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“Right tool,” wrong “job”: Manual vacuum aspiration, post-abortion care and transnational population politics in Senegal



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ABSTRACT

The “rightness” of a technology for completing a particular task is negotiated by medical professionals, patients, state institutions, manufacturing companies, and non-governmental organizations. This paper shows how certain technologies may challenge the meaning of the “job” they are designed to accomplish. Manual vacuum aspiration (MVA) is a syringe device for uterine evacuation that can be used to treat complications of incomplete abortion, known as post-abortion care (PAC), or to terminate pregnancy. I explore how negotiations over the rightness of MVA as well as PAC unfold at the intersection of national and global reproductive politics during the daily treatment of abortion complications at three hospitals in Senegal, where PAC is permitted but induced abortion is legally prohibited. Although state health authorities have championed MVA as the “preferred” PAC technology, the primary donor for PAC, the United States Agency for International Development, does not support the purchase of abortifacient technologies. I conducted an ethnography of Senegal’s PAC program between 2010 and 2011. Data collection methods included interviews with 49 health professionals, observation of PAC treatment and review of abortion records at three hospitals, and a review of transnational literature on MVA and PAC. While MVA was the most frequently employed form of uterine evacuation in hospitals, concerns about off-label MVA practices contributed to the persistence of less effective methods such as dilation and curettage (D&C) and digital curettage. Anxieties about MVA’s capacity to induce abortion have constrained its integration into routine obstetric care. This capacity also raises questions about what the “job,” PAC, represents in Senegalese hospitals. The prioritization of MVA’s security over women’s access to the preferred technology reinforces gendered inequalities in health care.

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1. Introduction

Since the late 1990s, the Senegalese Ministry of Health (MOH) has championed manual vacuum aspiration (MVA) as the technology of choice for the treatment of abortion complications or post-abortion care (PAC) in state hospitals. MVA offered a safer, faster, cheaper and more effective form of uterine evacuation than dilation and curettage (D&C). Yet, unlike other state-approved medical technology in Senegal, MVA is not available through the national pharmacy through which health managers can purchase supplies at district and regional depots. MVA may only be purchased at the headquarters of a regional reproductive health research agency located in the capital city of Dakar. These purchases require the signature of one of two high-level officials from the MOH’s Division of Reproductive Health. This paper explores

how the flexible capacity of MVA to induce abortion and treat abortion complications has constrained its integration into routine gynecological practice in Senegal.

Sociologists have cautioned against the “black boxing” of medical technology as “inert, ahistorical objects, uninteresting in and of themselves” (Casper and Morrison, 2010). Science and technology studies (STS) explore what medical technologies do and the ways in which they participate in and coordinate medical work (Timmermans and Berg, 2003). The technology’s practical and institutional suitability—its “rightness”—for a particular task, and its integration into standard practice, are negotiated by a variety of actors and institutions, each motivated by a particular set of concerns and interests (Fujimura and Clarke, 1992). In the field of global reproductive health, technologies shape and are shaped by institutional goals and practices related to improving sexual, reproductive and maternal health. In post-colonial settings such as Senegal, the articulation of claims to the “rightness” of reproductive technologies unfolds within a transnational landscape of

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negotiation over definitions and goals related to reproductive health within the broader context of global governance regarding population and development by state health authorities, non-governmental organizations (NGO), health professionals and aid donors (Atukunda et al., 2015; Carpenter and Casper, 2009; Ginsburg and Rapp, 1995; Pigg and Adams, 2005).

This ethnographic study identifies multiple actors and institutions involved in negotiating the “rightness” of MVA for the “job” of PAC in Senegal. I illustrate how transnational population policy configurations, including Senegal’s abortion law, United States (US) prohibitions on development aid for abortion and various shifts in the conceptualization of gender and reproduction within global governance of population and development, have complicated the “rightness” of MVA for PAC. The capacity of this device to induce abortion in a country where this procedure is legally forbidden has not only displaced MVA from the national medical supply system, but has also thrown into question the very meaning of PAC in Senegalese hospitals. The incongruence between MVA discourse and practice at various levels of the health system reinforces gendered health inequities by limiting women’s access to the “preferred technology.”

1.1. Abortion, PAC and MVA: global and Senegalese perspectives

In spite of evidence that abortion-related mortality declines when governments permit access to safe abortion (Sedgh et al., 2012), abortion remains one of the most controversial areas of global health. Nearly 20% of women worldwide live in countries where abortion is completely prohibited or permitted only to preserve the woman’s life (WHO, 2011). The controversy also stems from the influence of US abortion politics in the field of global reproductive health, in which the US is one of the primary donors of aid. Between 2009 and 2010, the US spent approximately \$4 billion on global reproductive health (Hsu et al., 2013). Since the early 1970s, the US has issued legislation, such as the Helms Amendment (1973) and the Mexico City Policy (1984), that has severely curtailed federal population assistance for activities and services related to abortion. These policies have had a “chilling” effect on the global reproductive health community, often silencing NGOs from addressing abortion for fear of jeopardizing their US funding for other population activities such as family planning (Cohen, 2000; Crane, 1994; Crane and Dusenberry, 2004; Kulczycki, 1999).

The PAC model was developed in the early 1990s to address abortion-related mortality in a global policy climate hostile to abortion. PAC includes emergency management of complications of abortion, family planning counseling and services, and links to other reproductive health care services (Corbett and Turner, 2003). The PAC model also calls for safer and more effective methods of uterine evacuation than dilation and curettage (D&C) such as MVA (illustrated in Fig. 1) that can be performed at lower levels of the health system (Corbett and Turner, 2003; Greenslade et al., 1994). According to the World Health Organization (WHO), the rate of complications associated with MVA is two to three times lower than D&C. MVA is also associated with less blood loss and pain than D&C (WHO, 2012). Decentralizing PAC from tertiary to secondary and primary health facilities increases women’s financial and geographical access to these services (Curtis, 2007). In developing countries where midwives rather than physicians provide the bulk of reproductive health care (Berer, 2009), authorizing this cadre of health professionals to use MVA also improves women’s access to safe PAC services (Otsea et al., 1997). Separate rooms for PAC treatment enhance the capacity of health providers to protect the privacy of PAC patients (PopCouncil, 1999).

