the project in 2007, Fistula Care, in consultation with the U.S. Agency for International Development (USAID), developed a set of core, routine monitoring indicators in support of the project's results framework.¹ At that time, the development and routine use of fistula treatment and prevention indicators was an evolving field, with little programmatic experience upon which to build. During the course of the project, fistula treatment monitoring indicators have been modified, as we have learned what was feasible and important to routinely collect.

Fistula Care supports fistula prevention services at facilities and at the community level. At the facility level, we address four key prevention measures from the wide range of interventions available to strengthen safe motherhood and reduce maternal morbidity and mortality. Fistula Care focuses on: family planning; the promotion of correct and consistent use of the partograph; immediate catheterization for women after prolonged or obstructed labor, to prevent fistula and/or to treat "fresh" fistula; and an increase in access to emergency obstetric care and improvement in the quality of cesarean delivery performance. At the community level, the focus of our work is to increase awareness, reduce stigma, and promote antenatal care, use of birth plans, and skilled attendance at delivery.

For facility-oriented indicators for monitoring fistula prevention, we agreed with USAID to determine the feasibility of routinely collecting three indicators:

- The percentage of all labors at fistula-supported sites for which partographs are correctly completed and managed according to protocol²
- The institutional cesarean delivery rate
- The number/percentage of cesarean deliveries that were the result of obstructed labor

The last monitoring indicator was suggested during our discussions with USAID about whether such an indicator could serve as a proxy for "fistula averted." While an interesting question, we determined that it was not possible to answer this question using our proposed study design. (See the discussion on page 9 about measurement issues for fistula averted.) Nevertheless, we proceeded with the study to assess cesarean services, to examine what was feasible in terms of analysis of indications and other related variables, and to identify areas for service and record-keeping improvement.

To support the project's third result—gather, analyze, and report data to improve the quality of performance of fistula services—Fistula Care is working with supported sites to strengthen staff

¹ The four key results are: 1) building capacity to provide treatment and to support prevention through advocacy; 2) increasing attention to the provision of emergency obstetric care and to the use of family planning and identifying ways to help fistula clients postsurgery reintegrate into their families and communities, if that is their desire and their need; 3) using data for decision making; and 4) strengthening the environment for fistula prevention, repair, and reintegration.

² In 2008, we developed a partograph monitoring tool that Fistula Care and partners routinely used to review a sample of partographs at supported sites at least once per year. Findings from these reviews are summarized in the Fistula Care annual reports, beginning with the FY 2009–2010 annual report.

skills and abilities to use data for decision making. At the beginning of the project, we had little information about how supported sites managed the routine review and reporting of cesarean deliveries, including a review of indications.

As further background to this study, we know that cesarean rates are on the rise in developed and middle-income countries and remain low in many low-resource countries with inadequate emergency obstetric care services (Torloni et al., 2011). While rates are also rising in developing countries, researchers have found that economic disparity is a key indicator of access to these services (Kushner, Groen, & Kingham, 2010). Women in the wealthiest quintile have rates above 20%, while rates among the very poor are so low that women are likely to die or face disabling consequences because they do not have access to the service (Ronsmans, Holtz, & Stanton, 2006). If data about the clinical indications for cesarean deliveries were available, they could help explain the additional factors that influence these rates.

In 2011, Torloni and colleagues conducted a systematic review of cesarean classification systems, to identify the main systems used worldwide and to analyze the advantages and challenges of each system. The review identified 27 different systems, which were then categorized into three major types: indications (n=12); degree of urgency (n=5); and patient characteristics (n=4); six systems were classified as other.. One indication-based system included in this review was proposed by a group of experts at an Immpact Project and International Federation of Gynecology and Obstetrics (FIGO) consultative meeting in 2006 (Stanton & Ronsmans, 2008). These experts recommended a simple classification of cesarean indications into two groups: absolute maternal and nonabsolute (see Table 1). Acknowledging the lack of a standardized definition of indications, the purpose of this system is to encourage and standardize monitoring and reporting of cesarean deliveries across service delivery settings and to facilitate their inclusion in national health information systems. The experts suggested that the simple grouping of indications into absolute maternal and nonabsolute indications could provide reliable and timely data to health care managers in allocating resources for maternal and newborn services and addressing any areas of concern. As of 2011, the Immpact/FIGO indication-based classification system had not been tested (Torloni et al., 2011).

Table 1. Recommended classifica	ation system, immpactinico meeting, 2000
Absolute maternal indications	Nonabsolute indications
 Obstructed labor, including severely deformed pelvis and failed trial of labor Major antepartum hemorrhage and grade 3 or 4 placenta previa Malpresentation (including transverse, oblique, and brow) Uterine rupture 	 Failure to progress in labor, including prolonged labor Previous cesarean delivery Genitourinary fistula or third-degree tear repair Antepartum hemorrhage, excluding those for absolute indications and including abruptio placentae Maternal medical diseases Severe pre-eclampsia or eclampsia Psychosocial indications, including maternal request "Precious" pregnancy Fetal compromise, including fetal distress, cord prolapse, and severe intrauterine growth retardation Breech presentation

Table I. Recommended classification system, Immpact/FIGO meeting, 2006

To determine if cesarean indications could easily be extracted from patient records for periodic review, using a simple indication classification system to track trends, Fistula Care carried out a retrospective record review study. The objectives of the study were to:

- 1. Identify the indications for a sample of cesareans, specifically to determine if obstructed labor and other related indications were recorded in client files.
- 2. Identify other key details about the cesarean delivery (e.g., timing of cesarean, use of the partograph, cadre of provider who performed the cesarean), using a standard data collection tool, to identify areas for improvement.
- 3. Review data reporting procedures to identify any challenges to recording and reporting quality data on cesarean indications at facilities.
- 4. Assess providers' perspectives about the organization of cesarean services and data management.
- 5. Determine the feasibility of using an indication-based classification system for periodic review of trends in cesarean deliveries.

