1-5-2009

Providing Providers: Abortion Training for Physicians in the United States, 1920-2007

Soledad Tarka Ayres
Yale University

Providing Providers: Abortion Training for Physicians in the United States, 1920-2007

A Thesis Submitted to the
Yale University School of Medicine
in Partial Fulfillment of the Requirements for the
Degree of Doctor of Medicine

by

Soledad Tarka Ayres

2008

Abstract

This work was designed to investigate the teaching of induced abortion to allopathic medical doctors in the twentieth-century United States. Elective termination of pregnancy is an extremely common procedure in the United States (1). While abortions have been and continue to be performed by nurses and midwives as well as by physicians, the training of medical doctors is of particular interest. Their lengthy formal training and historical stature as a highly educated group have garnered a respect in the public eye and an image as safe and knowledgeable providers, even where abortion training might have been lacking. This project aimed to determine the exposure of medical students and residents to abortion procedures in their routine course of training.

A literature search was conducted, including journal articles, books, and conference proceedings from 1920 to 2007. Particular attention was paid to reports of medical student and resident didactic and clinical experience with abortion. Resident experience with management of incomplete abortions was considered as an additional source of procedural experience prior to legalization.

The most surprising finding was that residents might have had greater procedural experience prior to legalization of abortion. In the era of illegal abortion, many women presented to hospitals with incomplete abortions, which were managed using techniques that could also be employed to interrupt a stable pregnancy. Residents thus had more procedural training and experience with complications. Once abortion was legalized, these cases dropped dramatically. Since most abortions took place and continue to take place in freestanding outpatient clinics, training physicians have little exposure. So while training in pregnancy options counseling may now be available where it was previously

lacking, the technical skills needed to provide safe and effective terminations may be more difficult for residents to acquire.

This work would not have been written without the support and insight of many people. Many, many thanks to Naomi Rogers, my advisor, for her feedback, to Mark Gentry and the Cushing/Whitney Medical Library for research advice and assistance, to Thomas Ayres for his comments, and to Maggie Hatcher for lunch and a CD.

Table of Contents

Introduction

Elective termination of pregnancy is an extremely common procedure in the United States (1). It is estimated that nearly half of unintended pregnancies result in abortion. In 2002, nearly 1.3 million procedures were reported (2). Prior to the legalization of abortion, women sought terminations from providers of diverse backgrounds, ranging from midwives and physicians to those with no formal medical training. Legal restrictions on abortion left women vulnerable to increased complications, including mortality. Open access to terminations from licensed health providers following *Roe v Wade* resulted in a drop in morbidity and mortality from the procedure.

The training of physicians is of particular interest because as a group they have been regarded historically as being adequately prepared to provide safe procedures. While many physicians did provide pregnancy terminations to their patients, even in the era of criminalization of the procedure, they were not the only source. For millennia, reproductive care had fallen into the domain of women. Women turned to their mothers, aunts, and sisters, and to midwives for infertility counseling, for prenatal care, for labor and delivery, and for ridding themselves of unwanted pregnancies. The nineteenth century United States underwent a major shift in the provision of care from traditional female midwives to the overwhelmingly male organized medical profession. Many women continued to seek abortions from midwives and nurses as well as from their physicians into the twentieth century. Because physicians had the most formal medical training and because of their historical stature as a highly educated group, they were often assumed to have the necessary training to ensure safe and efficient abortions even where

it might have been lacking. This project aimed to determine the exposure of medical students and residents to abortion procedures in their routine course of training.

A literature search was conducted, including journal articles, books, and conference proceedings from 1920 to 2007. Particular attention was paid to reports of medical student and resident didactic and clinical experience with abortion. Resident experience with management of incomplete abortions was considered as an additional source of procedural experience prior to legalization.

The most surprising result was that residents might actually have had greater procedural experience prior to national legalization of abortion. In the era of illegal abortion, many women presented to hospitals with incomplete abortions, which were usually managed using techniques that could also be employed to interrupt a stable pregnancy. Residents thus had more procedural training and experience with complications. Once abortion was legalized, these cases no longer appeared in hospital emergency rooms, and since most abortions took place and continue to take place in freestanding outpatient clinics, resident physicians in training have little opportunity for exposure. So while training in pregnancy options counseling may now be available where it was previously lacking, the technical skills needed to provide safe and effective terminations may actually be more difficult for residents to acquire.

It is worth clarifying some of the vocabulary used here in reference to pregnancy termination. The term *abortion* is defined medically as “expulsion from the uterus of an embryo or fetus prior to the stage of viability” (3). It includes both provoked fetal loss, as in the lay usage of abortion, and unprovoked or spontaneous abortion, as in the lay term miscarriage. In this work, abortion is used in the lay sense to refer to an intended interruption of pregnancy, except where otherwise specified. The term *therapeutic*

abortion is used to refer to the legal interruption of a pregnancy by a physician, especially as sanctioned by the hospital committees of the 1950s and 1960s. Sometimes an intended termination is also called an elective abortion. An *incomplete abortion* is used, as in the medical sense, to denote a fetal loss without complete expulsion of all tissues, and may refer to a spontaneous or provoked process.

Methods

The focus of this work was the training of medical doctors in the provision of abortion in the United States between 1920 and 2007. Subjects of study included physicians training in traditional allopathic medical programs. Because the bulk of procedural training occurs in the United States during the years of residency, most of the material focused on the experience of resident physicians with abortion, although information on abortion training in medical school was included as well. Although this work was not intended to be limited to any particular specialty, emphasis was placed on the training in obstetrics and gynecology programs, the field historically bearing chief responsibility for abortion provision. The training of family physicians was also considered in the last few decades as abortion was integrated in their curricula.

A review of relevant literature published between 1920 and 2007 was carried out using Medline and Web of Science. Search terms included abortion, therapeutic abortion, criminal abortion, and education. Articles from foreign journals and those relating to spontaneous abortion were excluded. Because trainees had little official experience with elective abortion prior to 1971, information on management of

incomplete abortion was included. Bibliographies of abortion resources from the National Abortion Federation and from Medical Students for Choice were used as well, as were articles referenced in database search results. A manual subject index search of the American Journal of Obstetrics and Gynecology was conducted between 1920 and 1970 for abortion. Other materials considered included the published proceedings from conferences and books on the subject of abortion. Official requirements of the Accreditation Council for Graduate Medical Education (ACGME) for residency accreditation were downloaded from the Council website.

Data obtained in the manner described were analyzed chronologically. The time period of interest was divided into three eras. The first era of 1920 to 1945 reflected a period of gradually growing openness toward the topic of birth control in the discussion of reproductive health. The second era of 1946 to 1970 coincided with the rise of the hospital therapeutic abortion committees established to authorize or deny abortions. The third and final era of 1971 to 2007 included the period of legalized elective abortion following the Supreme Court decision in *Roe v. Wade*. In order to make direct comparisons between training in different eras and in different programs, numerical data were standardized when sufficient information was available, to arrive at an estimated number of procedures performed per resident per year.

During the pre-1971 period, in which abortion was illegal except for certain medical indications, these results probably provide a relatively accurate picture of the official curricular training offered to all students and residents. Comments made at conferences offer additional information about a procedure that was taboo within the medical community. What is missing from a search of published material is the additional unofficial training that may have been sought out and received relatively

secretly by certain individuals. It is not difficult to imagine that a trainee interested in learning more about abortion might have found mentorship during their training and gained additional experience that was outside the scope of the standard curriculum, and that such experiences would not be formally published in the literature of the time. Following legalization of abortion, there is much more open discussion of the topic in the literature. An investigation of further training sought and obtained by training physicians prior to abortion legalization would probably best be addressed through structured interviews or surveys of doctors training in that era.

1920-1945

The twentieth century was a momentous time in the history of reproductive politics. In the 1910s, the birth control movement began to advocate for increased development of and access to contraception. The movement gained national prominence in the 1920s. Early proponents, such as Emma Goldman and Margaret Sanger, saw birth control within the context of class struggles. They framed the need for family planning as a way for the working classes to take full control of and thereby limit labor production, and to improve their own finances. Highly controversial, both within and outside of the professional medical community, the movement nevertheless could claim some supporters among the ranks of physicians. Even while the AMA remained officially opposed to birth control until 1937, prominent figures such as Robert Dickinson and Frederick Taussig, both obstetrician-gynecologists, produced numerous publications on methods of birth control (4).

Although birth control had vocal advocates within nursing and medicine, abortion remained divorced from the movement for several decades. Whether motivated by their own moral beliefs or by a fear of undermining progress in contraceptive access, advocates were careful to separate the cause of birth control from that of abortion (4). The movement thus adhered strictly to the view of conception as the beginning of life, and promoted only those methods designed to prevent pregnancy prior to conception.

The prevailing depiction of induced abortion within the medical literature remained that of an immoral procedure performed in violation of the ethical code of a physician. A provoked fetal loss was still denominated a "criminal abortion" within the literature. The discussion of induced abortion remained one framed within the context of medical ethics. If induction of abortion was denounced as immoral, the literature was often eloquent in its derision of physicians who performed the procedure. Criminal abortionists were "shady physicians" (5) practicing a "nefarious trade" that "prostitutes [the] profession" (6). "Offending physicians" carried out this "abortion evil" (7) and were described as "unworthy persons, who by some misadvertence [sic], have been admitted into the sacrosanct ranks of those to whom proper moral and ethical standards…has [sic] been providentially inborn" (8). Milder descriptions appeared in the papers of those supporting therapeutic abortion. One author stated that the physician "who terminates a pregnancy before the fetus is viable assumes a heavy responsibility" (9). While this description condones the action of the aborting physician, it still depicts him in a negative light by association with so distasteful a procedure. Absent from the literature are positive descriptors of those saving lives by their actions, even as therapeutic abortion was justified for the mother's health.