In 1994, the Platform of Action for Reproductive Health issued by the United Nations International Conference on Population and

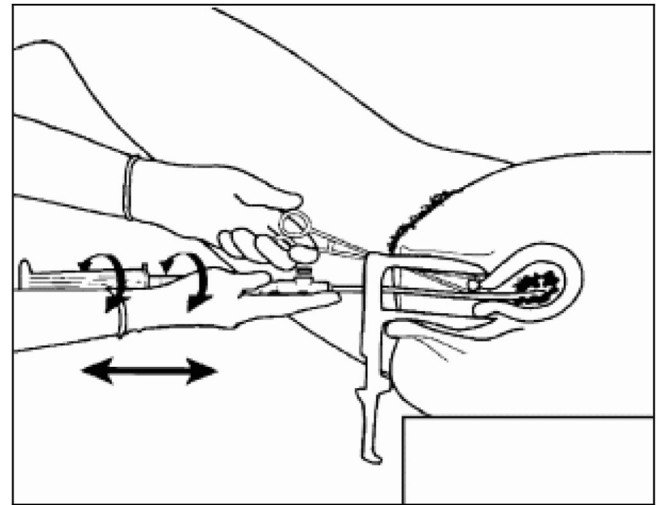


Fig. 1. Manual vacuum aspiration.

Source: WHO (2007). Managing complications in pregnancy and childbirth: a guideline for midwives and doctors, Figure P36. http://whqlibdoc.who.int/publications/2007/9241545879_eng.pdf?ua=1

Development (ICPD) called for quality PAC services irrespective of the legal status of abortion (Kulczycki, 1999). Even with the Helms Amendment in place, between 1994 and 2001 the US Agency for International Development (USAID) spent over \$20 million supporting PAC activities in more than 40 countries (Curtis, 2007). In 2012, approximately half of the NGOs involved in PAC activities in up to 50 countries worldwide received USAID funding (PAC-Consortium, 2012).

Senegal’s abortion law prohibits abortion under any circumstance and subjects women and practitioners who procure abortion to imprisonment, fines and revocation of professional license (CRR, 2003; Scales-Trent, 2010). The 2010–2011 Demographic and Health Survey reports a maternal mortality ratio of 392 deaths per 100,000 live births, but does not estimate the contribution of unsafe abortion to maternal death (ANSD, 2012). The first national study of abortion incidence, conducted in 2013, estimated a rate of 17 abortions per 1000 women aged 15 to 44. While this figure is lower than the estimated regional incidence of abortion in West Africa (28 abortions per women aged 15–44), the study suggests that unsafe abortion presents a serious public health problem in Senegal. More than half (55%) of all women who had an induced abortion experienced complications, and approximately 43% of women with complications did not receive medical treatment (Sedgh et al., 2015).

Prior to the introduction of PAC to the Senegalese health system in the late 1990s, the primary methods of uterine evacuation were D&C and digital curettage. Illustrated in Fig. 2, digital curettage involves inserting two fingers through the dilated cervix into the uterus and removing any loose tissue, using gloves, antispasmodics and antibiotics (DSR, 2007). While physicians at tertiary level hospitals practiced D&C, midwives performed digital curettage at both tertiary and district hospitals. Studies showed that women were exposed to pain and infection when the necessary precautions were not observed during digital curettage (PopCouncil, 2007). The WHO does not recognize digital curettage as a safe, effective form of abortion care (WHO, 2012).

Operations research in Senegal showed that PAC increased post-abortion contraceptive uptake; reduced the length of hospitalization and cost for patients with complications of abortion; and that midwives at district hospitals could safely and effectively use MVA (CEFOREP, 1998; EngenderHealth, 2003; PopCouncil, 2004). The

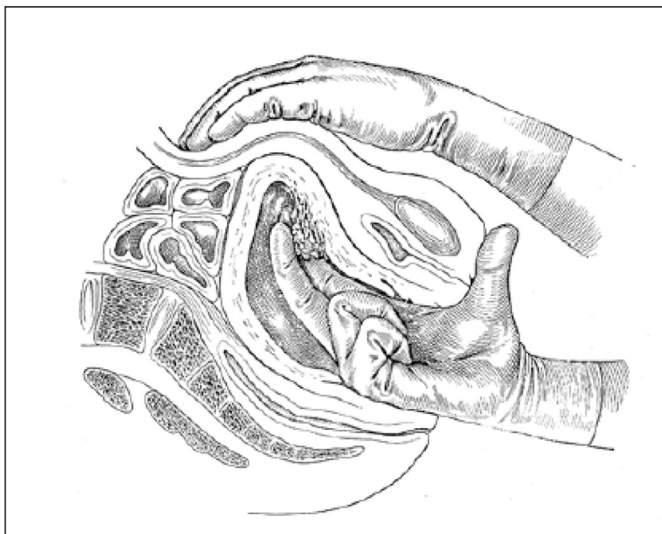


Fig. 2. Digital curettage.

Source: Thiam, F., S. Suh, and P. Moreira. 2006. "Scaling up postabortion care services: results from Senegal." in *Occasional Papers*. Cambridge, MA: Management Sciences for Health.

MOH integrated PAC and MVA into its Norms and Protocols for reproductive health in 1998 (Diadiou et al., 2008). In addition to authorizing midwives to perform MVA, these guidelines recommended that uterine evacuation be conducted in rooms separate from delivery. While PAC services are now available at all levels of the health system, MVA remains limited to tertiary and secondary level hospitals. I describe elsewhere the social, professional, legal and moral complexities of practicing PAC in a country where induced abortion is highly restricted (Suh, 2014).

2. Locating MVA in transnational population politics

This paper draws on theoretical approaches from the field of STS to situate MVA and its flexible capacity within the context of global population politics. STS aim to "dissect" medical technologies to explore how "their historical, cultural and political innards" not only influence daily clinical practice and institutional logics, but also shape health outcomes and give rise to new meanings and possibilities related to bodies and identities (Casper and Morrison, 2010). "Technology in practice" approaches examine not only what technologies do but also how their technical qualities accomplish (or not) medical or public health goals (Timmermans and Berg, 2003). Scholars have used the phrase "the right tool for the job" as a metaphor for the contingency involved in determining the appropriate techniques to address problems in scientific practice (Fujimura and Clarke, 1992). The negotiation of a technology's "rightness" is not restricted to the laboratory, but rather unfolds within a broader social, professional, political and economic context involving multiple actors and institutions with various interests in the technology.

This metaphor can be extended to the domain of medicine, where such negotiation influences the technology's integration into routine medical practice. For example, Pap Smear technology remains one of the most widely used technologies for cervical cancer screening despite persistent problems related to its ability to accurately detect and classify disease. The Pap Smear became "the right tool for the job" for a number of reasons. Following World War II, national organizations such as the American Cancer Society and the National Cancer Institute promoted the Pap Smear as a simple,

affordable device for early cancer detection and treatment by supporting research and training for medical professionals. The Pap Smear also strengthened the efforts of obstetric-gynecologists to normalize annual check-ups into women's health care, thereby extending professional jurisdiction beyond pregnancy and childbirth. Also critical to the mainstreaming of this technology into routine gynecological practice was the feminization of cytological screening in order to keep costs low (Casper and Clarke, 1998).