The study was carried out between 2009 and 2011 at 10 facilities in five countries where Fistula Care was working to implement fistula prevention activities: Bangladesh, Guinea, Mali, Niger, and Uganda. The national cesarean delivery rates for 2008, as reported in Demographic and Health Survey (DHS) data for these five countries, fall into a category of low use of cesarean delivery (fewer than 10% of all births) (Gibbons et al., 2010):

- Bangladesh—7.5 %
- Guinea—1.7 %
- Mali—1.6 %
- Niger—1.0 %
- Uganda—3.1 %

Methods

We modified a data collection tool developed by the Averting Maternal Death and Disabilities (AMDD) project (*EmOC Needs Assessment Module 8 [Cesarean Delivery Record Review]* AMDD, 2009) for the record review. Thirty-eight variables for each cesarean delivery were collected from individual client files/charts, the maternity hospitalization (intake) register, the delivery register, the operating theater register, the operating theater consumables register, and

the referral/counter referral registers. Interviews were conducted with key informants from management, the maternity ward, and the records department, to assess the strengths and weaknesses of the record-keeping systems and reporting.

All records of women who delivered by cesarean section, elective or emergency, in calendar year 2008 constituted the study group. At sites with 350 or fewer cesareans in the reference period, all cesarean delivery records were reviewed. At all other sites, a random sample of 350 records was drawn. This sample size was calculated using the formula for estimating a single mean or proportion: $n=Z^2 p(1-p)/L^2$. Given that the percentage of women obtaining a cesarean delivery due to reasons of obstructed labor was unknown, we chose the conservative estimate of 50%. Using this formula, a sample size of 384 would allow us to estimate the proportion with a 95% probability that the estimate found would be within 0.05 percentage points of the population value. However, given the relatively small size of the population of interest (women obtaining cesarean deliveries at selected facilities), the desired sample size (n) was adjusted by dividing it by (1 + [n/N]), where N is an estimate of the population size. We used the largest population size expected (1,024 cesarean deliveries at Bangladesh Site A) to calculate a sample size of 279, and after accounting for 20% missing responses, obtained a final sample size of 350.

Data were collected by two-person research consultant teams at each hospital. Research teams were instructed to record the exact information found in the client files about primary and secondary indications. Data from the record review were entered into Epi Info. Data cleaning and analysis were performed by the Fistula Care team in New York, using the statistical software package SPSS. Individual study reports for each site were prepared and shared with the key stakeholders (see reference list for listing).

Findings

Site Characteristics

The retrospective record review of cesarean delivery records from calendar year 2008 was conducted at six public hospitals, three faith-based facilities, and one private hospital. All of these hospitals function as regional referral hospitals serving either rural or urban populations; Table 2 shows details about the 10 sites. We did not collect information about surgical capacity at nearby facilities.

		and dates of u	ata conection	
Name of facility	Type of facility/location	Estimated size of catchment area	No. of records reviewed	Data collection timeframe
Uganda Site A	RR, FBO/R	523,000	348	Sept. 2009
Uganda Site B	RR, FBO/R	>350,000	349	Jan.–Feb. 2010
Bangladesh Site A	RR, PR/R	5,000,000	350	Mar.–April 2010
Bangladesh Site B*	RR, FBO/R	750,000	348	Mar.–April 2010
Mali	RR, P/U	194,000	269	July 2010
Guinea Site A	RR, P/U	1,432,900	277	Aug. 2010
Guinea Site B	RR, P/U	307,450	376	Aug. 2010
Niger Site A	RR, P/U	2,016,690	299	Oct. 2010
Niger Site B	RR, P/U	2,235,748	349	Oct. 2010
Niger Site C	RR, P/U	2,658,099	324	Oct. 2010
Total			3,289	

Table 2.	Study site,	type of location,	catchment area,	number of	f records reviewed,
		and date	s of data collection	on	

Type of facility—RR: regional referral; P: public; PR: private; FBO: faith-based organization. *Location*—R: rural: U: urban

*Analysis of the data from the record review at this facility was discontinued after a revalidation review of a 10% random sample of the original sample showed numerous data recording errors by the consultant research team. The facility's organization of record keeping is included in this report, however, as its systems are examples of good practices and offer some ideas for others to consider.

Institutional Cesarean Delivery Rate

In theory, the institutional cesarean delivery rate is relatively straightforward to collect and calculate. However, sources for this information were not always clear at each of the study sites, and there were some discrepancies in the numbers, depending on the data source at the facility. Examples of explanations for such discrepancies include laparotomies done for uterine rupture but recorded as cesareans.³ Another important indicator to examine alongside the institutional rates is the proportion of cesareans done as emergencies vs. as elective surgeries. In this study, overall, 76% of the records reviewed listed the cesarean delivery as emergency, 8% classified it as elective, and 16% had data missing for this variable. Table 8 (page 15) presents additional information from each study site.

³ In many of these cases, uterine rupture is usually related to obstructed labor.

The majority of the sites have multiple (and often duplicative) data systems in place that could be streamlined. Only one site has a computerized record-keeping system for all medical records (Bangladesh B). One hospital had an Excel spreadsheet database listing all surgeries, and the cesarean deliveries were easily identifiable (Uganda A).

As shown in Table 3, the institutional cesarean delivery rate varied greatly by site. All of these facilities are regional referral hospitals serving populations spread out over large geographic

areas (see Table 2). Rates vary widely across countries and by site within a country. In Bangladesh, Site A's rate is twice as high as Bangladesh Site B's. Bangladesh Site B has a good network of well-resourced community health centers/safe delivery units offering antenatal care, birth preparedness, and vaginal deliveries, as well as an extensive community outreach program providing information about pregnancy, raising awareness about the need for delivery with a skilled attendant, etc. Families in Site B's catchment area are likely to be better informed about the need to seek skilled care during pregnancy. Staff at the safe delivery units are well-trained and make appropriate referrals for emergency cases. Bangladesh Site B does not provide cesarean deliveries without clear medical indications.⁴

delivery rate, by hospital, 2008						
Hospital	Institutional					
	cesarean					
	delivery rate (%)					
Bangladesh A	49					
Bangladesh B	24					
Guinea A	24					
Guinea B	53					
Mali	26					
Niger A	16					
Niger B	49					
Niger C	7					
Uganda A	34					
Uganda B	37					

Table 3. Institutional cesarean

In Uganda, rates at the two hospitals were similar. Women in the district where Uganda Site A is located are more likely to seek delivery services at this hospital than at the nearby government tertiary hospital, as the latter is often understaffed. In Guinea, Site B's rate is quite high—more than twice that of Guinea Site A. This is most likely due to the fact that Site B is the only hospital offering cesarean deliveries in a larger geographic area than Site A's catchment area. In Niger, Site B's comparatively high rate most likely reflects a similar pattern—the hospital is the emergency referral center for a large catchment area. Niger Site C's low rate, in contrast, masks the fact that they are managing a very high volume of deliveries.