It should be noted that even while advocating against elective abortion, some physicians claimed autonomy in determining who should qualify for the procedure on a medical basis. In a discussion of the 1934 *JAMA* papers on indications for therapeutic abortion, Taussig stated in no uncertain terms that the possibility of abortion should remain open to the discretion of the physician based on the clinical and social picture of the patient (10).

If elective abortions were excluded from the domain of the medical practitioner, abortion retained a place in medical training, as a physician would be expected to competently perform a uterine evacuation when medically indicated. This included removal of a dead fetus in a missed abortion, in which fetal demise occurs and the uterus fails to expel the tissue, as well as removal of non-fetal tissue, such as a hydatid mole or a hemorrhage (11). This also included the so-called therapeutic abortion, which was generally accepted as necessary under particular circumstances. While there was no question over the need to remove non-fetal material from the uterus, the termination of a viable pregnancy came under much greater scrutiny and controversy remained over strict definition of circumstances requiring a therapeutic abortion. Discussion of therapeutic abortion within the literature focused predominantly on determining the specific indications for its practice, rather than debate over whether the procedure was ever justified.

While there existed no single definitive or consensus list of indications for a therapeutic abortion, there were certainly conditions that were more readily accepted, recurring throughout the relevant literature. A 1927 *AJOG* article on a method of therapeutic abortion listed common indications based on disease in several organ systems. These included acute pulmonary tuberculosis, a vague mention of cardiac

disease, nephritis, spinal cord tumors, epilepsy, hyperthyroidism, uterine fibroids, and acute arthritis (12). The fact that the authors were able to produce such a list without long rationalization supports the general acceptance of the various pathologies as cause for termination.

A series of papers presented at the 1934 annual meeting of the AMA sought to define specific criteria for termination from the standpoint of several experts in internal medicine, neurology, and ophthalmology. The aim of these papers was to establish clear parameters for intervention, as the physician would neither want to place a woman in danger by allowing her to proceed with a risky pregnancy, nor much less perform an unwarranted abortion. The prevailing view of the establishment was best described as cited by Cheney (10): “The induction of abortion should be undertaken as reluctantly as one would commit justifiable homicide.” Abortion was a procedure of last resort, a distasteful treatment for a woman medically unable to proceed with pregnancy who had failed prior interventions.

An abortion could be justified for a woman with tuberculosis only if she experienced active disease prior to the third trimester (13). The issue of tuberculosis had been a recurrent topic in the literature, with debate over severity and distribution of disease. A case series of thirty-eight patients published two years previously had argued for therapeutic abortion in women with tuberculosis except those with severe disease who were believed to be unlikely to benefit from termination (14). According to the author (13), a quarter-century earlier, tuberculosis in any form was always a cause for termination.

Congestive heart failure was an indication for a woman who met the New York Heart Association criteria for class 2B or 3 disease (15). Renal disease was an indication

in progressive cases with worsening albuminuria or nephrosis. Nephritis was a consideration only if present at conception or activating early in pregnancy and refractive to treatment (16). The development of retinitis in a patient with hypertensive toxemia warranted termination because of the risks to vision and to the general vascular system (17). Finally, a number of psychiatric diagnoses were used most controversially as cause for therapeutic abortion. Cheney (10) refuted justifications based on epilepsy, multiple sclerosis, myasthenia gravis, polyneuritis, or syringomyelia, all of which had been previously cited, and offered only depression refractory to treatment as reason for termination.

The conditions enumerated at the 1934 meeting continued to comprise the most common reasons given for therapeutic abortion. A 1936 paper presenting two hundred patients selected for therapeutic abortion by means of a new technique reported chronic cardiac disease, pulmonary tuberculosis, and Graves' disease as together comprising the indications in two-thirds of the patients. Other conditions mentioned included nephritis, "malignant psychoneuroses," "mental deficiency," malignant hypertension, severe diabetes, and asthma, as well as more rare diagnoses (18). A 1939 hospital review showed pulmonary tuberculosis, heart disease, and nephritis leading the list of diagnoses indicating abortion. Other causes included hypertension, preeclampsia, hyperemesis, and several other rarely used conditions (9). A 1944 review of therapeutic abortion described many of these same conditions as commonly used indications for termination. Severe hypertension, toxemia of pregnancy (now called preeclampsia), congestive heart failure, and pulmonary tuberculosis were listed, as well as hyperemesis gravidarum (8). Absent from the literature are clear studies indicating medical need for abortion. The same

conditions appeared repeatedly as cause for intervention, without solid evidence to support their use.

The lack of uniform criteria for therapeutic abortion highlighted the controversy surrounding the procedure. It was generally accepted within the literature that a termination of pregnancy could become necessary for the survival of the woman. However it was not clear exactly when such a drastic measure became indicated, and the practices of individual physicians undoubtedly differed in the threshold used for inducing abortion. On one side were the doctors opposed to abortion in any circumstance. One physician arguing this view claimed there was "always a way to avoid [therapeutic abortion]" (10). On the other side were those who not only accepted the medical indications for termination, but who also believed socioeconomic factors played a role. Taussig assumed a broad interpretation of the therapeutic abortion, stating that in addition to the strictly medical indications, the physician "should be guided…[by the] individual patient…her economic status…the hereditary and constitutional factors in the particular case" (10). One physician admitted to "consideration of…not only the patient's medical condition, but her surroundings and her social and economic status" (8). The conclusions of a 1940 paper by three physicians stated that abortion should be performed to protect the mother's life or health "or to prevent the transmission of serious hereditary defects" (9). These last statements blur the line between the medical therapeutic abortion and the eugenics movement of the time, and suggest that some physicians may have been motivated by the latter in their positions on abortion.

When the practice of therapeutic abortion itself was called into question, arguments centered on ethics. In a discussion of abortion, one physician asked, "Since when does the medical profession not need to recognize ethical standards?" (8) At best,

it was described as a necessary evil, performed to preserve maternal health. At an earlier conference, the chairman called therapeutic abortion "a confession of our medical ignorance, for we should ultimately have sufficient knowledge to save life without destroying it" (19). A 1940 paper, published in the *American Journal of Obstetrics and Gynecology* (*AJOG*), called it simply "a necessary, but relatively infrequent, obstetric procedure" (9). At times, even preservation of maternal life was not considered sufficient cause for induced abortion.

In a paper presented to a meeting of the New York Obstetrical Society in 1944, Cosgrove (8) likened abortion to save a mother's life to a surgical procedure associated with high rate of mortality. He concluded that if such high-risk procedures were not carried out despite their possible benefit because of the overwhelming risk involved, then an abortion resulting in certain fetal death could no more be justified. It is difficult to determine the prevalence of this view within the medical community. Certainly more articles appeared in the literature based on an assumption that abortion was at times a medical necessity, and arguing only over indications for therapeutic abortion. In the discussion following the paper, one physician argued that Cosgrove's vehement stance against therapeutic abortion was misdirected, when in fact his indignation should have been reserved for criminal abortion. He also claimed that the indications listed in the paper were "generally accepted by the profession." The numerous objections to Cosgrove's arguments by various speakers support Kosmak's assertion about prevailing views in the community.

The Cosgrove article also garnered two letters of response published subsequently. One physician wondered "how in the world one can practice good obstetrics…with a therapeutic abortion rate of only 1 to 16,750 deliveries [as claimed by

Cosgrove].” For while the author asserted explicitly that a low abortion rate was enviable in a hospital, his implication was that abortion must, in some circumstances, be induced, and that to allow certain pregnancies to continue was poor practice. He recognized the imperative to avoid excessive terminations, but concluded that “reduction in maternal mortality is still the paramount aim of modern obstetrics” (20). The second response to Cosgrove took issue with his use of the word murder to describe an induced abortion, arguing instead for homicide as a better descriptor in the absence of a malicious intent toward the fetus as motivator for termination (21). Again, the publication of these letters does not establish the prevalence of the views they espouse among physicians at the time. However, they do reveal the existence of controversy in the community over the role of therapeutic abortion and the ethical dilemma of a pregnancy in which the needs of the fetus and those of the woman are at odds.

Several techniques existed for induction of abortion. Taussig provided a review of practical and experimental methods in his 1936 book. The most commonly employed methods, endorsed by Taussig, were a combination of cervical dilation and manual or curette-assisted removal of the uterine contents. Dilation could be accomplished by the use of metal dilator, laminaria tents, or intrauterine gauze packs. While there was disagreement in the international literature over the preferred method, most obstetricians in the United States relied on metal dilators or gauze packs. Following dilation, fetal tissue could be removed either with a finger or a curette. Abortions occurring in the first twelve weeks could be conducted with a curette alone, while manual guidance was recommended for later procedures. If the procedure was less urgent, a patient with a gauze pack might be able to pass the products of conception spontaneously. Abortions occurring after sixteen weeks of gestation required more invasive techniques.

Hysterotomy could be performed vaginally or abdominally, with subsequent evacuation of uterine contents. In a less urgent situation, a patient might pass the fetus spontaneously after cervical dilation (11).