Studies of abortion technology indicate that the "rightness" of the "job" itself may complicate the routinization of a particular device beyond the laboratory. Although Mifepristone (also known as RU-486), a drug that can be used to terminate first-trimester pregnancy, was available in France as early as 1988, the drug was not approved in the US until 2000 (Joffe and Weitz, 2003). Reproductive scientists and medical groups argued that RU-486 was the "right tool for the job" because it presented an effective and affordable alternative to surgical abortion. Feminist and women's health organizations also supported the drug because it offered women greater autonomy over a commonly practiced medical procedure (Clarke and Montini, 1993). Three in ten American women are estimated to terminate a pregnancy by age 45 (Jones et al., 2008). For anti-abortion groups, however, RU-486 made the reprehensible "job" of abortion entirely too easy for women and health care professionals. They successfully lobbied the Federal Drug Administration (FDA) to implement an import ban on the drug that was only lifted in 1993. Although RU-486 was released to the market in 2000, the FDA limited administration of the drug to physicians trained in surgical abortion. While this restriction has been lifted, up to 39 states currently limit surgical and chemical abortion to physicians (Gutmacher, 2013). The "rightness" of RU-486 in American medicine is inextricably linked to reproductive politics, in which anti-abortion activists have rendered the job itself—abortion—morally, legally and professionally unacceptable.

MVA is an abortion technology whose flexible capacity to induce abortion and treat abortion complications has persistently raised questions about the "rightness" of the "job" it is designed to accomplish within global reproductive health governance. Feminist and post-colonial scholars have demonstrated how reproductive technologies are embedded in transnational power relations through which international NGOs and aid agencies reconfigure population goals and practices in the global South (Atukunda et al., 2015; Carpenter and Casper, 2009; Ginsburg and Rapp, 1995; Pigg and Adams, 2005). Negotiations over MVA's "rightness" as a tool, as well as the various "jobs" it is capable of performing, must be situated within shifting conceptualizations of gender, fertility and reproduction within the field of population and development.

MVA entered the realm of global population politics during the early 1970s, when a prototype of the contemporary syringe (developed by an American who had been convicted of illegal abortion), caught the interest of USAID (Goldberg, 2009; Joffe, 1999; Tunc, 2008). Since the 1950s, the US had supported population control as a necessary precondition for social and economic development in the global South. The "explosive" fertility of "Third World women" (Mohanty, 1988) was perceived as a threat not only to development, but also to women's health and the well-being of their families (Greenhalgh, 1996; Hartmann, 1995; Kabeer, 1994). In addition to distributing contraception to family planning programs worldwide, USAID also supported research and development of abortion technology (Dixon-Mueller, 1993; Greenhalgh, 1996). MVA was "right for the job" as it was well-suited for "rudimentary" clinical settings lacking electricity (Sinding, 2001). USAID contracted an American aspiration manufacturer (Battelle Corporation) in the early 1970s to re-engineer the MVA prototype for mass production. Although abortion was not yet legal in the US, USAID had ordered 1000 MVA kits, known euphemistically as "menstrual

regulation kits,” and distributed them to health practitioners worldwide (Goldberg, 2009).

USAID's role in distributing MVA technology was short-lived. In 1973, Congress passed the Helms Amendment which prohibited support for abortion “as a form of family planning” in foreign countries (Barot, 2013). USAID subsequently transferred the manufacture and distribution of MVA kits to Ipas, an American abortion advocacy NGO (Goldberg, 2009). In 1984, the American delegation to the ICPD in Mexico City identified government intervention rather than high fertility as the primary obstacle to economic development. Support for family planning was framed in terms of protecting the “interests of families” and “preserving maternal and child health” rather than women's reproductive health and choice (Dixon-Mueller, 1993). The Mexico City Policy prohibited direct or indirect support to organizations that provided abortions, referred women to abortion providers or engaged in advocacy to liberalize abortion laws (Crane, 1994; Crane and Dusenberry, 2004; Kulczycki, 1999).

MVA resurfaced in global population politics in the 1990s when it was championed as the technology of choice for PAC in the developing world. The qualities of MVA that had made it the “right tool” for abortion in the eyes of population control advocates—safe, usable by paramedical professionals, and amenable to settings lacking electricity—were equally attractive to international agencies and national health authorities interested in implementing PAC to reduce abortion-related mortality (Curtis, 2007; Greenslade et al., 1994). By 1993, Ipas had introduced MVA to over 100 countries worldwide (Kulczycki, 1999).

Yet, MVA now operated within the boundaries of a new population paradigm that emerged during the 1994 ICPD. Known as the reproductive health paradigm, this feminist approach rejected population control as a solution to economic underdevelopment. It called instead for a broader conceptualization of *women's* health that prioritized the sexual and reproductive health, well-being and autonomy of all women, not just current or eventual *mothers* (Dixon-Mueller, 1993; Kabeer, 1994; Rance, 1997). Part of this approach urged greater attention to women's mortality from complications of unsafe abortion, often most lethal among poor and marginalized women, as a matter of social justice (Dixon-Mueller, 1993; Kulczycki, 1999). MVA was championed over D&C as the easy-to-use, woman-friendly technology in the treatment of abortion complications (Greenslade et al., 1994; PopCouncil, 1999).

Contradictions in global population discourse and policy regarding the “job” MVA is supposed to perform are related to shifts in conceptualizations of gender, fertility and reproduction that have persistently excluded abortion from global reproductive health governance since the 1970s. Although USAID supports MVA training for PAC providers, the Helms Amendment prohibits the procurement of MVA with federal dollars because it is an abortifacient (Barot, 2013). USAID support of PAC is firmly grounded in discourse on preserving maternal health and family well-being rather than women's reproductive choice (Dixon-Mueller, 1993). Furthermore, as global donors increasingly prioritize disease-specific interventions that demonstrate “cost-effectiveness,” reproductive health advocates and scientists have narrowed their focus to hospital-based, physician-controlled maternal health initiatives such as emergency obstetric care (Béhague and Storeng, 2008, 2013; Storeng and Béhague, 2014). While such interventions are important, they indicate a shift away from the comprehensive definition of reproductive health espoused by the 1994 ICPD, which emphasized the sexual and reproductive health and rights of all women, not just mothers (Lane, 1994). Indeed, global maternal health initiatives like *Safe Motherhood* and *Women Deliver* may reinforce pre-ICPD conceptualizations of reproduction in population and development discourse, in which investment in

women's reproductive health was understood primarily as a means to other ends such as child health, family well-being and economic development, rather than an end in and of itself (Basu, 2000; Dixon-Mueller, 1993; Kabeer, 1994). The justification for investing in women's health within global health governance is increasingly fixed to the particularly gendered status of mother, which is often aligned with notions of vulnerability, selflessness and abundant nurturing (Rance, 1997).

