Quality Of Post-Abortion Care In Java, Indonesia: An Essential Services Analysis

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Abstract

Background High maternal mortality in Indonesia persists despite economic growth and a reform that extended health insurance to all Indonesians. Quality of obstetric health services, in general, has been identified as a factor for this; in addition, the country’s restrictive abortion laws merit special attention to the quality of post-abortion care (PAC) services.

Methods Using data from a survey of 657 hospitals and emergency obstetric-registered public health centers in Java, Indonesia’s most populous island, we used the essential services framework to measure the health system’s capacity to offer PAC. We then used this framework to explore how Java’s capacity to offer PAC could change given two hypothetical reforms. Finally, we calculated the proportion of PAC patients treated using each of four different procedures.

Results No emergency obstetric health centers (PONEDs) are adequately staffed or authorized to offer basic PAC services, while 46% of all hospitals in Java have the full set of services needed. These proportions increase in hypothetical scenarios in which PAC authorization is expanded to midwives, general physicians, and PONED facilities. Eighty-eight percent of PAC patients were treated using dilation and curettage (D&C).

Conclusions Allowing clinicians other than Ob/Gyns to perform uterine evacuation and offering first-trimester PAC service in PONEDs would greatly improve the capacity of Java’s health system to serve PAC patients. Increasing the use of vacuum aspiration and misoprostol would lower the burden of treatment for patients, reduce costs to the health system, and facilitate the task-shifting efforts needed to expand access to this life-saving service.

Plain English Summary

Despite the fact that complications resulting from pregnancy loss are common and often relatively straightforward to treat, most facilities with the full capacity to offer round-the-clock post-abortion care (PAC) in Java, Indonesia are high-level hospitals. This paper identifies two main reasons why: first, PAC provision is restricted to Ob/Gyns, which limits the number of staff who are available to offer this type of care especially in lower-level facilities. Secondly, PAC is not allowed to be performed in emergency obstetric-registered public health centers, even though these health centers routinely
offer more intensive services such as childbirth and care for other obstetric and neonatal emergencies. This paper demonstrates the increase in access to PAC that would occur if Indonesia were to equip and authorize these health centers to offer PAC service for early gestation (first trimester), and to expand PAC provision and training to non-specialist practitioners, namely midwives and/or general physicians.

Where PAC is offered in Java, the vast majority (88%) of patients are treated using dilation and curettage (D&C), an invasive and painful procedure that carries a greater risk of infection and requires more specialized training to perform. This is contrary to guidelines from the World Health Organization and the International Federation of Gynecology and Obstetrics, which both recommend less invasive methods – vacuum aspiration and misoprostol – as first-line treatments for most PAC cases. Both of these methods require less specialization than D&C, and are therefore amenable to the task-shifting needed to expand access to PAC in Indonesia.

Background
High maternal mortality in Indonesia presents a paradox, persisting despite an ambitious 2014 health system reform which contributed to a high proportion of deliveries by trained health workers (1,2). The most recent maternal mortality ratio (MMR) estimate found 305 maternal deaths per 100,000 live births in Indonesia during the five-year period from 2010-2015 (3), much higher than the 2015 Millennium Development Goal (MDG) target of 102 (4) and other countries in the region with similar or lower GDP (5).

Existing literature attributes Indonesia’s elevated maternal mortality to the poor quality of health services (1,5). Two additional factors may contribute. First, abortion is illegal unless the woman’s life is in danger or if a pregnancy up to six weeks’ gestation resulted from rape, restrictions which incentivize unsafe procedures. Secondly, unlike many middle-income countries, Indonesia’s policies and health care reimbursement scheme restrict post-abortion care (PAC) provision to Ob/Gyns practicing in hospitals (6). PAC is an important service that prevents complications from induced or
spontaneous abortions from resulting in death or more severe morbidity, and is especially critical in settings with restrictive abortion laws.