Other methods included medications, such as quinine, pituitary extract, and ergot. Pituitrin and ergot were also used for treatment of incomplete abortions, and for induction of second trimester terminations. Quinine and ergot, followed by dilation and curettage, was also described to manage hemorrhage in early pregnancy (22). However, large doses of ergot were required for induction, introducing the added risk of ergot necrosis. Consequently, these were seldom used. Rat and rabbit studies had demonstrated an efficacy of follicular extract injections, but had yet to be tried in human subjects. Intrauterine paste injections had been used abroad with inconclusive results on efficacy and reports of risk of air and fat embolism (11).

Another technique mentioned sporadically in the literature relied on radiation to produce abortion. It was first employed in Germany in 1914, and used occasionally in the United States as well. One group reported success with its use in 1927 (12). By 1936, the same group had used radiation techniques in 200 women with a 96% success rate. Any woman failing induction was aborted by dilation and curettage. Because pelvic radiation was associated with infertility, the method was employed in cases where sterilization was desired (18).

Although induction of abortion appeared occasionally in the literature, the overwhelming majority of research on methods came from abroad. In the Soviet Union, where elective abortion was legal, the use of suction curettage was published as early as 1927, although it would not reach the United States until the 1960s (23). Most of the research reviewed by Taussig in his book came from Germany (11).

Given the anti-abortion sentiments of the medical community, it was tempting to shift blame for the large numbers of criminal abortions elsewhere to other providers. Indeed, the problem was attributed to "nonmedical individuals" (8), midwives and "charlatans" (6). Failing that, doctors who performed illegal abortions were explained as anomalies within the noble profession. However, it could not be denied that many physicians participated in the provision of elective abortion procedures. As the chairman of a 1942 conference acknowledged in his opening remarks, "Although the performing of abortion has been forbidden to physicians since the time of Hippocrates, nevertheless the abortionist is drawn principally from this profession" (24).

Women sought abortions from their physicians in the belief that doctors were well trained in this procedure and that they would be safe, safer perhaps than going elsewhere for terminations. In fact, this was not necessarily true. While the medical profession may have wanted to believe that they were able, if unwilling, to provide safe abortions with low complication rates, data from Russia's experience with legalized abortion showed comparable complication rates between those abortions performed openly in hospitals and those performed elsewhere (25).

It might seem illogical to assume that a physician would be well trained in a procedure despised and openly shunned by the profession, but it was not the procedure that was considered immoral so much as the circumstances. As previously described, therapeutic abortions were generally accepted, which meant that a doctor must be exposed to abortion during training it that capacity. However, proper training would require observation and participation with a number of procedures, and a fledgling doctor's experience would be limited by the number of cases occurring in the training years of medical school and residency.

There is little data on the number of abortions witnessed or performed by the average training physician. A 1931 obstetric survey of medical school deans included a few relevant questions. When asked how many deliveries a student should observe and perform, most deans answered 11-30 and 10-20, respectively, although many also indicated that their students were not necessarily meeting that ideal. The survey also included questions on the number of abortions performed at their hospitals, and revealed an average rate of close to one abortion for every ten deliveries (26). No information was given on student attendance at abortions, but even a proportional rate of one to ten would suggest observing only three or fewer procedures during medical school under ideal circumstances.

While these numbers may seem paltry indeed, procedural training becomes much more important during residency years than during medical school, once medical students have committed to a particular field. Again, little information is available in the literature on training per se. A 1936 review at a New York City hospital (27) described management of patients presenting with incomplete abortion. The article explicitly stated that residents oversaw the initial administration of ergot and pituitrin (a combination of vasopressin and oxytocin), and that the intern managed all further care. In addition to medication treatment, most patients also required the same sort of dilation and curettage procedure that could be used to induce abortion. While there was no mention of who provided the curettage, the implication was that the intern was responsible. During the period of 1930-1934, the hospital saw 1971 cases, or an average of close to four hundred cases per year. If indeed the interns were responsible for completion of the abortion, this meant each trainee might see dozens of cases during internship year.

If interns and residents were intimately involved in the provision of therapeutic abortions, then the frequency of these procedures determined the training received. Taussig estimated in 1931 that 30-40% of pregnancies ended in abortion, of which 13% were therapeutic, 37% were spontaneous, and 50% were criminal (28). Cosgrove's review of therapeutic abortion (8) compared rates in seven prominent hospitals in the 1930's and 1940's. He found that in most of the institutions the number of therapeutic abortions represented between 0.006 and 2.8% of all deliveries, with a median of 0.69%. An Indianapolis-based study interviewed women in1941 and 1942 on their reproductive histories. The results, presented at the 1942 conference, indicated that 9.9% of their pregnancies ended in abortion, of which therapeutic abortions represented only 7%, or 0.7% of total pregnancies (29). In his 1936 book, Taussig reported the rate of therapeutic abortions from a few sources. A study conducted among Iowa country physicians found that therapeutic abortion comprised 0.01% of all deliveries (11). Self-reported data from birth control clinics in New York City revealed a single therapeutic abortion among nearly 40,000 pregnancies. This last figure is difficult to interpret based on the method in which it was gathered. Only twenty illegally induced abortions were reported in the same group, a number that also seems unrealistically low. The remaining data indicates a large discrepancy between the abortions performed in hospitals and those performed by the rural physicians. Given the nature of medical training, which was, then as now, hospital-based, it is the inpatient figures that are most relevant. In fact, the Cosgrove numbers concord well with those of the Indianapolis study, suggesting an average hospital performed therapeutic abortions at a rate of 0.7 for every hundred deliveries.

Estimates of resident experience with therapeutic abortions can be derived from published reports of abortion rates at hospitals with training programs. Table 1 shows the

incidence of therapeutic abortion at several hospitals in the 1930s and 1940s. Assuming that a single resident was involved in each case, the average resident could be expected to encounter no more than two abortions per year of training. Because length of training programs varied, it is difficult to determine the number of procedures that might be encountered during the entire course of residency, but programs generally lasted 1-3 years.

Table 1. Estimated resident experience with therapeutic abortion.

Hospital	Year(s)	Total # of Therapeutic Abortions	Mean # of Residents[A] per Year	Mean # of Abortions per Resident per Year
Margaret Hague Maternity Hospital, Jersey City (8)	1931-1943	4	7	0.0
New York Post-Graduate Medical School and Hospital (30)	1935-1945	73	15.9	0.4
Woman's Hospital, NYC (8)	1941	21	11	1.9
Johns Hopkins, Baltimore (8)	1941-1942	55	86	0.3

A. Includes interns and residents in obstetrics and/or gynecology programs.

In 1942, the National Committee on Maternal Health hosted a conference entitled simply “The Abortion Problem.” Most of the participants were physicians, although there were a few non-physician researchers and judges in attendance as well. In an effort to avoid alienating potential participants, invitations were sent assuring that it would be a meeting conducted without publicity. A resolution passed at the conference was not publicized, in keeping with the promises of no publicity, and attendees were invited to remove anything from the recorded notes that they wished to omit prior to publication of the proceedings. The secrecy surrounding the conference speaks to the sordid reputation of abortion and to the fear of association on the part of physicians. Although criticized at the time by some of the attendees for this reason (24), the lack of press likely allowed for more frank discussions of a taboo topic. The resulting proceedings, published two years

later, provide a glimpse of the views on the topic of the progressive voices of the time. While the opinions expressed must be taken as those of a self-selected group, choosing to attend a conference on the topic and therefore biased from the prevailing norms, they represent a vocal group and one to be taken not altogether lightly.

For the purposes of the conference, the term abortion remained a broad one, encompassing both the spontaneous abortions referred to by the lay public as miscarriages and the provoked abortions referred to within the literature as either therapeutic or criminal abortions depending on the circumstances. However, the proceedings omit the term criminal abortion, replacing it with induced abortion. This change in terminology is significant in that it suggests the existence of a professional group questioning the use of a legal term to define a medical procedure.

While the conference remained firmly opposed to elective abortion, the tone of the discussion differed from that within the published literature. The very title of the gathering denoted the idea of abortion as an issue to be addressed because of its negative implications. Presentations emphasized the high morbidity and mortality of abortions. However, many of the discussions surrounding the topic were those of a group of physicians analyzing a procedure or event in medical terms rather than focusing solely on moral arguments. The first of four sessions included data on the frequency of abortion (spontaneous and induced), and its general effects on the population and the individual. The second session was devoted exclusively to the pathophysiology underlying spontaneous abortion and to its treatment and prevention. Not until the second half of the conference was induced abortion specifically discussed, and then only as part of a larger problem. In addition, the very decision to hold a conference on both spontaneous and induced abortion brought the topic of elective termination of pregnancy into the realm of

medical science, where it had formerly been excluded as a social topic. By presenting induced abortion alongside spontaneous abortion, an area in which more research had been conducted on physiology and pathology, the conference gave legitimacy to the topic as one worthy of discussion on medical grounds.

Dickinson, a prominent obstetrician-gynecologist and conference participant, summed up the frustrations of physicians interested in abortion:

> "It is the only surgical procedure in which the profession fails to visit the experts to observe their several techniques…training for necessary skill is handicapped or prevented…The specialists in this department of medicine are denied hospital facilities for operation or after-care. Although sometimes necessary to save life, research on methods, or on simple non-surgical means of induction is neglected or absent. Journals to publish comparison of results, meetings to evaluate methods, and organization to classify those well-trained and expert in a category apart from the ethical and careless are denied." (24)

It is telling of the general feeling at the conference, if not in the broader medical community that his speech drew applause from fellow attendees, the only mention of applause in the conference proceedings.