While such definitions may mobilize financial and political support for maternal mortality reduction, they reinforce the isolation of abortion from reproductive health care because they posit abortion as incompatible with motherhood, and even womanhood (Kumar et al., 2009). They also restrict legitimate MVA utilization to the treatment of abortion complications, rather than the termination of first-trimester pregnancy. MVA, a technology designed for effective abortion care, is caught between transnational population politics and funding mechanisms that purport to prioritize women's health while excluding abortion from the continuum of women's reproductive health care.

This study explores how daily utilization of MVA in Senegalese hospitals unfolds at the intersection of these contradictory policies and discourses in global population politics. In a context where induced abortion is illegal, MVA raises questions about the job that is being performed in hospitals: treating abortion complications (the right job) or inducing abortion (the wrong job). I investigate how anxieties about MVA's flexible capacity are embedded in hospital organizational practices that prioritize technological security over women's access to effective technology.

3. Research methods

I conducted an ethnography of Senegal's national PAC program in three regions of the country between November 2010 and December 2011. The study was authorized by research ethics committees at Columbia University and the Senegalese MOH. I observed PAC services for six months in three hospitals, one in each region of study. Hospitals 1 and 3 were tertiary level hospitals and Hospital 2 was a district hospital. I also conducted an archival review of the national PAC program, including norms and protocols and clinical and operations research on PAC.

I interviewed 49 health professionals: 36 health providers and 13 state health officials. I used theoretical sampling (Bernard and Ryan, 2009) to capture a range of professional and institutional perspectives on PAC. The 36 health providers, including doctors, midwives and nurses, worked in eight health facilities in the three study regions. Most of the providers (30/36) worked in the three study hospitals. Most of the providers (28/36) were women. They were predominantly midwives (23/36), followed by doctors (10/36) and nurses (3/36).

In the first region, I interviewed a total of 12 health providers. Ten of these providers worked in the study hospital. Among these participants, two held supervisory positions. The remaining two providers in this region included midwives who practiced PAC at a district health center and a community health clinic, respectively. I interviewed 11 health providers in the second region of study. Among these participants, 7 worked at the second study hospital. Two of the providers held supervisory positions and two were nurses. The remaining four participants included a physician at a tertiary hospital and a head nurse and two midwives at two community health clinics. In the third region, I interviewed thirteen health providers at the study hospital. Two of these participants included supervisory personnel. I interviewed 13 individuals from the national MOH, including two district officials, 5 regional officials and 6 central level officials. Most of the MOH officials (8/13) were women and midwives by profession. The remainder (5/13)

were male physicians.

Participants were recruited in person or by telephone and provided written consent prior to the interview. Interviews were conducted in French and recorded with a digital recorder or manually. A research assistant transcribed audio-recorded interviews. All interviews with MOH officials took place in the participants' offices. While I interviewed supervisory health providers in their offices, interviews with non-supervisory nurses and midwives often took place in the delivery room or the staff room.

I simultaneously collected and analyzed data from interviews, observation and hospital records. Observations were converted from hand-written notes to typed field notes after leaving the hospital. At each hospital, I reviewed abortion data from PAC registers and annual reports. I reviewed the total number of abortions treated, the method of uterine evacuation and the type of attending provider. With my research assistant, I transferred these data from PAC registers and annual hospital reports into a notebook. I later converted these data into descriptive statistics using Excel.

My analysis draws on two sociological paradigms of ethnographic research. I used a grounded theory approach (Corbin and Strauss, 2008) to review my field notes and interview transcripts for themes. Recognizing that I arrived at my field site having already reflected upon relevant social theory, I also used the extended case study method (Burawoy, 1998) to locate the politics and practice of PAC in Senegal within the broader context of global reproductive health politics and governance. My theoretical findings did not simply emerge from my field notes and interview transcripts. Rather, I triangulated data from observation, interviews and hospital record review with institutional PAC texts to study how various actors and agencies involved in reproductive health care in Senegal understand and practice PAC. This entailed several rounds of open and focused coding (Lofland and Lofland, 2006). While in the field, I conducted open coding by reading and re-reading field notes and transcripts. I wrote analytical memos to elaborate on concepts identified in these sources and to reflect on data obtained from hospital records and institutional PAC texts. Throughout the fieldwork period, I cross-checked data obtained from records and from observation of treatment during formal interviews and informal conversations with health providers and health officials. I discussed parallels and contradictions among the various data sources in the memos. For example, once I converted hospital data into Excel, I was able to juxtapose the persistence of digital curettage at all three hospitals with claims by health providers and health officials that MVA was the “preferred” PAC technology.

Towards the end of my fieldwork period, I had identified several major concepts. After exiting the field, I used Atlas.ti to conduct focused coding of these concepts in field notes and interview transcripts for health providers and officials. After coding for each group of participants, I created data matrices that facilitated comparison of code-related text between various types of health providers, between the three study hospitals, between health providers and health officials, and between district, regional and central MOH officials. From these matrices emerged additional analytical memos that explored various professional and institutional perspectives on each code.

4. MVA practices at three hospitals

I present findings from each hospital in separate sub-sections below. For each hospital, I compare the proportion of cases treated by MVA to other methods of uterine evacuation. I describe how the organization and availability of MVA services at each hospital compare to national and global PAC guidelines, as well as to each other. I also report how medical professionals interpret

departures from national and global guidelines within the context of the hospital setting as well as the national abortion law.

4.1. Hospital 1

Fig. 3 shows that MVA was the most frequently used form of uterine evacuation at Hospital 1, followed by digital curettage. By 2010, however, the proportion of patients treated with MVA dipped to 49%, while digital curettage accounted for approximately 37% of PAC cases. There was no record of D&C at this hospital between 2004 and 2010. When asked whether D&C was ever performed, one of the physicians insisted that this method had been virtually “banished” in Senegal since the introduction of PAC and was only rarely used at this hospital.

The organization of PAC at the first hospital was closely aligned with national and global PAC protocols. Midwives were the primary providers of PAC and offered MVA around the clock. They practiced digital curettage in the delivery room and aspiration in a separate room a few steps away from the delivery room. During my second week of observation at this hospital, I was granted permission to observe this room, known as the “MVA room.” Equipped as an operating theater, this room had a large, well-upholstered examination bed and powerful mobile lamps attached to the ceiling that midwives used during treatment. I observed six large Ipas posters on the wall with images of MVA syringes and cannulae. Some displayed testimonials from health professionals regarding their experience with Ipas material. Others listed the advantages of Ipas MVA kits, such as their 98% efficiency rate. A few displayed step-by-step aspiration procedures using the Ipas MVA syringe. Midwives circulated back and forth between the MVA and delivery rooms as they cared for patients, assisted by student midwives, nurses and nursing assistants. They filled out the PAC register at a table in the delivery room. They also cleaned and sterilized MVA material in the delivery room.