While the institutional cesarean delivery rate may be "easy" to calculate on a routine basis, this one figure alone is difficult to interpret, for several reasons: The hospital may be a regional referral hospital where complicated cases are sent; in addition, there may be a lack of information about the cadres of providers and their skills for providing cesarean delivery services, as well as availability of the necessary equipment and supplies. A limitation of this study is that we did not collect information about the capacity of other health facilities in the larger catchment area to provide emergency obstetric care. We also were not able to obtain population-based cesarean delivery rates from a regional or subregional level for any of the study sites.

Despite its limitations, we believe the institutional cesarean delivery rate to be a useful descriptive indicator that sheds light on the volume that a site is managing and on the site's place

⁴ Personal communication with Site B staff, June 20, 2012

in the larger health care system. Therefore, beginning in FY 2010, we have been routinely collecting and reporting this indicator in our annual report to USAID (see Annex A for data reported to USAID in FY 2010 and FY 2011).

Indications for Cesarean Delivery

Overall, nearly all of the records reviewed had at least one indication recorded in the client files. (The data collection tool was designed to collect up to 24 pre-coded indications and included room to record other indications not on the list.) In only 10 cases (<1%) was there no information about the primary indication.⁵ At all sites, if two indications were recorded in the client file, the first recorded indication was considered the primary indication. (This decision was based on information from key informant interviews.) Forty percent of the records reviewed included a secondary indication.

While the majority of files reviewed had a recorded primary indication, the overall quality of the recorded indications in the client records was mixed. Eight of the 10 sites were using some sort of cesarean delivery classification system, though in all instances these systems were not formally documented. (The two sites in Uganda said that they did not use any formal system.) As reported above, we instructed the consultant research teams who were collecting the information to record the indication as noted in the files; we did not provide guidance on how to group indications. Given the lack of standards and often conflicting opinions about the grouping of cesarean delivery indications, we felt it was better to make the determinations of how to collapse indications during the analysis by the Fistula Care research team.

A total of 112 different indications were recorded, either as primary or secondary, in all of the records reviewed (Table 4). Our analysis shows that providers from different sites (and within the same facilities) used different names or terms for common indications. For example, for malpresentation, we found 11 other recorded indications that could be collapsed into that category (e.g., prolapse of hands of both twins, neglected shoulder, etc.). In our analysis, we classified some of the recorded indications as "other," as there was not enough information to determine if the indication was a true indication for cesarean delivery; these "other" indications accounted for one-third of all recorded indications (Table 4).

We collapsed all of the recorded indications into 17 major indications and included an 18th group for "other." We then further categorized these 17 indications as being either absolute maternal or nonabsolute, based on the Immpact/FIGO suggested classification. (See Appendix B for a full description of all recorded indications and how they were collapsed for analysis by major indication.)

⁵ Three records at Bangladesh Site A, one in Mali, five at Niger Site B, and one at Niger Site A.

Hospital	Total no. of different recorded indications (primary and secondary)	No. of indications classified as appropriate for cesarean delivery	No. (and %) of indications with insufficient information to classify as appropriate
Total	112	75	37 (33%)
Bangladesh A	34	20	14 (41%)
Guinea A	21	19	2 (10%)
Guinea B	25	21	4 (16%)
Mali	35	26	9 (26%)
Niger A	43	36	7 (16%)
Niger B	41	33	8 (20%)
Niger C	34	31	3 (8%)
Uganda A	26	24	2 (8%)
Uganda B	38	27	(29%)

Table 4. Number of recorded indications, by hospital

Percentage of Cesareans Occurring as a Result of Obstructed or Prolonged Labor⁶

We had two research questions about indications related to obstructed and/or prolonged labor.⁷ First, did this information exist in medical records, and could it be collected routinely (i.e., on a monthly, quarterly, or annual basis) for monitoring? Second, could cesarean deliveries performed for obstructed or prolonged labor be used as a proxy measure for fistula averted?

As noted above, our review showed that the hospitals included in this study did have medical

records that included recorded indications for cesarean deliveries. Recorded indications included both obstructed and prolonged labor indications (as well as failure to progress). However, the use of terms to describe these two indications was not uniform, either within a facility or between countries. In fact, at three sites (Guinea A and Niger A and B), neither of these terms was used; rather, other descriptions and names were used to indicate obstructed or prolonged labor (Table 5). In our second definition of prolonged labor (see box), we adapted the definition from WHO guidelines (WHO, 2000) to include a description of the "prolonged latent phase." There is continuing debate as to whether prolonged latent phase is clinically significant or associated with adverse outcomes (Royal College of Midwives, 2008). However, studies have shown that women

Definition of terms

Obstructed labor: "Failure to progress due to mechanical problems—mismatch between fetal size, or more accurately, the size of the presenting part of the fetus, and the mother's pelvis, although some malpresentations, notably a brow presentation or a shoulder presentation, will also cause obstruction." (Neilsen et al., 2003)

Prolonged labor (1): Onset of regular, rhythmic, painful contractions accompanied by cervical dilation where labor is longer than 24 hours. (WHO, 2008)

Prolonged labor (2): Onset of regular, rhythmic, painful contractions accompanied by cervical dilation where labor is longer than 24 hours. In terms of clinical management, it is useful to differentiate between "prolonged latent phase" (i.e., regular painful contractions with cervical effacement and dilation up to 4 cm lasting longer than eight hours) and "prolonged active phase" (i.e., regular painful contractions and progressive cervical dilation from 4 cm, lasting more than 12 hours). (Adapted from: WHO, 2000)

⁶ Discussion and debate continue in the maternal health community about the definition of prolonged labor; two definitions are provided in the box on this page.