Research was stymied by the laws against elective abortion, as eloquently described by Dickinson. Those best suited to publish on the procedure were those physicians who performed the most terminations. However, because the bulk of these were illegal elective rather than therapeutic abortions, they were unable to share their experience openly with other practitioners. Similarly, those most qualified to teach abortion techniques, could not do so openly, and training was left in the hands of those performing a handful of therapeutic abortions. In this way, without preventing abortion from occurring, the legal restrictions did have the effect of leaving the United States behind the rest of the world in the development of safer, more efficient methods, and in training young physicians in their use.

Therapeutic Abortion Committees: 1946-1970

The post-war era saw a change in the control of therapeutic abortion provision. A growing nationwide trend toward centralization within individual hospitals of control over therapeutic abortion had implications for physician training. As the frequency of legal pregnancy terminations decreased rapidly, procedural training became increasingly dependent on the management of patients with missed or incomplete abortions. Medical students and residents were simply not exposed to sufficient numbers of patients undergoing therapeutic terminations to ensure proficiency in their own future careers.

Controversy over appropriate indications for termination of pregnancy combined with individual differences between physicians' attitudes toward termination had created a differential in practice between providers. One article claimed "therapeutic abortion has been seriously neglected in obstetrical literature, and is very probably the most poorly regulated procedure in medicine" (31). Frustration within the medical community over the discrepancy in provider interpretation of indications prompted a search for a more uniform approach.

The idea of a hospital committee with a specific mandate to authorize or deny therapeutic abortions on an individual case basis was introduced in the late 1930s, although they would not be widely implemented for several years (4). Guttmacher, a prominent obstetrician and vocal supporter of family planning, was instrumental in establishing one of the early abortion committees in the country at Mount Sinai Hospital in Baltimore in 1945. He later oversaw the founding of the New York Mount Sinai abortion committee as well. He explained his actions as a desire to eliminate the arbitrary decision-making he witnessed in granting therapeutic abortions. During his residency, he had witnessed a policy in which the obstetric chief was ultimately responsible for

granting or denying terminations. Consequently, women who were related to his colleagues obtained abortions that might be denied under similar circumstances to other women (32).

Abortion committees became increasingly popular in the 1940s, and by the early 1950s most hospitals had organized their own committees to oversee cases (4). They generally consisted of three to five physicians, often from different medical disciplines, who reviewed requests for abortion and issued a decision. An approval usually required unanimous consent (4, 33, 34). The committee structure gave the hospital control over the provision of abortion services, and offered individual physicians some degree of legal protection, removing from them the decision of which cases met indications for termination. Although the committees were ostensibly established to give some measure of impartiality to the decision to terminate a pregnancy, members undoubtedly brought their own biases and beliefs to the committees. As Schaupp noted in 1963, a committee could be formed to behave in any way desired, depending on the persons chosen at its conception. He advocated at a regional obstetrics and gynecology meeting for the selection of committee members based on the prevailing views of the practitioners in the hospital in question. His suggestion was immediately challenged by other conference participants (35). In this way, hospitals were able to maintain central control over the abortion provision through the selection of committee members.

One of the chief aims of the hospital committees was the reduction of abortion rates. The therapeutic abortion was, by its very definition, a procedure performed out of necessity rather than at the demand or desire of the patient. As a legally and medically condoned practice, it was only to be used for those women for whom the alternative, continuing with the pregnancy to full term, would jeopardize their health or life.

Therapeutic abortion thus continued to be depicted within the literature as a failure by the medical profession to preserve both maternal and fetal health, “a direct violation of the fundamental ideals and traditions of medical practice,” (31) “a failure of medical science” (36). In this context, abortion could only be considered a poor outcome of pregnancy, and a rate reduction must be desirable so long as the procedure was practiced.

In this matter, the hospital committees had their desired effect. At the University of Iowa affiliated hospitals, the abortion rate decreased steadily from 0.8% of deliveries in the period between 1926 and 1930 to 0.5% of deliveries between 1946 and 1950 (37). The Florence Crittendon Hospital in Detroit established a therapeutic abortion committee in 1946. In 1947, it approved all three of the cases presented. In 1948, it denied one of four petitions, and requested further information in the remaining three, which was not provided (33). The Marin General Hospital in California approved twelve of the eighteen cases appearing before the therapeutic abortion committee between 1952 and 1962. At the same time, the hospital witnessed 14,961 deliveries (35), meaning that the abortion rate represented 0.1% of deliveries, a figure well below the roughly 0.7% seen in the decades preceding the institution of abortion committees. A study of therapeutic abortions in New York City from 1943 to 1947, using data reported by physicians at time of delivery or termination, found that 3,592 abortions were performed, or 0.47% of deliveries during the same period (38). A second study looking at New York City hospitals in the same period found a rate of therapeutic abortions of 5.0 for every thousand deliveries. This proportion dropped over the next few years to 4.3 in 1949, 3.3 in 1952, and 2.9 in 1953 (34).

Although hospital records indicated they approved most of the requests submitted for review, the abortion committees undoubtedly served as a deterrent in many cases that

might previously have been granted a therapeutic abortion by a physician with more liberal views on medical indications. In the period of 1952 to 1955, the Mount Sinai Hospital committee approved fifty-seven of sixty-nine abortion requests. However, there is no way to determine how many cases were never officially submitted after discouragement from members. Guttmacher described a scenario at Mount Sinai, likely common to other institutions as well, in which a physician would approach a committee member in a "curbstone consultation" for advice about whether or not to submit a case for review. If the chances were seen as poor, the case never came before the committee, so there is no record of how many of these were unofficially denied (34).

The common indications for therapeutic abortions changed with the advent of abortion committees. Medical indications, never precisely defined, were based on a sort of ethical scale between maternal health and fetal loss. Improvement of treatment for various conditions shifted the scale against termination, as the mother's health could be preserved while continuing pregnancy. Donnelly, at a 1958 conference (34), gave the example of hyperemesis gravidarum. Formerly considered a common indication for termination, it was questioned in 1940, and then discarded as treatment improved.

In the case of tuberculosis, there were fewer therapeutic abortions performed for a combination of reasons. First, there was a change in the prevailing opinions of the medical community with regard to the necessity for termination. A 1952 case review of women with tuberculosis during pregnancy compared outcomes of 63 women undergoing termination with 407 women delivering at full term, and found no significant difference between the two groups (39). Furthermore, there was a decrease in the prevalence of the disease in the population (34). Between changes in medical opinion, changes in disease prevalence, and the creation of hospital abortion committees with the desire to reduce

therapeutic abortion rates, medical indications resulting in pregnancy termination in hospitals fell dramatically.

Many of the specific medical indications were unchanged; only their frequency declined. At the California Hospital in Los Angeles, medical indications in the period from 1944 to 1949 remained similar to previous decades. Pulmonary, hypertensive, and renal conditions were most common, followed by cardiac and neurologic or psychiatric diagnoses. In that six-year period, 88 therapeutic abortions were performed, as were 16,988 deliveries, or a rate of 0.5% terminations (40). Among New York City hospitals between 1951 and 1953, common medical indications included rheumatic heart disease, pulmonary tuberculosis, hypertension, and fibroids (34).

Even as total numbers of therapeutic abortions were declining, two categories of indications were increasingly used successfully to petition for termination. The first of these were the psychiatric indications. Between 1926 and 1950, neurologic and psychiatric diagnoses comprised 13% of therapeutic abortions at the University of Iowa (37). Similarly, at the Chicago Lying-In Hospital between 1931 and 1954, they were responsible for 15% of therapeutic abortions (41). A questionnaire survey of 152 teaching hospitals revealed that 404 (15%) of 2,717 therapeutic abortions performed between 1941 and 1950 were done so for a psychiatric or neurologic diagnosis. In 377 cases (14%), the diagnosis was either psychosis or neurosis (31). Between 1953 and 1964, Mount Sinai Hospital performed 406 abortions, a rate of 0.7% of deliveries, similar to many hospitals in the preceding decades. Of these, psychiatric diagnoses alone now comprised 205, or 51%, of all indications (42). A study of US and Canadian hospitals included in the Professional Activities Survey between 1963 and 1965 found that 34% of

therapeutic abortions were for psychiatric indications (43). At UCSF, by 1968, “mental illness” accounted for 88% of therapeutic abortions (32).

A couple of explanations are possible for the relative rise in psychiatric indications. First, this could represent an absolute rise in the incidence of disease. However, there is no reason to believe that psychiatric disease suddenly rose so dramatically. Second, there could have been an increase in the number of diagnoses in the absence of an actual rise in disease. Third, the relative increase could be an artificial effect of a decrease in other indications, although that would still beg the question of why everything else would decline. Most likely, there was a combination of the last two effects, as medical indications declined for the reasons described above, women increasingly sought out psychiatric diagnoses to justify an otherwise inaccessible abortion. In fact, a comparison of abortion rates in New York City hospitals between the years 1943 and 1953 found that total abortions per 1000 live births declined from 5.1 to 2.9, while psychiatric indications increased from 0.4 to 1.2 per 1000 live births. Proportionally, this was a rise from 8.2% to 40.0% of therapeutic abortions induced for psychiatric indications (34). A 1967 study of US and Canadian hospitals found that roughly 85% accepted psychiatric indications for therapeutic abortions (44).