Providers at Hospital 1 stored MVA material in the MVA room, which remained unlocked to ensure timely services. The head midwife kept a spare MVA kit locked in a closet in her office. She removed damaged cannulae from the maternity ward and kept them in her office to “prevent people from using them from other purposes.” I observed both a new and an old kit in her closet.

I soon perceived a discrepancy between the practice of MVA and its inscription in the PAC register. MVA appeared in the register and providers spoke frequently of the advantages of this method. While observing a case of uterine evacuation, I realized that midwives were using *electric vacuum aspiration* (EVA) rather than MVA. They attached the cannulae to an electric aspirator. Yet, they systematically referred to this practice as MVA in conversation and recorded it as MVA in the PAC register. While the data in Fig. 3 reflect a combination of EVA and MVA procedures, it is impossible to

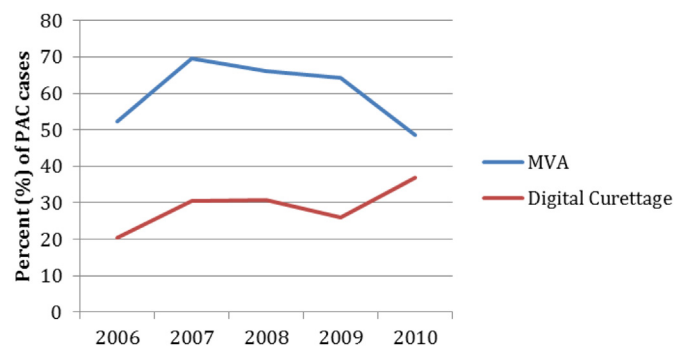


Fig. 3. Uterine evacuation at hospital 1, 2006–2010.

disentangle the two precisely because of this particular recording practice.

Providers indicated that they used EVA because it permitted more rapid and effective treatment as well as processing of equipment. A midwife explained the importance of these advantages in light of the hospital's status as a regional referral facility with a high PAC caseload:

This hospital gets all the cases in the region. It would be impossible to treat all those cases with just one MVA kit. Every time that you use it you have to decontaminate before reusing it. You couldn't do more than one a day. But we have several cases each day, so we use EVA with the cannulae. It's more practical. There are problems with the MVA kit (Midwife, Hospital 1).

With only one MVA syringe in circulation in the maternity ward, providers suggested that uterine evacuation services would be subject to delays while observing proper decontamination procedures after each patient. Although the cannulae attached to the electric aspirator also required decontamination after each use, providers had access to several cannulae of varying sizes. Another reason cited for using EVA included staff training. Most of the midwives were formally trained in digital curettage and had received on-site training in EVA (but not MVA) at the hospital. Supervisory staff members also indicated that the methods are essentially the same and both are authorized by national PAC guidelines.

Providers articulated a strong rationale for using EVA rather than MVA. Less clear, however, was why providers continued to refer to EVA as MVA. A comparison of MVA practices between Hospitals 1 and 3 offers insight into the organizational origins of this misnomer. Both were tertiary level hospitals with a separate room for MVA. Two midwives were assigned to both night and day shifts. Midwives at both hospitals continued to use digital curettage in spite of the availability of aspiration technology. In both hospitals, most midwives were not formally trained in MVA. The main difference in MVA provision was that midwives performed MVA at Hospital 1 while physicians performed this service at Hospital 3. Given the other similarities in the organization of MVA provision, what accounts for the use of EVA rather than MVA in Hospital 1?

Hospital 1 providers explained that a high PAC caseload fostered the need for a faster method of aspiration. Fig. 4 shows that Hospital 3 treated more abortions than Hospital 1 between 2006 and 2009. To be more precise, the average monthly abortion caseload during this period was nearly three times higher at Hospital 3 (128) than Hospital 1 (42). If a high PAC caseload alone accounted for the use of EVA at Hospital 1, then we might expect providers at Hospital 3 to use this method. Yet, Fig. 7 shows that EVA accounted for very little aspiration at Hospital 3.

There is a strong possibility that the *proximity* of each facility to the MVA supply center in Dakar significantly shaped aspiration practices. Its location in the same region as the MVA supply center facilitated access to this technology at Hospital 3. In contrast, Hospital 1 was located at least a four hour drive away from this center. To adapt to this constraint while continuing to offer quality aspiration services, Hospital 1 used Ipas cannulae with an electric aspirator rather than an Ipas syringe.

4.2. Hospital 2

Fig. 5 shows that between 2004 and 2010 at Hospital 2, the proportion of cases treated with MVA increased from 35% to 77%. At the same time, utilization of D&C started to decline in 2005 and the method was no longer reported by 2007. While digital curettage was used in 65% of cases in 2007, it accounted for about a quarter of cases by 2010.

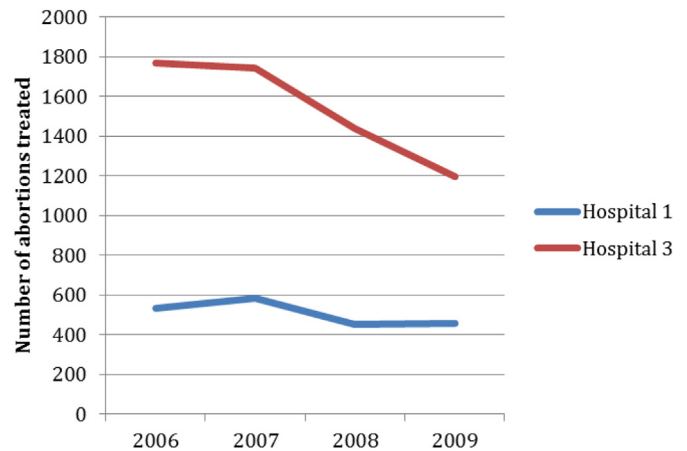


Fig. 4. Number of abortions treated in hospitals 1 and 3, 2006–2009.

Midwives at Hospital 2 were the primary practitioners of PAC. Similar to Hospital 1, they practiced PAC everyday around the clock. Unlike Hospital 1, Hospital 2 did not have a separate MVA room. Midwives performed both digital curettage and MVA in the delivery room, which was equipped with three beds. I frequently observed midwives treating women who were delivering and women who were experiencing complications of abortion at the same time in this room. With neither air conditioning nor fans, providers usually kept the windows open for air circulation as well as extra light during daylight hours. Midwives cleaned and sterilized the MVA device in the delivery room. They completed the PAC register in a small room next to the delivery room where patients were triaged and examined upon arrival.

The head ob-gyn complained about the continued practice of PAC in the delivery room. She showed me an empty room next to her office, a few feet from the delivery room. Although this separate room for MVA had been approved by district health authorities, it did not yet have an appropriate drainage system. The physician attributed the continued delay in installing the drainage system to a “lack of political will” on the part of district authorities.