A small body of evidence supports the hypothesis that complications from pregnancy loss may contribute to Indonesia’s high MMR. A 2003-2004 study in Banten province in 2003-2004 attributed over 30% of obstetric admissions in public hospitals to complications resulting from induced or spontaneous abortion; 16% of induced abortion admissions were classified as near miss (7). Furthermore, a recent study in Yogyakarta province found a strong association between better PAC quality and higher survival rates among patients with the most severe post-abortion complications (8).

This paper aims to provide the first comprehensive assessment of PAC quality in Indonesia. We apply the essential services framework, which uses indicators at health facilities to summarize the availability of key components of emergency obstetric care in a country’s health system (9,10). This framework has been adapted to measure both safe abortion care and PAC in a variety of contexts (11–13). Using data from health facilities in Java, Indonesia’s most populous island (14), we first evaluate the capacity of Java’s health system to provide PAC. Next, we identify which components contribute to the biggest gaps in capacity, and explore alternative scenarios should those gaps be remedied. Finally, to illustrate the quality of services provided, we present the distribution of PAC procedures used.

Methods
Data for this analysis come from a Health Facilities Survey (HFS), which was conducted April-June 2018 in Java, Indonesia. The HFS was conducted in a face-to-face interview with staff members knowledgeable about PAC provision in their facility, usually the medical director or head midwife. In eight sampled hospitals, multiple wards treated PAC patients. In these cases, interviewers conducted separate surveys within each ward. In seven hospitals, two wards were interviewed, and three wards were interviewed in one hospital. The Guttmacher Institute’s and University of Indonesia Faculty of
Public Health’s respective Institutional Review Boards granted ethical approval for this study.

We aimed to include all facilities with the potential to offer PAC in our sampling frame. For hospitals, this was defined as having either an obstetric care ward or an operating theater. We included all public hospitals in the sampling frame, which are classified into four types denoted by the letters A through D. Type A hospitals are the largest and most comprehensive facilities, whereas Type D hospitals are the smallest, with no more than four specialty care wards. We also included private, often religiously-affiliated maternal and neonatal specialty hospitals called Rumah Sakit Ibu dan Anak (RSIA, Mother and Child Hospitals), and Rumah Sakit Anak dan Bunda (RSAB, Child and Mother Hospitals). Finally, health centers with PONED (basic obstetric and neonatal emergency service) registration were included in the sampling frame. PONED health centers, staffed mainly by midwives and GPs, were established in 2008 to combat Indonesia’s high level of maternal and infant mortality by expanding access to basic emergency obstetric and neonatal care.

We extracted information on public and private hospitals from the Ministry of Health Hospital Management Information System website in June 2017, and on PONED health centers from the Ministry of Health 2016 report, a national census of all health facilities. After adjusting for closures and misclassification, the sampling frame consisted of 2,239 health facilities (Table 1). We used stratified random sampling to obtain a sample representative of Java and each of its six provinces. Within each province, we selected 100% of Type A hospitals, 40% each of Type B, C, D, and RSIA/RSAB hospitals, and 20% of PONED health centers. This resulted in a sample of 717 facilities (32%) (Table 1).

**Table 1. Java Health Facilities Survey 2018 sample**
| Type of facility               | Universe with potential to offer PAC (corrected) | HFS sampling fraction (based on corrected universe) | Number selected | Number of completed interviews |
|-------------------------------|--------------------------------------------------|----------------------------------------------------|-----------------|-------------------------------|
| Hospital Type A               | 13                                               | 100%                                               | 13              | 11                            |
| Hospital Type B               | 205                                              | 40%                                                | 84              | 73                            |
| Hospital Type C               | 446                                              | 40%                                                | 192             | 171                           |
| Hospital Type D               | 356                                              | 40%                                                | 134             | 123                           |
| RSIA/RSAB (private maternity hospital) | 233                                          | 40%                                                | 97              | 82                            |
| PONED (BEmOC-registered health center) | 986                                          | 20%                                                | 197             | 197                           |
| **Total**                     | **2,239**                                        | **32%**                                            | **717**         | **657**                       |

Within each stratum (facility type and province), we first calculated a base weight equal to the inverse probability of selection, and a non-response weight equal to the inverse probability of participation.