⁷ Prolonged labor and obstructed labor, as well as failure to progress, are terms that are often used interchangeably by providers; obstructed labor is the most common reason for prolonged labor. In some instances, providers may not record "obstructed labor" as the primary indication, as it could imply an element of neglect.

admitted to the hospital while in the latent phase have higher rates of obstetric intervention (e.g., induction, augmentation, cesarean section) (Bailit et al., 2005; Holmes, Oppenheimer, & Wen, 2001). The prolonged active phase should not last longer than 12 hours (i.e., to the right of the "alert" line on the partograph) without timely referral to a facility offering comprehensive emergency obstetric and newborn care (WHO, 2000).

As shown in Table 5, nine different terms were recorded in the files that would describe obstructed labor, and five additional recorded indications described prolonged labor/failure to progress. Cesarean deliveries performed for reasons of obstructed labor account for between 2% and 59% of cesarean deliveries in this sample; combining obstructed labor with prolonged/failure to progress raises this range of proportions to 7–61%.

Fistula Averted

While we were interested in determining whether the percentage of cesarean deliveries done for reasons of obstructed/prolonged labor could be used as a proxy measure for fistula averted, it was not possible to answer this question using our study design, nor is it likely that a facility-based sample would ever provide an answer in the contexts where fistula is prevalent. Our

sampling frame consisted of women receiving cesarean delivery, rather than women experiencing obstructed labor. Calculating an estimate of the total number of women receiving a timely cesarean as a result of obstructed labor out of all women experiencing obstructed labor (denominator) would be a better and more stable estimate of fistula averted, since it would show the proportion of obstructed labors that were treated by cesarean. Our study design will only tell us about the proportions of all indications for cesarean (and if we were to continue tracking this, would tell us about changing trends over time-e.g., more cesareans done for absolute maternal indications vs. nonabsolute). If we were able to assess the number of women with obstructed labor and, among those, identify the women who were treated with a timely cesarean

Cephalo-pelvic disproportion (**CPD**): "May be due to a small pelvis with a normal-size head or a normal pelvis with a large fetus, or a combination of large baby and small pelvis. CPD may be *marginal* (problem may be overcome during labor) or *definite* (pelvis is too small, [pelvis] is abnormal in shape, or the fetus is abnormal or too large for the pelvis through which it has to pass)." (WHO, 2008)

section, this could possibly be used as a measure for fistula averted at the facility level; however, it would be an underestimate of the total number of women with obstructed labor, since many such women never make it to a health facility. In addition, women with obstructed labor who do make it to a facility may already have developed a fistula may already have developed a fistula or may have experienced the "third delay" (Thadeus and Maine, 1994) and end up with a fistula because of a failure to receive a timely cesarean delivery. As our data demonstrate below, the quality of record keeping on the timing of the decision to perform a cesarean delivery was poor.

	Total	Bangladesh B	Gui	nea	Mali	Niger		Uganda		
			Α	В		Α	В	С	Α	В
	N=2,941	n=350	(n=277)	n=376	n=269	(n=299)	n=349	n=324	n=348	n=349
All Obstructed labor indications	23.5	2.0	59.2	52.7	16.4	10.4	16.0	9.3	14.9	30.9
Retracted/contracted pelvis	12.1	.0	46.9%	29.8	10.8	5.4%	4.9	0.3	4.9	9.7
Obstructed labor	6.1	1.7	0.0%	16.5	0.7	0.0%	9.2	0.0	5.7	16.3
Big baby	3.0	0.3	9.4%	5.9	3.0	2.0%	0.6	0.3	2.9	3.4
Dystocia, obstructed labor due to poor descent	1.4	0.0	2.9%	0.0	0.0	2.0%	0.0	8.0	0.0	0.0
Failed trial of previous scar	0.3	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	1.4	1.4
Immature pelvis	0.3	0.0	0.0%	0.0	1.9	0.3%	0.9	0.3	0.0	0.0
Deformed pelvis	0.1	0.0	0.0%	0.5	0.0	0.3%	0.0	0.0	0.0	0.0
Failed trial of labor	0.1	0.0	0.0%	0.0	0.0	0.3%	0.3	0.0	0.0	0.0
Big baby breech presentation	0.0	0.0	0.0%	0.0	0.0	0.0%	0.3	0.0	0.0	0.0
Asymmetric pelvis	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.3	0.0	0.0
All Failure to progress/ prolonged labor indications	8.3	5.1	2.5	0.3	8.6	9	5.7	7.4	19.5	16.3
Prolonged labor	2.6	4.0	0.0%	0.3	1.1	0.0%	0.3	0.0	12.4	4.3
Failure to progress	3.2	1.1	0.0%	0.0	6.7	5.0%	0.0	1.9	5.5	9.5
Cervical dystocia	1.8	0.0	2.5%	0.0	0.0	3.3%	1.1	5.6	1.7	2.3
Delayed second stage	0.1	0.0	0.0%	0.0	0.7	0.0%	0.0	0.0	0.0	0.0
Uterine inertia*	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0	0.3
Failed dilation	0.5	0.0	0.0%	0.0	0.0	0.0%	4.3	0.0	0.0	0.0
Obstructed labor (dynamic) †	0.1	0.0	0.0%	0.0	0.0	0.7%	0.0	0.0	0.0	0.0
Total Obstructed and prolonged labor (combined)	31.8	7.1	61.7	53.0	25.0	19.4	21.7	16.7	34.4	47.2

Table 5. Primary indications for obstructed and prolonged labor, by hospital (%)

* While this indication would not be considered a major cause of fistula, we have included it in the categorization of prolonged labor.

†At one site, providers used this term, which means that the labor is obstructed, but not for mechanical reasons; we chose to categorize this with prolonged labor

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Absolute Maternal/Nonabsolute Classification

We applied the Immpact/FIGO classification of absolute maternal and nonabsolute categories to the primary indication data found in the records. However, we chose to deviate from the Immpact/FIGO recommendations in the categorization of two indications: failed induction and cephalo-pelvic disproportion (CPD). We considered failed induction an absolute indication, as once a decision has been made to induce delivery for the health of mother or baby, cesarean section is usually the only viable alternative if induction fails.