I observed one MVA kit in the delivery room at this hospital, displayed in Fig. 6, that was available to all midwives. Midwives indicated that although just one kit was in circulation, there had previously been a separate kit for each of the four shifts. They expressed concerns about deteriorating MVA material as well as the difficulty of ensuring appropriate sterilization procedures with just one syringe:

The syringe should only be used 25 times before replacement, but sometimes we use it more than double that amount. We put vitamin oil on it now to lubricate it. We just have to make do. We

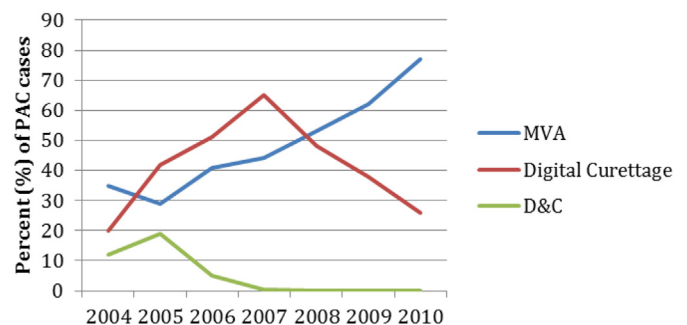


Fig. 5. Uterine evacuation at hospital 2, 2004–2010.



Fig. 6. MVA kit at hospital 2.

use it much more than that. It really is a problem. It often doesn't work (Midwife, Hospital 2).

If each midwife had her own MVA kit, it would be better. With four kits, each midwife could take care of sterilizing her material properly. Now, there's just one kit in circulation. What is the condition of the material in that box? It's not at all agreeable (Midwife, Hospital 2).

The head ob-gyn offered the following explanation for her circulation policy:

I received a donation of kits recently from the Ministry. But I keep these in my office. I have 4 kits. Before, I would give one kit to each team. But they were broken very quickly, and then if one breaks and I replace it for one team I have to replace it for every team. So now I leave just 1 kit for all 4 teams, and I replace it when needed. I think the current system in place is fine. The material shouldn't be available to everyone (Physician, Hospital 2).

A district health official echoed the need to keep MVA secure:

There shouldn't be boxes of MVA material just hanging around the delivery room. We don't want everyone to have access to that (District health official, midwife, Region 2).

The average lifespan of the MVA syringe is between 25 and 50 procedures. While some aspirators have reportedly lasted for up to 100 procedures with careful utilization, the most conservative estimated lifespan is 25 (Hudgins and Abernathy, 2008). During the first month of observation at Hospital 2, midwives treated 43 out of 47 PAC cases with MVA. During the second month, they treated 31 out of 36 PAC cases with MVA. At no point during this two-month period, in which the syringe was used for a total of 74 procedures, was the syringe replaced. The quality of this syringe was thus possibly compromised. I observed midwives placing a lubricant on the syringe prior to utilization. There was also medical tape wrapped around the head of the syringe to keep it in place. With only one syringe in circulation, cleaning and sterilization of the

material after each procedure would also lead to delays in service when multiple patients required MVA.

4.3. Hospital 3

Fig. 7 shows that by 2009, nearly three quarters (71%) of PAC cases at Hospital 3 were treated with MVA. The practice of digital curettage declined by half from about 31% of cases in 2006 to 13% in 2010. D&C declined from about 14% in 2006 to 7% in 2008, but by 2010 rose to about 16% of cases. EVA was the least frequently used method of uterine evacuation, accounting for less than 5% of cases.

Similar to Hospitals 1 and 2, midwives practiced digital curettage in the delivery room. MVA was performed in a smaller room, located several feet from the delivery room. Like the MVA room in Hospital 1, there was one examination bed in the room. Although there was a mobile lamp, I observed a physician instruct a student physician to use the light on his cell phone for additional light during MVA procedures. Next to the MVA room was another small room where women could lay down to recover following treatment. In contrast to the delivery room, which was equipped with ceiling fans, this room had an air conditioning unit. The windows were generally closed and covered with drapes.

Unlike Hospitals 1 and 2, Hospital 3 offered MVA only during the day shift on weekdays. Women who arrived late afternoon, at night or on weekends were treated with either digital curettage in the delivery room or EVA or D&C in the operating theater. MVA services coincided with the presence of senior gynecologists at the hospital during the week. This arrangement was implemented when PAC was first piloted in 1997. At the time of my study, the physician responsible for implementing PAC was a district official and therefore no longer directly responsible for managing the maternity ward. Nevertheless, his decision to limit MVA services to this time period remained in place and was explicitly tied to his concerns regarding off-label utilization for induced abortion:

The service ends at 2 pm because we have to leave the material in the hands of trustworthy men. I put everything in place now so that tomorrow I won't be exposed. So if someone wants to use the material for illegal abortion, he does it at his own risk. The night shift is uncontrolled. There are only interns. They can take the material into some corner and do their abortion, whereas with D&C, you need two or three people. That's why I forbade MVA after 2 pm (District health official, physician, Region 3).

In addition to limiting MVA services to day shifts on weekdays, Hospital 3 limited the practice of MVA to physicians. Midwives at Hospital 3 only practiced digital curettage in the delivery room. Physicians practiced MVA in the MVA room and EVA and D&C in the operating theater. Table 1 shows that in 2009 and 2010, doctors performed approximately three quarters of all PAC procedures. This

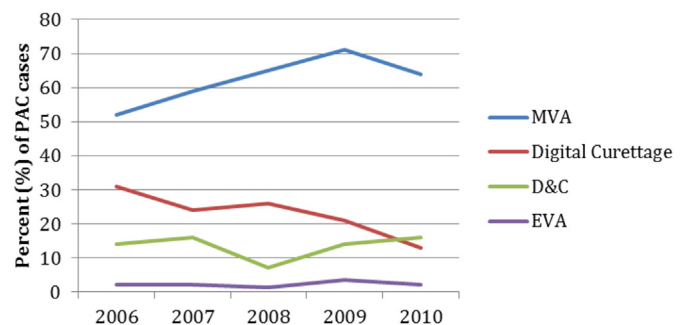


Fig. 7. Uterine evacuation at hospital 3, 2006–2010.

division of labor differs significantly from that of Hospitals 1 and 2, in which midwives treated nearly all PAC cases.

Supervisors at Hospital 3 attributed this arrangement to the facility's identity as a training site for physicians and a lack of midwives with formal training in MVA. Other providers suggested that it reflected the former head gynecologist's concerns regarding MVA abuse. A midwife described the physician's reluctance to authorize midwives to use MVA:

There are midwives trained in MVA here, but the former head doctor didn't want midwives to do MVA, because he didn't want to give them access to the material so that they do illegal abortion to make money. He said as much here, in front of everyone. He said there were some midwives he trusted, and others he didn't (Midwife, Hospital 3).