The second class of indications for therapeutic abortion that emerged during this period was that concerning fetal health. These were the terminations for fetuses thought to have suffered a grave insult *in utero*, such as those exposed to rubella in early development, or those with suspected Rh incompatibility, as well as terminations for eugenic reasons based on family history. The idea that a therapeutic abortion could be performed for fetal indications in the absence of maternal difficulties with pregnancy appeared in the literature in the post-war period and became increasingly common over

the succeeding decades. Congenital rubella first appeared in the literature in 1941, and was further characterized in several studies in the early 1960s (45). At the Chicago Lying-In Hospital, “maternal-fetal indications” explained 5% of therapeutic abortions from 1931 to 1954 (41). In the 1953 study cited above of teaching hospitals from 1941 to 1950, “Rh problems” and rubella were sited for 1.9% of terminations (31). Among New York City hospitals, by 1951 to 1953 Rh incompatibility accounted for 1.5% of terminations, and rubella for 3.4%. At Mount Sinai, rubella explained 18% of therapeutic abortions performed between 1952 and 1955 (34). During the period of 1953 to 1964, that figure increased to 22%. At the same time, other genetic indications were responsible for 3.7% of abortions, including hemophilia, osteogenesis imperfecta, muscular dystrophy, early exposure to radiotherapy or methotrexate, and “familial idiocy” (42). Rubella accounted for 22% of therapeutic abortions performed between 1963 and 1965 among hospitals included in the Professional Activities Survey (43). Fetal indications for abortion were justified both on the basis of eugenic considerations (34) and for concomitant maternal health and quality of life (46).

It is once again difficult to gain a sense of the abortion exposure and practice that a physician might receive during the course of training years. During the undergraduate years of medical school, a student would certainly be exposed to obstetrics and gynecology as part of the curriculum. The inclusion of abortion as a topic within that unit was less sure. In discussing the role of medical schools in teaching family planning in 1969, the dean of the Mount Sinai School of Medicine outlined the integration of obstetric and gynecological material into the four-year program. Abortion was included in the first year course on issues of family planning. Third-year students had a seven-

week clerkship in the department, which was to include aspects of family planning. No further mention of abortion was made (47).

As the bulk of procedural training occurred during residency, it is again important to consider the experience of resident physicians with abortion. An obstetric resident would still likely be involved in the abortions performed on his service during training. One of Guttmacher's residents noted as much at a 1968 conference, complaining in fact that it was the responsibility of the residents to increase the number of procedures performed among ward patients as part of an effort to equalize the distribution of abortions between ward and private patients at Mount Sinai (32). However, even if residents were involved in all abortion cases occurring on their services, then their experience must necessarily have been limited by the number of procedures performed. As rates of therapeutic abortions dropped in the 1950s and 1960s with the proliferation of the hospital abortion committees, so too did resident training.

Of course training could not be uniform between different training programs, as hospitals differed greatly in their abortion rates. For example, the city of Buffalo, New York, had six hospitals with residency programs in obstetrics and gynecology in 1968. Of these, two were Catholic, and two of the four non-religiously-affiliated hospitals had Catholic physicians as chiefs of service. Consequently, only two of the six hospitals were performing therapeutic abortions in any sort of routine fashion (32). Since many of the patients of the first four hospitals found their way to one of the remaining two for their procedures, this phenomenon increased the cases seen by residents at those two hospitals, while the remaining residents saw virtually no terminations during their residency training.

A 1967 questionnaire-based study of US and Canadian hospitals with residency programs in obstetrics and gynecology included issues relating to therapeutic abortion. Among the roughly 80% of respondents, the mean number of therapeutic abortions performed per hospital per year was 7.8, although the distribution was skewed with a median of only 3.8. None of the Catholic hospitals permitted therapeutic abortions, in contrast to the 90.7% of non-Catholic hospitals that did allow them (44). These data were consistent with the situation described in Buffalo, as they suggested that a small number of hospitals were responsible for the bulk of abortion procedures. Thus, residents enrolling in the programs that were performing therapeutic abortions may have been exposed to a fair number of procedures during their training, while others might have extremely minimal exposure. Catholic hospitals, which reported no therapeutic abortions at all, had the lowest response rate of any group, and yet they comprised nearly one sixth of training hospitals included in the survey.

Methods of procuring therapeutic abortion remained largely unchanged from the previous decades, as research was sparse. The most commonly employed interventions were surgical, especially dilation and curettage (D&C). At the California Hospital in Los Angeles, of the 88 therapeutic abortions performed between 1944 and 1949, 43 were D&Cs, 17 were abdominal hysterotomies, 26 were hysterectomies, and 2 were vaginal hysterotomies. Hysterotomy procedures were more common than D&Cs in patients undergoing sterilization procedures as well (40). A 1954 review of therapeutic abortion cited D&C or hysterotomy with ligation as the most common methods for a first trimester procedure. Terminations occurring later in pregnancy were procured with abdominal hysterotomy, rupture of membranes, or rarely with a Voorhees bag (36). At the University of Iowa, between 1926 and 1950, only 17% of therapeutic abortions were

D&Cs, while 72% were hysterotomies, and 11% were hysterectomies (37). At the Chicago Lying-In Hospital, between 1931 and 1954, 27.5% of therapeutic abortions were D&Cs, 40% were hysterotomies, 32% were hysterectomies, and 0.5% were procured by bag insertion (41). In a study of 384 US and Canadian hospitals conducted from 1963 to 1965, 71% of abortions were performed by D&C, 14% by hysterectomy, 10% by hysterotomy, and 5% by other methods, or not stated (43). Based on these data, it is probably generous to ascribe 30% of abortions to a D&C, in which case one could assume that the average hospital performed only 2.3 abortions per year by dilation and curettage.

If most obstetric residents were not exposed to more than a handful of therapeutic abortions, their procedural training might still be found in other situations. Missed and incomplete abortions required intervention for completion, and many of the techniques employed could be used to induce abortion as well. Many women who desired a termination and were unable to obtain one through legal channels provoked an abortion outside the hospital and then presented reporting a history of spontaneous abortion. Consequently, incomplete abortion was a common reason for hospital admission. While difficult to document, the idea that most incomplete abortions actually represented inductions produced outside the hospital was presented at the 1958 conference (34). In one hospital review of 1954-1955, incomplete abortions represented fully one third of admissions on the gynecology service (48). At the Jackson Memorial Hospital in Miami, abortions accounted for 25-30% of admissions to the obstetrics and gynecology service from 1961 to 1965. The authors were explicit in noting that the second- and third-year residents directly performed all procedures for completion (49).

Management of an incomplete abortion included both medical and surgical measures. Standard medication in the 1940s was pituitary extract and ergotrate (50). By the 1960s, pituitrin had been replaced by purified oxytocin, still used in conjunction with ergotrate. Surgical management consisted primarily of curettage. At the Queens Hospital Center in New York, curettage was used as an elective procedure after initial medical management in the mid 1950s (48). In a review of 1326 cases of incomplete abortion presenting to the Walter Reed General Hospital between 1951 and 1960, 88% of patients were managed with curettage alone, and 5.9% with dilation and curettage. Less than 2% were treated with medical management alone (51). Thus, a total of 1246 patients were treated with curettage, or an average of 125 per year. This figure far outstrips the 7.8 therapeutic abortions performed annually in an average hospital, and suggests that the bulk of procedural training took place outside the context of abortion induction. Although some studies suggested the safety and efficacy of outpatient management (49, 52), most patients with incomplete abortion were treated as hospital inpatients.

Medical terminations and surgical interventions beyond curettage and hysterotomy remained largely experimental. The use of hormones to provoke abortion had been shown in animal models. In 1948, Kurzok described hormonal administration in a very small group of human subjects, using ethinyl estradiol. Four of the six patients responded adequately within 72 hours and were able to abort without further intervention. A fifth pregnancy was terminated with additional doses of estradiol (53). This method was not widely employed, nor did it enjoy prominence in the literature as an experimental method in the ensuing years. The additional time required to monitor the patient in comparison to a surgical intervention may have made it an impractical choice.

Another experimental method that was never widely implemented relied on intraamniotic injection of hypertonic saline. Saline injection was used in Japan in the initial post-war era, but abandoned for complications. One small study of twelve patients at Johns Hopkins found that hypertonic injection produced successful abortion in all eight patients given saline and in two of four patients given 50% glucose solutions. However, two patients experienced complications including hypotension, bradypnea, bradycardia, lethargy, and loss of consciousness (54).

A new technique for termination of pregnancies that was developed abroad appeared in the United States literature for the first time in the late 1960s. Vacuum aspiration relied on the generation of negative intrauterine pressure, and had first been described in 1927 by Bikov in a Russian journal as a method of preventing pregnancy. It was not pursued further until 1958, when a Chinese group published reports of its use for provoking abortion. A large study presented in Moscow in 1963 included experiences with 17,000 pregnancies terminated by vacuum aspiration (55-57). Despite the efficacy and safety of the new technology in the East, global politics prevented easy communication of these findings with the capitalist nations of the western hemisphere. Vacuum aspiration did not appear in the American Journal of Obstetrics and Gynecology until 1967, in an article by a Bulgarian author. The study of 517 patients found decreased blood loss, shorter duration of procedure, decreased pain, and fewer and milder complications when compared with a control group of 286 patients aborted by curettage alone. The aspiration patients did not require any medication (i.e. uterotonics) for completion of abortion (55). A Swedish study published the same year described routine usage with vacuum aspiration for terminations, as well as for incomplete and missed abortions and secondary postpartum hemorrhage, and in one case of a molar pregnancy.