We weighted all facilities by the composite weight equal to the product of the base weight and the non-response weight. A total of 657 facilities (92% response rate) completed the HFS. For the purposes of this analysis, we collapsed hospitals into three groups: Type A/B, Type C/D, and RSIA/RSAB, as the hospital types within each grouping offer similar levels of obstetric service provision.

We created a composite indicator for each facility summarizing its capacity to treat the most common complications from miscarriages and unsafe abortions: infection, hemorrhage, and internal injury.

This indicator classifies capacity to treat PAC patients into two categories, based on the essential services framework:

**Basic PAC capacity** is defined as the ability to offer round-the-clock access to a minimum level of PAC service. To meet this standard, a facility must be open 24/7 with at least three appropriate providers on staff, and have a means of contact with and transport to a higher-level facility for referral. The facility must offer services necessary to prevent and treat infection and manage early-gestation pregnancy loss: parenteral antibiotics, IV fluid, uterotonic oxytocics, uterine evacuation for early-gestation pregnancies, and provision of short-acting contraceptives. Facilities are considered to have full basic PAC capacity if they meet all of these criteria, but do not provide the full set of comprehensive service indicators, described next.

**Comprehensive PAC capacity** is defined as service provision that can accommodate both basic PAC treatment (defined above) as well as complete care for more advanced interventions: surgery capability (laparotomy), stocks of blood for transfusion, second-trimester uterine evacuation, and provision of long-acting contraceptives (IUD or implant). Primary-level health facilities are typically excluded from this measure, since only hospitals are expected to have the potential to provide this more advanced treatment. Hospitals with all services listed in Table 1 are classified as having comprehensive PAC capacity.
We adjusted these definitions to account for Indonesia’s unique regulations and practices. First, in most other settings where the essential services framework has been applied, midwives and GPs typically count towards the three appropriate providers needed to meet the standard for full PAC capacity. In Indonesia, midwives and GPs have neither authorization nor, generally speaking, training to provide the full set of services for basic PAC. Therefore, for this analysis, only Ob/Gyns count towards the three staff minimum. Secondly, all health centers and hospitals in Indonesia are required to have a means of communication and transport, so we excluded questions about this from the HFS and assume that all facilities in our sample have referral capacity. Thirdly, because Indonesia’s national health insurance does not reimburse hospitals for provision of short-acting contraceptive methods, these methods are less routinely offered in hospital settings. Including this service as an essential indicator caused many hospitals to be classified as lacking the full set of services needed for basic PAC provision, even if they otherwise met the criteria for comprehensive PAC capacity. To account for this, we removed short-term contraceptive method provision as a criterion. Finally, Indonesia’s blood supply chain relies primarily on local International Red Cross facilities, which coordinate with hospitals to ensure a sufficient supply of blood products; hospitals are generally not expected to routinely keep blood products onsite (15). For this reason, we did not consider stocks of blood products a requirement for comprehensive PAC capacity. Table 2 summarizes these definitions.

**Table 2. Essential services for basic and comprehensive PAC**

| Indicator                              | Basic | Comprehensive |
|----------------------------------------|-------|---------------|
| Open 24/7                              | ✗     | ✗             |
| >= 3 Ob/Gyn doctors on staff           | ✗     | ✗             |
| IV fluids                              | ✗     | ✗             |
| IV antibiotics                         | ✗     | ✗             |
| Uterotonic oxytocics                   | ✗     | ✗             |
| First trimester uterine evacuation     | ✗     | ✗             |
| Second trimester uterine evacuation    |       | ✗             |
| Surgical capacity                      |       | ✗             |
| Long-acting contraceptive method (IUD or implant) |     | ✗             |

Respondents reported whether the facility is open 24/7 and the number and type of providers on staff. To determine whether facilities had IV fluids, parenteral antibiotics, uterotonic drugs, short-acting contraceptive methods (pill or injectable), long-acting contraceptive methods (IUD or implant) and blood for transfusion, respondents reported whether the facility offered each service and whether
the facility had experienced stock-outs of each commodity at any point in the past three months. Facilities that offered the service and experienced no stock-outs in the past three months were coded as having that equipment or drug. Respondents also reported whether the facility had the ability to perform removal of retained products of conception in both the first and the second trimester, separately.