The recommended list of indications from Immpact/FIGO did not specifically include CPD, as they felt that the indication alone was a vague "umbrella" term and thus not useful for this classification. The group's goal was to find specific language for the classification system.⁸ There is a continuum of CPD, and the patient notes did not indicate whether CPD was marginal or definite. The data collection tool for this study was not designed to collect information to assess this condition in more detail. Since there was no information about the severity of CPD, we opted to include CPD in the absolute category. Overall, 7% of all primary indications were listed as CPD (Table 6).

Overall, 51% of all cesareans at the nine sites were done for absolute maternal indications, 43% were done for nonabsolute indications, and 6% were classified as other (Table 6). There were significant differences (p < .05) between sites when we applied this classification: More than three-quarters of the cesareans performed at two sites in Guinea were for absolute maternal indications, while at the one site in Bangladesh, absolute maternal indications accounted for just 11% of all cesareans. At that Bangladesh site, the indication for nearly one-third of cesarean deliveries was classified as "other."

At all but one study site (Bangladesh), the key stakeholders—i.e., heads of maternities, doctors, and nurses—thought it would be feasible and useful to review trends in indications for cesarean delivery on a periodic basis using this system. Such a review would help providers with quality improvement efforts.

⁸ Personal communication, C. Stanton, May 3, 2012

Primary indication for cesarean	Total	Bangladesh A	Guinea A	Guinea B	Mali	Niger A	Niger B	Niger C	Uganda A	Uganda B
	N=2,941	n=350	(n=277)	n=376	n=269	(n=2 99)	n=349	n=324	n=348	n=349
Absolute*	50.6	11.4	81.5	77.7	46.I	55.6	50.7	48.2	34.5	53.5
Obstructed labor	23.5	2.0	59.2 *	52.7*	16.4*	10.4	16.0	9.3	14.9	30.9*
Uterine rupture	8.0	0.3	7.2	11.4	10.0	20.7*	9.5	14.2	0.3	0.3
Malpresentation	7.2	2.0	4.3	4.8	4.8	12.4	10.9	9.6	5.5	10.6
CPD	6.7	5.4	6.1	4.8	11.2	6.7	4.6	5.2	11.5	5.7
Antepartum hemorrhage and grade 3 or 4 placenta previa	5.0	1.4	4.7	4.0	3.7	5.4	9.7	9.6	2.3	4.6
Failed induction	0.2	0.3	0.0	0.0	0.0	0.0	0.0	0.3	0.0	I.4
Nonabsolute	43.0	54.5	17.4	21.8	48.9	38.7	45.I	49.7	64.5	44.4
Fetal compromise	10.8	18.3	5.1	7.2	12.3	10.0	6.0	16.4*	14.9	7.2
Failure to progress/prolonged labor	8.3	5.1	2.5	0.3	8.6	9.0	5.7	7.4	19.5*	16.3
Previous cesarean	7.9	11.4	0.7	11.4	3.0	3.7	5.2	2.5	18.7	10.9
Severe pre-eclampsia or eclampsia	7.4	11.1	0.0	0.3	13.4	7.4	17.2*	14.2	1.7	2.0
Antepartum hemorrhage, excluding absolute indications, including abruptio placentae	3.3	1.4	8.7	0.3	5.2	0.7	6.9	5.9	2.6	0.0
Breech presentation	2.4	4.6	0.0	0.5	5.6	3.0	2.3	0.9	3.7	1.7
Precious pregnancy	1.1	2.3	0.4	0.5	0.4	2.3	0.3	0.3	0.6	2.3
Genitourinary fistula or 3rd degree tear repair	0.8	0.0	0.0	1.3	0.4	2.0	0.3	1.2	0.0	2.0
Maternal medical disease	0.5	0.3	0.0	0.0	0.0	0.3	0.3	0.6	1.1	1.4
Multiple gestation	0.4	0.0	0.0	0.0	0.0	0.0	0.9	0.3	1.7	0.3
Psychosocial, including maternal request	0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.3
Other	6.0	33.1*	1.1	0.5	4.8	5.4	2.9	2.2	0.9	2.0
Missing	0.3	0.9	0.0	0.0	0.4	0.3	1.4	0.0	0.0	0.0

 Table 6. Primary indications, by absolute and nonabsolute classification, according to hospital (%)

*Significant at p <.05.

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Record Keeping

All of the facilities included in this review used paper-based systems for client records and multiple logbooks/registers for tracking patient information. Some of the systems at the sites were duplicative, and often data were missing from the files/registers. The majority of the client files reviewed were loosely structured, with few standardized questions/variables. Details about the content of record-keeping systems are described in each of the study site reports. Bangladesh B hospital was the one facility with a standardized/structured client file that facilitates data recording and is a good management and teaching tool; it could serve as model for other programs.

For the variables on which we collected data on the timing of key events related to the cesarean delivery (e.g., time of admission, time of the decision to begin the procedure, birth outcomes, etc.), data were missing in many instances across all sites (Table 7).

Challenges for Service Providers

During key informant interviews, health care providers working in the maternity unit were asked about challenges to providing quality cesarean delivery services. Several themes emerged from these interviews across sites: staffing (e.g., shortages, lack of training), equipment/supplies (e.g., poor quality, lack of /insufficient number of cesarean delivery kits), management (e.g., poor record keeping), policies, and community links (i.e., poor coordination with lower-level health facilities for appropriate referrals, or lack of information at the community level about high-risk pregnancies). Details about challenges and recommendations identified by the key stakeholders are described in the study site reports.

Other Key Variables from the Record Review Type of Cesarean: Emergency or Elective

Data collectors were instructed to collect information about the type of cesarean (i.e., emergency or elective). If this information was not recorded in the client file, data collectors were instructed to classify the cesarean delivery as emergency if the decision to perform it was made after the woman had already started active labor and as elective if the decision was made before active labor started. If none of this information was available, they were instructed to code delivery type as "no information." Data collectors were instructed not to make their own judgment about the type of cesarean delivery. Overall, 76% of all caesarean deliveries were classified as emergency, with differences between sites—all of the cesarean deliveries at two sites in Niger were classified as emergency (Table 8). Data were missing for 17% of files reviewed; the majority of these were from Bangladesh.