In addition to the benefits described above, patients could usually be discharged home after a few hours of observation rather than requiring a hospital admission (58). A third study published in 1967, from Czechoslovakia, included 350 patients, and found no difference in blood loss when compared with curettage in patients with pregnancies up to 8 weeks gestational age, but did report decreased risk of uterine perforation and smaller minimal cervical dilatation (56). The first study conducted in United States was presented at the annual AMA convention in 1968 and published in 1969. The author described the use of vacuum aspiration in 200 patients for the management of incomplete and therapeutic abortions, as well as for molar pregnancies. Ergot was used prior to aspiration as a means of reducing blood loss. Procedures were completed in less than five minutes (57). Vacuum aspiration was presented at a 1968 conference on abortion by a Yugoslavian author, who cited the benefits described above (59).

One of the interesting aspects of the history of vacuum aspiration is the length of time it took to reach the United States. Despite widespread success in numerous countries with demonstrated improvements in safety, reduction in complication rate, and economic advantages, both in the form of decreased procedural time and in drop in hospital admission rate, the United States remained years behind in adopting a procedure that had become routine elsewhere. The reason for this delay may be attributed to a number of factors. First, this was a foreign technology, and to adopt it would be to admit greater measures of scientific progress abroad. Second, this was a method that had emerged from the communist world during the Cold War era in which the United States sought to demonstrate scientific superiority to the eastern world. Finally, the issue at hand was abortion, a politically charged topic and a field with a lack of domestic research.

A recurring theme in the literature on vacuum aspiration was the importance of operator skill for procedural safety and efficacy. The gritty feel of the uterine wall could establish the completion of the procedure in well-trained hands. Novak supported the practice of aspiration only by "specialized gynecologists after additional training" (59). At UCSF, residents needed to perform twenty-five procedures before they were considered competent in aspiration (23). This requirement underscores the importance of exposure to incomplete abortions and other conditions in the training of pregnancy termination. Given the rarity of hospital-approved therapeutic abortions, a resident at an average hospital would never be able to meet this quota if the procedure were not used in the management of incomplete abortions as well.

The post-war era was defined, in abortion history, by the advent of hospital therapeutic abortion committees. By creating a decision-making body responsible for the provision or denial of terminations, hospitals were able to dramatically reduce the number of pregnancy interruptions performed nationwide. The committee structures and policies also had implications for the indications used to justify abortion by women seeking them. The impact on procedural training within the medical profession, however, was slight. Because most training came from the management of patients with incomplete abortions, residents in obstetrics and gynecology programs were still able to attain sufficient experience in common techniques that could be applied to terminations. While the political climate may have limited or precluded training in options counseling and birth control discussions, the similarities in management in patients with multiple presentation ensured basic procedural training in an average residency program.

Legalized Abortion: 1971 – Present

In 1973, the practice of abortion provision changed fundamentally. While elective abortion had been decriminalized in a few states in preceding years, the US Supreme Court decision in *Roe v. Wade* legalized abortion throughout the country. Legalization impacted physician training in a few ways. On one hand, the legal changes lent legitimacy to procedural training, as physicians could now be expected to provide pregnancy terminations to women who might not have qualified for the relatively narrow range of therapeutic indications. On the other hand, the number of women presenting to hospitals with incomplete abortions dropped with legalization, so trainees had less exposure to these cases which had previously supplied the bulk of their procedural training.

Medical Schools

Even following legalization at a national level, abortion has continued to be a taboo subject in medical education. Obstetrics and gynecology comprise a substantial portion of undergraduate medical training. Women's health and reproductive issues are taught during both pre-clinical and clinical years, and students interested in the field may choose to pursue electives beyond the required third-year clerkship. Despite the recurrence of women's health issues in the curriculum, students are not necessarily exposed to abortion.

In the immediate post-legalization period, abortion was rapidly included in the student experience at many schools. A 1973 survey of 86 university hospitals included questions regarding medical student abortion experience. Among respondents, only 10.5% reported no abortion exposure for their students. Nearly half (45.3%) had regular

rotations including experience with abortion, and 16.3% offered an elective rotation. Students at 34.9% of schools received lectures or conferences on the topic, which may have occurred during the pre-clinical or clinical years (60). This initial inclusion of abortion into medical school curricula in response to legalization suggested that the procedure would become more common in teaching. The new status of the procedure might render it more acceptable and allow it to gradually become commonplace at all teaching institutions.

However, abortion continued to be often omitted from the education of medical students. Clinical undergraduate medical training occurred primarily during the third and fourth years. Students had required clerkship in obstetrics and gynecology, which provided the most obvious opportunity for incorporating abortion education. In practice, however, experiences were once again limited and varied according to institution. Not until 1995, over twenty years after the passage of *Roe*, did the American Medical Women's Association develop a month-long elective in reproductive health for fourth year medical students. The elective, which was initially established at Columbia and later replicated in other schools, was designed specifically to address concerns over the declining number of abortion providers (61). Fourth-year electives are only available to those students who seek them out specifically, so while the Columbia rotation filled a need for further training in medical school, it was not intended to reach those who might be ambivalent toward the procedure.

Nearly thirty years after *Roe*, abortion continued to be conspicuously absent from many schools. A 2005 survey of clerkship directors revealed that at 23% of schools responding, there was no formal abortion education in the course of the clerkship. Only 19% of respondents stated that their school had a lecture on abortion during the pre-

clinical years, while 37% had a lecture in which abortion was mentioned. During the clerkship, 32% of schools had an abortion lecture, and 45% offered clinical abortion experiences, but found low participation among students. The relatively small numbers of students receiving the abortion training offered may in part reflect the clerkship structure. Students were much more likely to have experience with abortions if their school specifically made them aware of the opportunities available instead of only offering them to those students taking initiative to seek them out (62). Rather than becoming a more routine component of undergraduate medical training, abortion had become less visible in medical schools (see Table 2).

Table 2: Medical student experience with abortion.

	1973 (60)	**2005** (62)
No formal abortion training	10.5%	23%
Didactic teaching	34.9%	32%[A]
Elective rotation	16.3%	45%
Routine clinical experience	45.3%	

A. Reflects proportion of schools with abortion lecture during clerkship. Smaller numbers also indicated an abortion lecture during pre-clinical training, and there may be considerable overlap.

The omission of abortion from medical school curricula is particularly concerning because medical schools have a unique opportunity to shape their students' attitudes. By failing to address the topic, they perpetuate the taboo nature of abortion within the medical community. In a 1996 survey of second year medical students at the University of Illinois, 30% of students felt that abortion was tantamount to murder. Thirty-seven percent felt they would be unwilling to perform abortions, but would make referrals for their patients, and 14% reported that they would neither perform abortions nor refer their patients elsewhere for the procedure (63). While it is not possible to determine whether

the student attitudes reflected their beliefs prior to beginning medical school, or whether they were influenced by their education, the study results do suggest a need for curricular improvement to address especially the group opposed to referring patients. It is alarming that there be a group of future physicians prepared to deny services to their patients in the absence of medical or even legal contraindications.

Undergraduate medical training is far more observation-based than graduate training, which is more procedural. It is not to be expected that a medical student would gain sufficient experience to become an abortion provider based on their undergraduate exposure to abortion. The role of training in medical school then is largely to normalize a procedure that has been shunned by the profession and to interest those relatively few students who may go on to become providers.

Obstetrics and Gynecology Residencies

The bulk of procedural training continues to occur during the residency years. Historically, therapeutic abortions and complications resulting from induced or incomplete abortions have fallen within the domain of obstetrics and gynecology services. Legalization of elective abortion by the Supreme Court in *Roe* gave further legitimacy to the teaching of abortion techniques, and has made it easier to document the experiences of residents with the issue.

A 1973 questionnaire-based study of university hospitals sought to determine the status of abortion training nearly a year after legalization went into effect. Of the sample of 100 hospitals selected, 86% responded. Because of the recent changes on a national level with regard to abortion, the authors analyzed data separately for hospitals in states with preexisting liberal abortion policies. About half of all respondents indicated having

faculty-supervised abortion programs through which residents rotated regularly. In states with established abortion programs, 32% of hospitals did not offer abortion training to their residents, or had only an elective rotation. In those states with newly legalized abortion, this figure was close to 50%. What is not clear from the study is the number of procedures that an individual resident might see or complete in the course of training (60).

By 1976, elective abortion had been legal in every state for at least a few years, and the number of training programs without resident exposure to abortion had fallen. Observation of abortion procedures was mandatory at 40.9% of programs, and offered at 51.6%. Residents were required to perform 1st- and 2nd-trimester abortions at 26.3% and 22.5% of programs, respectively, and were offered the opportunity electively at 66.2% and 61.5% of programs, respectively. Again, there is no indication of the number of procedures that a resident might observe or perform during training. One of the barriers to adequate abortion training cited by the authors is the fact that most abortions took place in clinics not affiliated with hospitals, decreasing the number of cases with which residents in teaching facilities might gain experience (64).