For the eight hospitals in which multiple wards were interviewed, we coded the entire hospital as having a given service or piece of equipment if any one of its wards did, under the assumption that hospital departments can share supplies or transfer patients to a better-equipped unit when necessary. The number of providers for these hospitals was calculated as the sum of providers reported in all surveyed wards.

Using the Indonesia-adjusted essential services definition and accounting for all of the above indicators, facilities were then coded into one of three categories: incomplete PAC capacity (lacking one or more of the basic PAC criteria), basic PAC capacity, or comprehensive PAC capacity. We then calculated the weighted proportion of facilities in each PAC capacity category, overall and by facility type.

To better understand which components contribute to facilities lacking the full set of PAC capability indicators, we calculated the proportion of facilities reporting each individual service or equipment. Although it was excluded from the list of indicators for this analysis, we also calculated the proportion of facilities that offer a short-term contraceptive method, since this service is appropriate for many PAC patients and has been used in most other published analyses of health system PAC capacity.

We also constructed a hypothetical indicator to summarize PAC capacity under three conditions that would account for potential changes in healthcare policies. First, we investigate what PAC capacity would be if first trimester uterine evacuation were offered in all PONED health centers, which currently are not authorized to provide this service. The second scenario portrays what would happen
if authorization to perform PAC were expanded to all GPs. The third scenario investigates the change in capacity if all midwives (but not GPs) could perform PAC. We assessed the impact of each change in authorized provider type individually and, finally, in combination with each other.

Finally, we also calculated the proportion of PAC patients treated with each of four methods. Respondents at each facility that treated PAC patients estimated the percentage of PAC patients treated with different methods, responses for which were grouped into four categories: dilation and curettage (D&C), manual or electric vacuum aspiration (MVA/EVA), misoprostol, and surgery/other methods. At each of the 438 facilities that provided PAC patient caseloads and estimates of the proportion treated with each procedure, we applied the distribution of PAC methods to the number of PAC patients treated at the facility in the year 2018, resulting in an estimate of the number of PAC patients receiving each type of treatment. In the eight facilities where multiple departments were interviewed, we did this in each department and then summed the number of patients treated with each method for a facility-level total. We applied facility weights to the number of patients treated with each method and divided by the total number of PAC patients to calculate the proportion of all PAC patients treated with each method in the year 2018. All analyses were conducted in Stata 15.0.

Results

About one-quarter (26%) of all hospitals and PONEDs have the full set of indicators to offer complete PAC service at the basic level or higher (21% comprehensive PAC, 5% basic) (Figure 1). No PONED facilities have the full set of indicators to offer basic PAC. When excluding PONEDs to account for this, 46% of all hospitals have the capacity to offer complete PAC service (38% comprehensive, 8% basic). The highest-level hospitals are the best equipped; 86% of Type A/B hospitals have the complete set of indicators for PAC service (75% comprehensive, 11% basic). Type C/D hospitals are the least equipped, with 34% having the capacity to offer either level of complete PAC service (26% comprehensive, 8% basic). RSIA/RSAB maternity hospitals fall in between the other types, with 53% having the full set of indicators for any level of PAC service (44% comprehensive, 9% basic).
Almost all facilities (at least 90% in each category) reported consistent stocks of IV fluids and uterotonic drugs (Figure 2). Most facilities, over 85% within each type, are open 24/7. Almost all hospitals (>90% in each type) and 78% of PONEDs reported consistent supplies of IV antibiotics. While almost all hospitals (92-99% in each type) report the ability to perform first-trimester uterine evacuation, only 7% of PONEDs do. Second trimester uterine evacuation is widely available at all three hospital types, ranging from 89% of RSIA/RSABs to 97% of Type A/B hospitals.

Almost all PONEDs (99%) offer at least one short-acting and at least one long-acting contraceptive method. About two-thirds (66%-72%) of hospitals offer a short-term method, and over three-quarters (75%-88%) offer at least one long-acting reversible method.