Use of the Partograph

A partograph was found in just over 40% of the files reviewed, with significant differences noted between sites: No partograph was found in any of the files at the sites in Guinea; in contrast, most of the files at the three sites in Niger included a partograph, but at two of the Niger sites, fewer than 3% of these partographs were completed correctly. Proper completion of the partograph was a quality issue across all sites. Among files found to contain a partograph, 7% indicated that the action line had been crossed, indicating the need for surgical intervention (Table 8).

Prophylactic Antibiotics

WHO recommends that all women undergoing a cesarean delivery be provided with prophylactic antibiotics. Eighty-five percent or more of women received this treatment at all but three sites: Mali (about one-third of women) and Niger (about two-thirds of women) (Table 8).

Complications

Data on complications were missing from 32% of the records reviewed; by site, such data were missing for approximately one-third of records from Guinea Site B, Uganda Site B, and Niger Site C and for two-thirds of files from Niger Site B and Mali. Guinea Site A, Niger Site A, and Bangladesh Site A had the highest levels of reported complications; the most commonly recorded complication was anemia, followed by wound infection (Table 8).

Birth Outcome

A total of 576 fetal deaths were recorded in the files we reviewed. More than half (56%) of these fetal deaths were recorded as stillbirths and 11% as early neonatal deaths; data on cause of death were missing from about 33% of the files reviewed. Nearly one-third of all cesarean delivery files reviewed in Niger included a fetal death. Data on this variable were missing from 12% of all files reviewed (40% at one site in Uganda) (Table 8).

Maternal Mortality

Maternal mortality was reported in 1.6% of the cesarean delivery records included in this review. Higher levels were seen at one site in Guinea (3.2%) and the three sites in Niger (2.6–3.3%). Data were missing for 9% of all records reviewed (nearly one-quarter at one site in Uganda and one site in Niger) (Table 8).

	Total	Bangladesh A	Guinea A	Guinea B	Mali	Niger A	Niger B	Niger C	Uganda A	Uganda B
	N=2,941	n=350	(n=277)	n=376	n=269	(n=299)	n=349	n=324	n=348	n=349
Time of admission	60.5	82.9	19.5	1.6%	51.7	92.3	90.5	96.0	NA	50.4
Time of first examination	30.7	4.6	0.4	0.3	5.6	59.9	75.I	67.6	NA	59.0
Time decision was made to do cesarean	12.3	5.1	0.4	0.0	6.7	2.7	3.4	27.8	NA	50.9
Time of skin incision	12.5	0.0	0.0	66.5	34.2	2.3	0.0	1.9	0.0	0.0
Time of birth	86.3	99.1	72.9	67.0	75.5	96.3	91.7	98.8	NA	88.0
Records with surgical consent form	24.3	87.4	0.0	0.3	0.0	0.0	0.0	0.0	NA	92.8

Table 7. Percentage of records found with information on recording of times for exams and procedures, by hospital

NA=not available; data collection form was modified to collect this information after study was completed at this site.

Table 8. Key variables from record review, by hospital

	Total	Bangladesh A	Guinea A	Guinea B	Mali	Niger A	Niger B	Niger C	Uganda A	Uganda B
	N=2,941	n=350	n=277	n=376	n=269	(n=299)	n=349	n=324	n=348	n=349
% referred to facility	38.3	0.9	12.6	38.6	51.3	66.9	88.3	56.2	10.6	22.6
Type of cesarean *										
Emergency	76.1	30.3	93.5	75.0	45.7	96.3	99.1	100.0	60.3	85.7
Elective	7.6	8.9	6.5	24.7	5.6	3.3	0.0	0.0	3.2	13.2
No Information	16.3	60.9	0.0	0.3	48.7	0.3	0.9	0.0	36.5	1.1
Partograph used *	39.7	1.4	0.0	0.0	23.8	97.3	96.8	99.4	23.9	18.3
Partograph completed correctly	26.4	20.0	NA	NA	34.4	2.1	65.I	0.3	23.9	53.I
Partograph action line crossed	7.0	0.0	NA	NA	4.7	7.6	1.5	5.0	NA	46.9
Prophylactic antibiotics administered*	80.5	88.3	97.8	98.6	35.7	97.0	63.6	67.0	85.3	85.7
% experiencing complications*	15.2	26.6	26.7	3.0	4. I	38.4	5.8	21.3	2.9	17.9
Birth outcome										
Born alive*	72.1	86.6	74.4	72.1	81.4	65.2	69.6	65.4	84.2	51.3
Dead	19.6	1.4	23.1	24.5	18.6	34.4	30.1	34.0	4.9	8.6
Missing information	8.3	12.0	2.5	3.5	0.0	0.3	0.3	0.6	10.9	40.1
Number of fetal deaths	576	5	64	92	50	103	105	110	17	30
Stillbirths	323	0	63	83	24	81	25	22	6	19
Early neonatal deaths	65	0	0	8	8	7	18	4	9	
Missing information	188	5		I	18	15	62	84	2	0
Number of maternal deaths (%)	46 (1.6)	0 (0.0)	I (0.04)	12 (3.2)	2 (0.7)	10 (3.3)	9 (2.6)	9 (2.8)	0 (0.0)	3 (0.9)

*Difference between sites is statistically significant at p < .05.

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Discussion

At all study sites, staff did a good job of recording indications in client records. However, documented use of any cesarean classification system, while accepted as necessary, is not the norm at any of the study sites. Staff at the study sites were unanimous about the need for each cesarean client record to include a clearly documented, standardized indication, to facilitate clinical audit and improve clinical practice. However, the wide range of terminology utilized by providers across sites and countries included in this review is evidence of the plethora of classification systems and the lack of adoption of a standardized system at any level.

The results of this study indicate that periodic review of cesarean indications, as well as of other key variables related to the delivery, is feasible, in order to understand trends and to help health administrators make informed decisions about how to improve outcomes.

While the institutional cesarean delivery rate may be "easy" to calculate on a routine basis, it is important that such reviews should include and take account of what other maternity care services are available in the catchment area. We believe that the institutional cesarean delivery rate is a useful descriptive indicator that sheds light on the volume of procedures a site is managing and the site's place in the larger health system. While fistula averted may be an unrealistic goal in terms of measurement, the fact remains that institutional cesarean delivery rates are very difficult to interpret without some kind of understanding of why cesareans are being performed and what other maternity services are being provided in the surrounding area.