The findings of this study suggest a growth in abortion training among obstetric and gynecology residency programs. Low response rates, particularly in the 1976 study (48.6%), make it more difficult to interpret the data. Response was especially low in 1976 among Catholic hospitals, which can be assumed to falsely elevate the proportion of programs with abortion training. However, this group is relatively small within the population of hospitals with residency programs. The fact that a difference was seen in the 1973 study between hospitals in states with established abortion policy and hospitals

in those states where legalized abortion was much newer is consistent with the increase in training in 1976 after hospitals had had several years to respond to the new laws.

By 1985, the initial expansion in resident access to abortion training had been reversed (Table 3), and the number of programs offering procedural experience was decreasing. Training in 1st- and 2nd-trimester abortions was required at 22.6% and 20.6% of programs and optional at 49.6% and 44.0% of programs, respectively. Training in 1st- and 2nd-trimester procedures was unavailable at 27.8% and 35.5% of institutions, respectively. Among those programs where training in 1st-trimester abortion was available, 25% had residents collectively performing an average of no more than one procedure per week, 65% averaged 2-10 procedures per week, and 10% averaged greater than ten. For programs with 2nd-trimester training, 65% had no more than one procedure on an average week by residents, 35% had 2-10, and a single program averaged greater than ten (65).

In order to standardize data on resident abortion experience with that reported elsewhere, results of national surveys were used to determine estimates of procedures performed per resident per year. When data were reported as proportion of programs with a set range of procedures, the mean number of procedures was used and weighted by the number of programs as a fraction of total programs. For example, Darney reported that 65% of programs had residents collectively participate in 2-10 first trimester abortions per week. The 65% was used to weight an average of 6 procedures against programs with greater or smaller frequency. Average number of weekly procedures was combined with second trimester procedures. Average number of residents per program was used to estimate a total number of procedures per year per resident. Based on these data, the average number of pregnancy terminations performed by residents in 1985,

including both 1st- and 2nd-trimesters, was 280.4 per program per year. Given the mean program size of the respondents included in the study, this works out to 17.1 per individual resident per year.

When compared with the 1976 study results, these data indicate a slight decrease in the proportion of programs requiring abortion training, and a more substantial decrease in those offering training electively. Consequently, there is a rise in the number of programs without training in abortion techniques available to residents. Given the particularly low response of Catholic hospitals in 1976 and their better representation in 1985, it is possible that their inclusion accounts for part of this shift. The number of hospitals offering no training options in 1985 remained below the levels seen in the 1973 survey.

By 1991, a dramatic shift in training had occurred. Routine instruction in 1st- and 2nd-trimester abortion had dropped to 12.4% and 6.9% of programs, respectively. The explanation for this decline was a change from abortion training as a requirement to optional status. Training was offered electively at 57.9 and 58.4% of programs for 1st- and 2nd-trimester procedures, respectively. The proportion of programs without any training was relatively stable at 29.6% and 34.8%. There was a very real impact in resident to exposure to abortions when training was changed from a requirement with exemptions on moral grounds to an optional elective for those interested in seeking it. Unlike the previous studies, this one included estimates of average numbers of procedures performed by residents at each program. Among the programs with routine 1st-trimester abortion training, nearly half (48%) of the directors reported an average of five or more procedures per week, while 21% reported one or fewer procedures per week. Contrariwise, at those programs with optional training, only 14% reported five or more

procedures performed by residents in an average week, and 50% had only one or fewer. Of the programs with routine 2nd-trimester training, 25% had residents performing five or more procedures per week, while at 31% of programs they performed no more than one per week. At programs with optional training in 2nd-trimester procedures, 3% reported residents performing at least five procedures in a week, and 77% had one or fewer (66).

Based on the findings of the 1991 study of program directors, the average number of resident-performed procedures in obstetrics and gynecology programs was 1.7 1st-trimester and 0.8 2nd-trimester terminations per week, for a total of 2.63 abortions per week or 137 abortions per year per program. Because the authors do not include the number of residents covered by their study, it is not possible to calculate the number of procedures per individual. However, when compared with the program average from 1985 of 280 annual abortions, this represents a decrease to less than half the number from six years prior.

In a 1992 structured questionnaire survey, 80% of residency program directors and chief residents responded to questions about abortion training in their programs. Data were analyzed separately for directors and residents. Among program directors, 28% reported that all of their residents had experience with 1st trimester abortion training, and 21% indicated that none of their residents had any experience with 1st trimester abortion. Among chief residents, 47% reported not having had any experience with 1st trimester abortion during their training, and 45% reported participation in more than 10 cases (67). One of the most interesting and important findings of this study was the discrepancy between reported resident experience from program directors and from residents of their programs. Although individual responses from the same program were not compared, the proportion of affirmative responses to the same questions from the

same programs should not have been so dissimilar. This result suggests a tendency either on the part of directors to overestimate the experience of their trainees with abortion, or on the part of residents to underestimate their own experience, or a combination of both. Because the residents are reporting on their first-hand experience and the directors are reporting on the program ideal or on feedback they receive second-hand, the responses from the residents are probably more the accurate group. This study then calls into question data from other surveys of program directors, suggesting a systematically elevated error in the proportion of programs reporting strong resident experience with abortions, and suggests that similar studies should be read with the understanding that director responses are likely to be biased in favor of greater resident experience than is accurate.

In 1995, the Accreditation Council for Graduate Medical Education (ACGME), which oversees US residency programs in all fields, adopted a requirement that programs in obstetrics and gynecology offer abortion training to their residents. The current policy states, "No program or resident with a religious or moral objection shall be required to provide training in or to perform induced abortions. Otherwise, access to experience with induced abortion must be part of residency education." Even programs with a religious affiliation or moral objection must allow their residents to obtain training at off-site locations, and must make their residents aware of the opportunity (68).

Residency directors were surveyed again in 2004-2005 about the experiences of their residents with abortion. Of the 252 programs contacted, researchers obtained 185 (73%) responses. By the time of the study, the number of programs offering training in abortion had risen from the 1991 level, returning to a status similar to that seen in 1976. Training was routine in 51% of programs, optional in 39% of programs, and unavailable

in the remaining 10% (2). Not only was abortion training offered at a greater proportion of programs, but programs were also shifting from a system of optional electives to increasingly establishing abortion as a routine part of graduate training in obstetrics and gynecology. However, despite this seeming advance, the average number of procedures performed by residents actually fell to 38.7 terminations per resident in the course of training. In a four-year program, this works out to an average rate of 9.7 terminations performed per resident per year. This figure is well below the average rate of 17.1 seen in 1985.

Table 3: Procedural abortion training in obstetrics and gynecology residency programs

	1976 (60)	**1985** (64)	**1991** (66)	**2005** (2)
Response rate	48.6	86.7	87	73
1st Trimester				
No training	7.5	27.8	29.6	10
Optional	66.2	49.6	57.9	39
Routine	26.3	22.6	12.4	51
2nd Trimester				
No training	16	35.5	34.8	
Optional	61.5	43.9	58.4	
Routine	22.5	20.6	6.9	

All data (except response rates) reported as percent of programs responding.

The importance of residency programs with adequate training in abortion provision has been well documented in terms of future physician practice patterns. Physicians who receive training in abortion provision during their residency years are much more likely to offer elective abortions to their patients than their counterparts who do not. This begs the question of what constitutes adequate training. Planned Parenthood

of New York established a liaison program at three clinics in 1993 for training residents in pregnancy termination. While most residents came from obstetrics and gynecology programs, a few also hailed from family medicine, internal medicine, and general surgery. The program included classroom instruction on surgical techniques, communication, anxiety reduction, and prevention and management of complications, as well as a clinical component in which participants performed upwards of fifty procedures. Residents from programs other than obstetrics and gynecology were expected to perform a greater number of procedures. Three years after implementation, about half of the first fifty-three graduates were performing elective abortions in Planned Parenthood clinics (69).

A 1995 survey of obstetrician-gynecologists with admitting privileges at one Rhode Island hospital found significant differences in abortion provision between those who had received training during residency and those who had not. Among those who had been trained in residency, 50% provided elective abortions to their patients. Among those without abortion training in residency, but who may have sought it afterwards, only 21% provided elective abortion. In the first group, 65% asked their patients about their pregnancy plans, while only 41% of the second group did so. While training was not the only factor found to be associated with abortion provision, it was a significant indicator of a physician's practice after residency (70).

A 2003 survey of graduates from five programs between 1989 and 1998 found a correlation between the number of procedures performed during residency and later provision of elective termination. Significantly higher rates of abortion practice were found among physicians who had performed at least 25 procedures during their training than among those who had received less experience (71). Based on the most recent

survey of residency program directors, the average graduate from a program in obstetrics and gynecology in the United States performs close to forty terminations, as described above. However, that figure includes both 1st and 2nd trimester procedures, so while many residents may be exposed to sufficient numbers of 1st trimester procedures, which are much more common and comprise the bulk of the figures cited, the average number of 2nd trimester procedures is well below 25. Certainly there is a range between programs and between trainees, but the majority of residents are not exposed to the minimum suggested here as a sufficient number of abortion procedures.

Family Practice Residencies

Although the field of obstetrics and gynecology has the most obvious and longest historical relationship with pregnancy termination, abortion training has found a place in other medical specialties. Many family medicine programs have begun to make training in abortion procedures available to their residents. The ACGME guidelines for Family Medicine residency programs are explicit about the inclusion of family planning in the curriculum, but make no direct reference to training in abortion (72).