While almost all Type A/B hospitals (91%) have 3 or more Ob/Gyns on staff, only 35% of Type C/D hospitals, 56% of RSIA/RSAB hospitals, and 0% of PONEDs do. While most lower-level hospitals have at least three GPs or Ob/Gyns on staff (92% of Type C/D hospitals, 91% of RSIA/RSABs), only 38% of PONEDs meet this criteria. Over 96% of facilities within each type, including 100% of Type A/B hospitals and PONEDs, have at least three midwives or Ob/Gyns on staff.

Figure 3 shows the hypothetical impact of changes to Indonesia’s PAC guidelines and professional training. Reimbursing PONEDs for first trimester uterine evacuation and, if necessary, equipping them to perform this service alone would have no impact on PAC capacity (Figure 3, part A). This is because only Ob/Gyns are allowed to perform PAC, and these providers do not regularly staff PONEDs.
We next explored a scenario in which PONEDs offer PAC and GPs are trained and authorized to provide PAC. Under this scenario, PAC capability in Java would more than double, with 59% of all facilities having the full set of PAC service indicators (34% comprehensive, 25% basic) (Figure 3, part B). By facility type, the proportion with PAC capacity would be 94% among Type A/B hospitals (83% comprehensive, 11% basic), 82% among Type C/D hospitals (55% comprehensive, 27% basic), and 83% among RSIA/RSAB hospitals (60% comprehensive, 23% basic). Over one-quarter of PONEDs (27%) would be fully staffed to offer basic PAC service.

Next, we explored the impact of allowing midwives, rather than GPs, to perform PAC, in addition to PONED service (Figure 3, part C). Under this scenario, 78% of all facilities in Java would have some level of PAC capability, with more facilities meeting the criteria for basic PAC (43%) rather than comprehensive (35%). PAC provision by midwives would lead to slightly higher capacity in hospitals, and 67% of PONEDs would be fully staffed to offer basic PAC.

In Java in 2018, 88% of PAC patients were treated using D&C, 7% with MVA/EVA, 4% with misoprostol, and 2% with surgery or another method.

Discussion

Under the current Indonesian policy, the facilities most capable of offering PAC are high-level hospitals, 75% of which are equipped to treat the most severe post-abortion complications. Type C/D hospitals comprise a large share of all hospitals in Indonesia (Table 1) and are more accessible than Type A/B hospitals. However, these facilities are currently the least likely of all hospital types to have the full set of services and staffing needed to offer round-the-clock PAC coverage. Similarly, no PONED health centers are adequately staffed or authorized to offer even basic PAC service. In addition to access challenges, the quality of PAC in Java suffers from an over-reliance on D&C.

Expanding PAC authorization and training to GPs and midwives would increase PAC capacity in Java’s
health system, with PAC provision by midwives having the greatest impact. Figure 2, part D shows that expanding PAC authorization to both GPs and midwives carries no increase in capacity compared to only expanding to midwives (shown in Figure 2 part C).

These results fit a global pattern in which basic emergency obstetric services are less prevalent than advanced care for severe complications (16). In Indonesia’s case, this is an artifact of restrictions on services performed by non-specialists and the lack of early-gestation uterine evacuation at PONED health centers. Given their position as a first line of care for obstetric emergencies, their focus on rural and underserved areas, and their integration with family planning and other reproductive health services, PONED health centers are uniquely poised to fill the gap in basic PAC provision.

Expanding PAC service to midwives and PONED health centers would have the greatest health system impact, especially at the primary care level. Midwives are already a major provider of basic obstetric care in PONEDs and lower-level hospitals. A body of evidence from a wide variety of settings shows that with proper training and professional support, midwives are capable of performing uterine evacuation, and patients perceive the quality of this care from midwives to be no worse, and in some cases better, than from specialist doctors (17–21). A Ministry of Health decree already states that midwife training in Indonesia should include the provision of medication (misoprostol) for abnormal bleeding and incomplete abortion (22), though it is unclear how many go on to actually perform that service. Extending PAC provision beyond Ob/Gyns would still require investments in training, both in the educational curriculum and for clinicians already in service.