Periodic reviews of indications for cesarean delivery and other related services should be included as part of routine quality of care monitoring. For example, uterine rupture represented nearly 10% or more of all primary indications at all six sites in West Africa, suggesting insufficient/late access to skilled attendance and emergency obstetric care in and around these facilities. More regular analysis of indications data could potentially inform action to remedy this situation, such as improving referral networks and creating messages to raise awareness in communities about the danger signs during pregnancy and childbirth and the need for antenatal care. In FY 2012–2013 in Niger, Fistula Care will provide technical assistance to strengthen referral networks for pregnancy complications.

The majority of providers showed interest in utilizing the indication classification system proposed by the Immpact/FIGO expert group. This is the first known attempt at applying this system to existing data. However, we chose to alter the classification system by including two indications in the absolute maternal category that were not part of the expert group's recommendation (failed induction and CPD) and one additional indication in the nonabsolute category (multiple gestation).

We considered failed induction absolute, reasoning that once a decision has been taken to induce birth for the health of the woman or the baby, then cesarean section is the only viable option if induction fails. CPD has traditionally been acknowledged as a major cause of obstructed labor. In our study, providers recorded CPD as the primary indication for 7% (n=197) of the cases reviewed. (This included 27 cases that were recorded as borderline pelvis and one case recorded as hydrocephalus.) Other conditions recorded that fit the WHO definition of CPD (as cited above) included retracted/contracted pelvis, big baby, immature pelvis, dystocia, poor descent (of the presenting part), big baby/breech presentation, and asymmetric pelvis. However, the Immpact/FIGO expert group perceived CPD to be a vague term and proposed adopting more specific terminology (i.e., severe deformed pelvis) under the obstructed labor indication in the absolute category.

For the purposes of this record review, we chose to include CPD in the absolute category, assuming that it was being used appropriately—though we have no way to be absolutely certain about this since the data collection tool did not specify if CPD was marginal or definitive. Given that CPD is a condition that can threaten the life of the woman and the baby and is likely to lead to obstructed labor, we felt it appropriate to assign this indication to the absolute category. We recommend that, as part of the work that needs to be done to standardize terms, stakeholders include this term in that review and try to achieve a consensus about using more specific terms to describe the condition.

In addition to reviewing cesarean indications, we encourage sites to routinely review other key aspects of delivery care, including using the partograph correctly, administering prophylactic antibiotics, ensuring that informed consent is obtained for both cesarean delivery and tubal ligation surgery, monitoring fetal and maternal outcomes, and paying overall attention to the completeness of records, to improve the quality of services. Data were missing for several key variables that should be standard for quality record keeping, such as the timing of the decision to do a cesarean and fetal and maternal outcome. Birth outcomes data were missing for nearly one-third of all records reviewed. As noted by Lawn and colleagues (2005), neonatal deaths may be underreported if the baby dies in the first hours or days after birth, and many deaths may be deliberately misclassified (i.e., early neonatal deaths classified as stillbirths, to avoid having to complete a death certificate). Use of the partograph was poor; sites need to identify strategies for encouraging the consistent and correct use of this inexpensive and simple "early warning system" for identification of childbirth complications. While adherence to the WHO standard recommendations about the use of prophylactic antibiotics was good at most study sites, this should a practice for 100% of women undergoing cesarean.

Conclusion

While a simple indication-oriented system seems reasonable, terms need to be used consistently, to ensure that reviews are conducted in an efficient manner, especially for indications such as obstructed labor, prolonged labor, and malpresentation, where a range of terms are used to describe the indication. As the data from our study show, clinicians do not have a standard language when speaking about cesarean indications. If sites are going to routinely review indications, the development and use of tools to facilitate data extraction and aggregation using standardized definitions needs to be balanced against the need not to sacrifice space in client records and record-keeping systems for capturing individual-level clinical information. We would recommend that a review of indications be part of ongoing periodic quality audits and be conducted, minimally, at least once per year.

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Appendix A. Institutional Cesarean Delivery Rates at Fistula Care-Supported Sites

Country and site	EY 200	9–2010	FY 2010–2011		
	No. of	Cesareans	No. of	Cesareans	
	deliveries	as % of all	deliveries	as % of all	
		deliveries		deliveries	
Bangladesh					
Ad-Din Dhaka	8,580	67	9,381	53	
Ad-Din Jessore	3,189	61	3,370	52	
Kumudini	1,779	44	2,240	37	
LAMB	3,457	24	3,614	19	
Democratic Republic of the Congo					
Imagerie Des Grands-Lacs	NS	NS	94	13	
HEAL Africa Hospital	1,042	13	1,262	13	
Maternite Sans Risque Kindu	NS	NS	458	8	
Mutombo	NS	NS	151	23	
Panzi Hospital	1,822	24	2,769	23	
St. Joseph	NS	NS	844	42	
Ethiopia*					
Adet Health Center	244	0	325	0	
Dangla EmOC Center	303	0	569	15	
Sekota Hospital	NS	NS	392	0	
Woreta Health Center	332	0	421	0	
Guinea					
Boke	I,448	25	1,418	19	
Faranah	600	26	832	19	
Ignace Deen	3,570	35	3,598	29	
Jean Paul II	494	13	769	10	
Kindia	1,175	28	1,834	23	
Kissidougou	800	51	1,325	31	
Labe	885	32	1,143	30	
Mamou	1,268	33	1,672	24	
NZerekore	996	42	1,367	41	
Mali					
Gao	1,177	22	1,277	18	
Niger					
Dosso	1,967	16	2,064	22	
Issaka Gazobi	4,397	66	5,290	57	
Maradi	2,134	45	1,756	60	
lahoua	NS	NS	4,106	5	
Tera District Hospital	NS	NS	836		

Number of deliveries and percentage of cesarean deliveries at selected Fistula Care-supported sites, by country and FY

Number of deliveries and percentage of cesarean deliveries at selected Fistula Care-supported sites, by country and FY⁹ (cont.)