In spite of these restrictions, a paramedical provider (a nurse's assistant), was primarily responsible for the MVA room where the device was used and stored. This provider generally unlocked the room between 9 and 10 am and stayed until the physician had performed all scheduled aspirations for the day, usually by around 3 pm. She then locked the room until the next morning. From time to time, she would lock the room during the day shift while she ran errands in other parts of the hospital. Occasionally, my assistant and I would find the room unlocked and unattended. She prepared the syringe device for physicians prior to each patient and disassembled, cleaned and sterilized it after treatment. She prepared intravenous therapy and administered injections to patients prior to MVA treatment.

The nurse's assistant also replaced MVA material. I observed two syringes in use in the MVA room. One day, three new kits arrived. She logged them into a notebook titled *Materials Received* and explained that she would replace the two current syringes with the new ones. The following morning, she had replaced the two kits and joked with the attending physician that he would "inaugurate the new material." During an informal conversation, she revealed that a physician had shown her how to do MVA and had let her perform the procedure on a patient on at least one occasion. We observed her discussing with one physician the MVA techniques of another physician, complaining that he conducted the procedure "too long" and "caused unnecessary bleeding."

When asked what she did with the old material, the nursing assistant indicated that she "threw it away." The head midwife also reported that old kits were "destroyed" and then "discarded." She echoed the former head gynecologist's concerns regarding the importance of keeping MVA material secure to prevent personnel from abusing the technology, citing "two or three" instances in which providers were caught using MVA to conduct illegal abortion in the hospital. While she explained that these situations were rare, the current organization of MVA services was designed to preempt such occurrences.

Supervisory health professionals voiced discomfort with the organization of MVA services at Hospital 3. The district coordinator

for reproductive health, a midwife, reported that regional and central level health authorities frequently criticized the hospital for not offering MVA services around the clock. The head gynecologist and midwife acknowledged that in order to increase women's access to MVA, midwives had to be authorized and trained to use the device. Although the head gynecologist explained that he soon planned to train some midwives in MVA, my fieldwork at this site ended before such training began.

5. Discussion

My research highlights important tensions between institutional discourse on MVA as the "preferred" PAC technology and daily MVA practices in Senegalese hospitals, and illustrates the implications of these tensions for women's health. The MOH and its partner NGOs have championed MVA as the method of choice through operations research and donation of equipment. The MOH integrated MVA into national norms and protocols for reproductive health and trained and closely supervised health professionals in the utilization of this device (CEFOREP, 1998; Cissé et al., 2007; Diadiou et al., 2008; Dieng et al., 2008; EngenderHealth, 2003; PopCouncil, 2007; Thiam et al., 2006). In Senegal, PAC and MVA are nearly *inseparable*. A similar "non-fungibility" was observed between the Pap Smear and its "arena of practice" in American cervical cancer screening, including laboratories, the obstetric-gynecological profession, cytologists, the American Cancer Society, the National Institutes of Health, and women's health groups (Casper and Clarke, 1998). Institutional PAC texts, including guidelines and operations research reports, differentiate between PAC (a set of services for treating abortion complications) and MVA (the technology of choice for uterine evacuation). Nevertheless, MVA is widely understood as an integral part of PAC. A district level official described the close relationship between MVA and PAC:

PAC is a package: it's MVA, counseling, family planning and the community aspect, these are the elements ... And if the strategy is well applied, it goes without saying that there will be a health impact (District health official, physician, Region 3).

MVA is understood and promoted by medical providers, health officials and NGO personnel as a key technological component of the state's strategy to reduce maternal mortality and morbidity, precisely because of the technological features that distinguish it from uterine evacuation methods such as D&C and digital curettage. Unlike D&C, MVA can be used by non-physicians at lower levels of the health system, thereby increasing rural women's access to this device. MVA is also more effective than digital curettage, a method for which nearly all midwives have received formal training, but that is perceived as "archaic" by some health professionals.

The inseparability of MVA from PAC is further reinforced by institutional PAC practices. The MOH requires health facilities to report the total number of PAC cases as well as the proportion treated with MVA. It does not require hospitals to report the proportion of cases treated with D&C or digital curettage. Furthermore, the MOH has not promoted just *any* MVA kit, but the MVA kit manufactured by Ipas (Dieng et al., 2008; PopCouncil, 2007). Prior to launching a formal PAC program in Senegal in 2008, Ipas donated MVA kits to the MOH. Ipas is currently the sole supplier of MVA in Senegal.

In spite of MVA's embeddedness within the national PAC program, the current MVA supply system, operated through a regional research agency in the capital city of Dakar rather than decentralized to district and regional outlets of the national pharmacy, reflects continuing institutional concerns about MVA's capacity to terminate pregnancy. The prioritization of MVA in institutional

Table 1
Abortions treated by provider type at hospital 3, 2009 and 2010.

Type of provider	2009		2010	
	N	%	N	%
Doctors	1072	73.1	848	77.6
Midwives	241	16.4	179	16.4
Joint	23	1.6	4	0.3
No Information on type of provider	131	8.9	60	5.4
Total abortions treated	1467		1091	

discourse regarding PAC masks the challenges faced by individual health facilities in mainstreaming this device into routine obstetric care. The slippage between EVA and MVA at Hospital 1 illustrates this tension between institutional MVA discourse and practice. The distance between Hospital 1 and the MVA supply center in Dakar hampered providers' capacity to replace MVA syringes in a timely fashion. To ensure quality PAC treatment, providers used a different method of aspiration. The tendency to refer to EVA as MVA reflects the *ubiquity* of MVA in institutional PAC discourse. Although MVA may be the "preferred" PAC technology, it is not the most *accessible* technology precisely because of institutional concerns regarding off-label utilization. Hospital 1 also raises questions about the accuracy of MVA reporting in national health information systems. If other hospitals have adopted similar practices to navigate the centralized supply system, then national MVA utilization may be over-reported. The MOH's practice of collecting data only on MVA and not other methods of uterine evacuation may further obscure challenges experienced by health facilities in obtaining and using MVA.