Current PAC provision in Java is not in line with the WHO and FIGO recommendations that most PAC patients be treated with vacuum aspiration (MVA or EVA) or misoprostol (23,24).

This study has several limitations. First, the results of this analysis may not be generalizable to all of Indonesia. Compared to the rest of Indonesia, Java is wealthier, more developed, and has a higher concentration of specialist doctors. It is likely that important indicators of PAC capacity vary widely by region. Second, the HFS only captured whether a facility possessed a piece of equipment, rather than
whether it had been used in the past 3 or 12 months, which means our measures may have overestimated PAC capacity at these facilities. In light of these two limitations, our results should be interpreted as a best-case scenario when considering Indonesia as a whole. Also, our framework defines quality in strictly material terms. Patient-centered indicators, such perceptions of stigma from providers, are important dimensions of quality that this paper lacks the necessary data to address. Finally, the HFS excluded private clinics, another potential source of PAC. We conducted an abbreviated version of the HFS with a purposive sample of 40 private clinics in Java after this survey was over. We found that in general, PAC capacity in these facilities was much more limited than in our data, as private clinics generally are not open 24/7 and have smaller staffs. Therefore, it is unlikely that the majority of these clinics would have met the criteria for PAC provision.

Conclusion

The results of this analysis are meant to inform policy makers’ decisions about improving PAC service quality and accessibility in Indonesia, and by doing so, reduce preventable maternal morbidity and mortality.

PAC training and authorization for non-specialists practicing at PONED health centers would dramatically increase access to PAC. Increased use of MVA/EVA and misoprostol would decrease patients’ burden of treatment while lowering health system costs. Transitioning towards these methods would also harmonize with task-shifting efforts, as they require less specialized training than D&C, and midwives’ training is already supposed to include the use of medication for PAC.

Finally, provision of short-term contraceptive methods at all facilities that offer PAC would ease PAC and other obstetric patients’ voluntary use of short-term methods. Indonesia’s national health insurance could consider reimbursing hospitals for these methods when offered in tandem with PAC as well as delivery and postpartum care.

Increasing the health system’s ability to offer high-quality PAC should be a top priority in Indonesia, to
help the country deliver on its commitment to safeguard pregnant women’s health and lives.

Abbreviations

PAC: Post-abortion care
PONED: Public health center registered to provide emergency obstetric services (Pelayanan Obstetri Neonatal Emergensi Dasar)
MVA: Manual vacuum aspiration
EVA: Electric vacuum aspiration
D&C: Dilation and curettage

Declarations

Ethics approval and consent to participate: Ethical approval for this study was provided by the Guttmacher Institute’s Institutional Review Board (DHHS identifier IRB00002197) on March 16, 2018, and by the Commission of Research Experts and Research Ethics of the University of Indonesia Faculty of Public Health on 14 February 2018 (no. 56/UN2.F10/PPM.00.02/2018).

Consent for publication: Not applicable.

Availability of data and materials: The data used for this study are available from the corresponding author at reasonable request. The data are not available publicly because information on province and facility type can identify some of the participating facilities, contrary to the confidentiality protection laid out in the Java Health Facility Survey’s informed consent statement.

Competing interests: The authors declare that they have no competing interests.

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Authors’ contributions: The study was designed by JP, NS, BU, and MG. The fieldwork and data collection were supervised by NS, RK, MI, JP, and BU. The analysis was performed by JP, with input and guidance from NS, RK, BU, MG, and MI. The first draft of the paper was written by JP and MI, and all
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Figures
Figure 1
Capacity to offer complete PAC service by facility type

Figure 2
Proportion of facilities with each PAC essential service, by facility type
Figure 3. PAC capacity in Java under four scenarios

A. PONEDs offer first trimester uterine evacuation

B. PONED service with GPs performing PAC

C. PONED service with midwives performing PAC

D. All three reforms: PONED service + GPs + midwives

Figure 3

PAC capacity in Java, Indonesia under four scenarios