Country and site	FY 2009–202	10	FY 2010-201	1
	No. of	Cesareans	No. of	Cesareans
	deliveries	as % of all	deliveries	as % of all
		deliveries		deliveries
Nigeria				
Argungu GH (Kebbi)	331	6	NA	NA
Faridat Yakubu GHI (Zamfara)	745	22	1,219	9
Jega GH (Sokoto)	286	8	NA	NA
General Hospital Dogon Daji (Sokoto)	36	11	NA	NA
Kamba General Hospital (Kebbi)	212	7	191	7
Maiyama General Hospital (Kebbi)	277	6	116	3
Maryam Abacha Women's and Children's	462	9	979	4
Hospital (Sokoto)				
Rwanda				
СНИК	1,974	49	2,078	52
Kanombe	3,158	32	3,383	35
Ruhengeri	4,713	24	5,468	24
Sierra Leone				
Aberdeen	217	16	1,078	18
Uganda				
Bwera Hospital – Kasese	NS	NS	810	13
Kagando	3,455	36	3,348	28
Kitovu	2,284	38	1,986	38
Kiwangala HC IV—Masaka	NS	NS	57	0
Kiyumba HC IV—Masaka	NS	NS	59	0
Masaka Regional Referral Hospital	NS	NS	3,473	20
Rwesande HC IV—Kasese	NS	NS	159	8
Total, all sites	58,930	40	79,581	33

* Data are on deliveries performed at centers where the pre-repair units are located. Dangla Health Center opened an emergency obstetric unit in September 2010. Two cesareans were performed in September 2010. NS=not supported; NA=not available

⁹ Sites included in the CS study are highlighted in gray.

Indications	Fistula Care master list (adapted from AMDD checklist)	Country additions under "other, specify"
Absolute Maternal Indications	· ·	
Obstructed labor, including severe deformed pelvis and failed trial of labor	 Obstructed labor Deformed pelvis Failed trial of labor 	 Big baby Failed trial of previous scar Retracted/contracted pelvis Immature pelvis Dystocia, obstructed labor due to poor descent Big baby breech presentation Asymmetric pelvis
Major antepartum hemorrhage and grade 3 or 4 placenta previa	Same as FIGO	Complete previa = central previa = complete placenta previa
Malpresentation (including transverse, oblique, and brow)	Same as FIGO	 Persistent occiput posterior Unstable lie Prolapse of hands of both twins Arm prolapse Arm presentation in lateral position Neglected shoulder Twins blockage Both arms presentation Hand presenting in a cephalic position Cephalic presentation with two hands presenting Face presenting with anterior position of the chin
Uterine rupture	Same as FIGO	 Baby or part of baby in abdominal cavity Signs of pending uterine rupture Abdominal pregnancy
Failed induction	FIGO considers nonabsolute	
Not explicitly included in the list	CPD	 Borderline pelvis Hydrocephalus Small mother Hydrocephalus

Appendix B. Immpact/FIGO indications correlated with Fistula Care/AMDD data collection tool

Indications	Fistula Care master list (adapted from AMDD checklist)	Country additions under "other, specify"
Nonabsolute Indications		·
Failure to progress in labor, including prolonged labor	 Failure to progress Prolonged labor 	 Cervical dystocia Delayed second stage Uterine inertia Failed dilatation Obstructed labor, dynamic
Previous cesarean delivery	 Same as FIGO Uterine scar from other previous surgery 	
Genitourinary fistula or third-degree tear repair	 Fistula Care addition vesico-vaginal fistula (VVF)—post-repair Fistula Care addition VVF 	 Previous repair of uterine prolapse History of VVF History of treated cystocele History of treated prolapse
Antepartum hemorrhage, excluding those for absolute indications and including abruptio placentae	Same as FIGO	 Antepartum hemorrhage, nonspecific Retro placental hematoma Retro placental hematoma/hemorrhage and acute renal failure
Maternal medical disease	Same as FIGO	 Preventkon of mother-to-child transmission of HIV Cardiopathy Cerebral malaria Sickle cell disease
Severe pre-eclampsia or eclampsia	Same as FIGO	Pregnancy-induced hypertension
Psychosocial indications, including maternal request	Same as FIGO	Maternal anxiety
"Precious" pregnancy (i.e., a pregnancy coming after a series of pregnancy losses, such as miscarriages or stillbirths)	Same as FIGO	 Bad obstetric history Prolonged sub fertility Previous perinatal death Previous stillbirth (precious baby)
Fetal compromise, including fetal distress, cord prolapse, and severe intrauterine growth retardation	 FistulaCare cord prolapse/presentation Fetal distress Severe intrauterine growth retardation 	 Retained twin Irregular fetal heart rate

Indications	Fistula Care master list	Country additions under "other, specify"
	(adapted from AMDD	
	checklist)	
Breech presentation	Same as FIGO	Retained head
		• Breech presentation on a primigravida, fully dilated but breech
		not descending
		Breech on primiparous
Not listed under FIGO list	Multiple gestation	Three feet presenting on twins pregnancy
		• Twins, with 1st breech
Other		
		Oligohydramnios
		• Pre-labor rupture of membranes (PROM)/ruptured membranes
		Failed instrumental delivery (forceps or vacuum)
		Reduced or absent fetal movements
		 Postterm (>42 weeks)/postdate
		Meconium stain
		Failed induction at home
		Scar tenderness
		Lower abdominal pain
		Absent fetal movement
		Chorioampionitis
		Moderate oligobydramnios
		 Intrauterine death
		Absent fetal beart beat
		Polybydramnios
		 Manhandling (may refer to failed induction at home: Kumudini)
		 Poor descent of the presenting part
		Aged primiparous with previous scar
		 Long child-spacing period
		 Short child spacing (loss than 1 year)
		Bolvic tumor on programsy
		Cord around the nock
		Gord around the neck
		Fight field to uter us
		Intractable pain in pregnancy
		Intractable severe faise labor pain
		Oedematous cervix
		Maternal exhaustion

Indications	Fistula Care master list (adapted from AMDD checklist)	Country additions under "other, specify"
		Grand multiparity
		Elective cesarean section
		Face presentation
		Ruptured bladder
		Ovarian infection
		Myoma and placenta previa
		Vaginal diaphragm
		Cervical prolapse
		Bicornuate uterus
		Uterine retroversion position

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