Institutional anxieties about MVA's capacity to terminate pregnancy are further reproduced by informal MVA policies at individual hospitals that contradict national and global PAC guidelines and contribute to the persistence of less effective treatment methods such as D&C and digital curettage. D&C holds a greater risk of complications, is more expensive and requires a greater period of hospitalization than MVA. While digital curettage generally costs about half the price of MVA, this method carries a greater risk of infection, and may not always be accompanied by pain relief medication. Although MVA was the method of uterine evacuation used most frequently at all three hospitals, digital curettage accounted for up to 37% of PAC cases at Hospital 1 and 25% at Hospital 2. A physician at Hospital 2 expressed concern that in spite of efforts to encourage midwives to use MVA, many continued to use digital curettage because it was "easier" and "faster" than MVA. Yet, this physician's one kit circulation policy may have fostered the persistence of digital curettage. Faced with an unwieldy MVA syringe requiring assemblage, disassemblage and sterilization with each use, midwives may indeed favor digital curettage, a method that requires minimal equipment. This policy may also have increased the likelihood of exposing women to overused MVA syringes. At Hospital 3, informal policies designed to prevent off-label utilization of MVA relegated women who arrived at night or on weekends to treatment by D&C or digital curettage. They also removed MVA from the hands of midwives, who are not only more numerous than gynecologists at this hospital but also more directly involved in around the clock care of patients in the maternity ward. Physicians performed nearly three-quarters of PAC procedures while midwives were restricted to practicing digital curettage. Paradoxically, these policies appear to render MVA the "wrong" tool for the job of PAC because they edge the device outside the boundaries of standard obstetric practice.

The persistence of less effective uterine evacuation methods, in spite of institutional discourse on MVA as the "preferred" technology, suggests a disregard for women's health rooted in broader gender inequalities. Preventing the abuse of MVA appeared to trump ensuring women's access to the best available uterine evacuation technology at all times. Yet, providers' concerns about securing MVA, as well as the informal policies designed to prevent off-label utilization of the device, were very much at odds with the actual storage and management of MVA, including paramedical professionals' considerable access to this device at all three hospitals. At Hospitals 1 and 2, MVA material remained unlocked and available to ensure access for multiple shifts of midwives. A paramedical provider at Hospital 3, the same facility where certain providers were alleged to have used MVA to illegally terminate

pregnancy, had considerable access to the device in addition to opportunities to observe and participate in its utilization. If health managers were truly concerned about off-label utilization of MVA, surely they would further limit access to the technology by paramedical providers. MVA policies in hospitals may thus be more representative of compliance with institutional discourse on securing MVA—a discourse that is evinced by the highly centralized MVA supply system—than genuine concern regarding off-label utilization. That demonstration of such compliance should outweigh ensuring women's access to effective technology suggests a troubling deprioritization of women's bodies, comfort and health.

These gendered health inequities are not unique to Senegal. Instead, they reflect continuing debates not only about what MVA is supposed to do, but also about the status of women within the modalities of global reproductive health governance that gave rise to the PAC model in the first place. Population control advocates understood MVA as one of several "right tools" for regulating the precariously abundant fertility of women in the global South. While the gender ideology of the population control paradigm framed women's primary contributions to social and economic development in terms of their roles as mothers, the dire nature of the population problem called for technological solutions such as abortion that seemingly contradicted this emphasis on motherhood. Shifts in global population policy to the more woman-centered approach of reproductive health deemed MVA the "right tool" for quality and humane PAC treatment. Although the right to safe abortion was not integrated into the ICPD Platform of Action, ensuring women's access to effective technology for treating abortion complications was understood as a matter of social justice.

The exclusion of abortion from global reproductive health governance suggests the persistent marginalization of women's sexual and reproductive health needs and agency beyond motherhood. In countries with active PAC programs, this exclusion, coupled with national prohibitions of abortion, limits the political and professional boundaries not only of acceptable MVA utilization, but also of PAC itself, to the treatment of complications of miscarriage. In another paper, I demonstrate how Senegalese medical professionals produce an account of PAC that suggests that most patients have experienced complications of miscarriage rather than induced abortion (Suh, 2014). In Burkina Faso, state health officials and providers support PAC as a matter of medical ethics, but do not favor the revision of legal restrictions on abortion (Storeng and Ouattara, 2014). In Bolivia, physicians refer to MVA as "the saving women device" to strengthen the technical and normative alignment between their PAC activities and the national Safe Motherhood initiative (Rance, 2005).

Laws and policies that reject abortion as a legitimate form of reproductive health and isolate abortion technology from routine obstetric practice reinforce the marginalization of women's sexual and reproductive health in national and global health policies and programs. They also fall short of the woman-centered population paradigm of the 1994 ICPD, which calls on governments to ensure access to safe, effective, and affordable services and technology related to sexual and reproductive health. My research demonstrates a pressing need for national PAC programs in countries like Senegal to re-evaluate local implementation of the global PAC model in ways that prioritize women's access to the best available care. Such revisions might include integrating MVA into the national medical supply system and into national training curricula for nurses and midwives. A recent study demonstrated the effectiveness of Misoprostol in treating incomplete abortion at community health posts in Senegal (Gaye et al., 2014). This drug should also be available through the national medical supply system as a form of PAC treatment.

This research also calls on actors within global reproductive health governance to resolve contradictions in funding policies that purportedly support reproductive health but not safe abortion. For example, American population assistance supports family planning, obstetric care and PAC, but not induced abortion (not even in cases of rape or to preserve the woman's life). While the global PAC model has deemed MVA more effective than D&C, American aid dollars cannot be used to procure this technology for Senegal's PAC program. In 2009, President Obama rescinded the Mexico City Policy. However, the 1973 Helms Amendment continues to prohibit the support of abortion-related services and technology. This Amendment should be reinterpreted to permit the purchase of MVA for the very PAC programs supported by USAID around the world. It should also be revised according to existing domestic abortion legislation such as the Hyde Amendment of 1977, which permits federal aid for abortion in the case of rape or to preserve the woman's life (Barot, 2013). This dissonance in global health governance discriminates against women and reproduces gendered health inequities in national and global reproductive health programming and policies.

A multiplicity of people and institutions negotiate the "rightness" of a device for a particular task within the broader social, political and economic context of its utilization. The practice and circulation of reproductive technologies are often embedded in social debates about gender, sexuality, fertility and motherhood. Anxieties regarding the very "job" abortion technology is designed to accomplish may complicate its integration into obstetric practice. My research illustrates how MVA's dual capacity to treat abortion complications and terminate pregnancy has challenged the very meaning of PAC, the "job" it purports to accomplish in Senegalese hospitals. I demonstrate how the formal and informal policies designed by health officials and medical providers to negotiate MVA's flexible capacity within the context of Senegal's abortion law have limited women's access to the very device championed by the state as the "preferred" technology for PAC. In Senegalese hospitals, MVA is only the "right" tool for PAC under a limited set of circumstances that expose women to overused technology and less effective uterine evacuation methods. Such exposure, when effective technology is available, illustrates a disregard for women's health rooted in broader gender and economic inequalities. Medical providers and state health officials deprioritize women's access to safe technology as they negotiate compliance with the global PAC model, the national abortion law and USAID funding policy. These gendered inequalities must be situated within continuing debates at global levels of reproductive health governance regarding women's sexual and reproductive well-being, rights and autonomy, as well as the extent to which donor agencies and national governments are prepared to recognize women's contributions to social and economic development beyond motherhood.

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