One of the first studies looking at outpatient abortion in a training program other than obstetrics and gynecology was conducted at the University of Washington among the family medicine residents. The family medicine clinic began offering 1st trimester pregnancy terminations with legalization. Between 1972 and 1981 the clinic, staffed by eighteen residents and twelve faculty members, had performed 260 terminations. Residents were trained in the practice of dilation, suction curettage, and sharp curettage. A retrospective study of these patients found that the outpatient abortion techniques used in this setting had a reasonable safety and efficacy profile (73).

Family practice residency programs were slower to adopt abortion into their routine training, a fact in part attributable to the historical relegation of pregnancy termination to obstetrics and gynecology. A 1994 survey of eight family medicine residency programs in southern California inquired about resident and faculty attitudes toward pregnancy termination and procedural training. Among respondents, 46.4% of residents indicated that the option of abortion training had been offered to them. Stark differences existed between programs, and most of the residents who responded affirmatively hailed from one of only two programs. The authors also noted that due to confusion with the questionnaire in distinguishing between elective terminations and dilation and curettage for other reasons, the figures presented might be an overrepresentation (74). The study is also limited in that not all programs were included. While the authors tried to choose a representative group among the region, extrapolation to a national level may be inappropriate. Given the broad scope of family medicine, it is perhaps unsurprising that the proportion of programs offering training in elective termination of pregnancy is much smaller than among obstetrics and gynecology programs. However, the taboos surrounding abortion compound the difficulties associated with its inclusion in family medicine training. While it may be argued that many gynecologic procedures lie outside the scope of family practice, the same study found that residents were much more likely to receive training in out outpatient procedures, such as IUD insertion, endometrial biopsy, and colposcopy.

By the early 1990s, family practice residencies were clearly far behind obstetrics and gynecology programs in offering abortion training. A 1993-1994 nationwide survey of program directors and senior residents yielded response rates of 75% and 63%, respectively. Only 12% of programs offered any kind of training in abortion procedures,

of which half were limited to the 1st trimester. In practice, an estimated 45 to 49% of residents actually participated in training opportunities when they were made available. Among residents who received any training, the median experience was 10 procedures performed (75). These findings suggest that not only were relatively few residents exposed to abortion procedures, but that those who were received only a limited experience. In a study discussed previously (71), residents were much more likely to offer abortions to their patients when they had performed at least 25 procedures themselves during residency. While that study was conducted among gynecologists, and family physicians might actually be more comfortable with a procedure after less experience given the broad scope of their training, a median of 10 procedures is likely to be too low to ensure that many residents would include abortions in their practice after such training.

A similar questionnaire was sent to program directors and chief residents in 1996, and yielded a 58% response rate. Slight differences were found between director responses and resident responses, but these were not significant. Among responding programs, 43-46% included a formal abortion education in the form of a lecture or discussion. Clinical training in 1st trimester abortion was available either routinely or optionally at 29% of programs. Among chief residents, 74% reported no training in 1st trimester vacuum aspiration, and 85% reported no clinical experience whatsoever with vacuum aspiration. Only 3% reported having managed at least 10 cases during their residency (76). These findings suggest substantially greater exposure to abortion than reported just three years prior, with training offered at more than twice as many programs. One possibility is that these data reflect a true increase in the availability of abortion training in family medicine residencies. Another possibility is that there is error

in at least one of the study results. Given the higher response rate in the 1993-1994 study, it is more likely that these results more accurately reflect the true population. It is also the case that programs including abortion training might be more likely to respond to a questionnaire on the topic, and that both figures are overestimates of the true proportion, with the 1996 data more skewed by the lower response.

A low rate of abortion training is also consistent with more recent data. In 2003, only 11 of 337 program directors (3.3%) reported full integration of abortion training into their curriculum. All positive responses were confirmed with a chief resident from the program (77). This proportion is dramatically lower than those reported previously and may partially reflect a true decline. In addition, this questionnaire sought to define integrated education, and may not have included programs offering abortion training on an optional basis, in contrast to prior studies.

The treatment of abortion within a training program plays an important role in determining the exposure of residents to the procedure and surrounding issues. Programs providing abortion training on a routine rather than on an optional basis generally have higher participation rates. One program coordinated by three northern California residency programs in conjunction with two Planned Parenthood clinics was implemented in 2003. Organized as an integrated part of the gynecology rotation, the program achieved a 75% procedural participation rate among residents over two academic years. Trainees attended didactic sessions and received training in pregnancy counseling, pre-procedure ultrasonography, and 1st trimester MVA. By completion of the rotation, the average participating resident had performed 29 surgical procedures and 1 medical procedure. The number of medical abortions performed by residents was much lower because these cases were integrated into other clinics at the training sites (78).

The attitude of a residency program toward abortion is reflected in the manner in which training is presented to its residents. Offering routine abortion training has been shown to influence resident attitudes toward the procedure. Residents whose programs present abortion as a natural component of family medicine are significantly more likely to respond affirmatively when asked if performing pregnancy terminations falls within the scope of family practice and if training in early abortion procedures should be included in their standard curriculum (74, 79). These residents are also more likely to report a desire for further training in the area (74) and a willingness to provide abortions to their own patients in their future practice (79). In a survey of resident attitudes after completing a routine training module, 69% of participants reported a more favorable opinion of the procedure than they had held prior to training (78).

Continuing Education

Practicing physicians wishing to provide procedural services to their patients in which they did not themselves receive training during residency may become certified in procedures through continuing education programs. Planned Parenthood designed a series of basic and advanced seminars on contraception for physicians, which were held in New York City beginning in 1966. By 1974, nearly fifty physicians had attended one of the series. Of these, 54% were obstetrician-gynecologists, and 26% were general practitioners (80). While seminars like these are small and only reach those motivated enough to find and schedule their own training, they can be an option for physicians missing abortion training in residency. At the 1990 convention of the American Academy of Family Physicians, a proposal was rejected that would have provided abortion training as a topic for continuing medical education (CME) for members (74).

This decision was tantamount to offering optional training to residents but not excusing them from other clinical duties to make time for it. Physicians could still seek out abortion training, but would not have the time counted toward their mandatory CME training. In addition to graduates of programs in obstetrics and gynecology and family medicine that do not receive adequate abortion training, CME is reasonable for physicians from other fields seeking abortion training. As of 2003, the National Abortion Federation provided an educational online program in abortion care for emergency medicine doctors (81). Currently, they offer CME courses in abortion care as well as an online course in early options (82).

The medical teaching of pregnancy termination has changed with the evolving legal context of abortion. While induction of abortion had been a legitimate topic in obstetrics and gynecology training prior to *Roe*, the legalization of elective abortion gave additional cause for procedural training. In addition to the surgical skills that residents had to acquire to manage patients with incomplete abortions, they could be trained in aspects of pre-abortion care that had been lacking in the prior era. Another result of legalization with profound impact on training was the shift from inpatient to outpatient abortion provision. In some ways, this change was able to broaden training, for as abortion became an increasingly outpatient procedure, family medicine programs began include training for their residents as well. However, the decline in inpatient abortions also meant that residents, whose training occurred primarily in hospitals, had less contact with patients seeking abortion, and less procedural experience.

Conclusion

Although abortion continues to be among the most common, if not the single most common, surgical procedure for women in the United States, and despite the decline in morbidity and mortality accompanying its legalization, procedural training for physicians is not universal. Even among residency programs in obstetrics and gynecology, the field historically responsible for therapeutic abortions, training is optional at best and many residents lack clinical experience. Family medicine programs have begun to include abortion in their curricula, but often only on an elective basis.

The purpose of this work was to examine the formal medical education in abortion offered to physicians-in-training in the United States in the twentieth century. Abortion is unique among medical procedures in that it is quite common, and yet often shunned for political and religious reasons, both within and outside of the medical community. The controversy surrounding the issue begs the question of how physicians have sought and received training in a procedure so mired by political and legal ramifications.

Prior to legalization, therapeutic abortion remained primarily within the domain of obstetrics and gynecology. Pregnancies could be legally terminated for medical reasons, although the specifics of these indications were not concrete. The decision to terminate remained somewhat at the discretion of the individual physician although increasingly within the realm of the hospital therapeutic abortion committee. Those abortions that were performed openly took place in hospitals, which meant that residents in training programs might be expected to be involved in the cases and to gain clinical experience. However, the incidence of legal therapeutic abortion was relatively low and accounted for only a minority of the actual number of procedures. In the post-World War

II era, hospitals across the country saw a trend toward the establishment of therapeutic abortion committees to oversee the approval or denial of abortion on an individual case basis, with the double aim of standardizing protocol for pregnancy interruption and lowering the abortion rates at their respective institutions. While the incidence of therapeutic abortions was low and steadily declined through the mid-twentieth century, residents had experience with complications, as women with incomplete abortions frequently came to hospital emergency rooms. Because management of these patients required many of the same procedures that could be used to interrupt viable pregnancies, such as dilation and curettage or vacuum aspiration, residents were able to gain clinical experience with abortion techniques.

Legalization impacted training in a few specific and highly significant ways. First, residents had increased opportunity for exposure to abortion, as the incidence increased. However, abortion quickly became a primarily outpatient procedure, effectively moving away from training sites and therefore decreasing resident experience. Second, because women desiring pregnancy interruption could now seek services legally, the number of self-induced abortions resulting in complications decreased, and the number of women presenting with incomplete abortions dropped. Thus residents' lost exposure to the group that had historically provided them with the greatest clinical experience. After legalization, the number of therapeutic abortions increased, but may not have reached the level of procedures required for the management of incomplete abortions (Figure1).

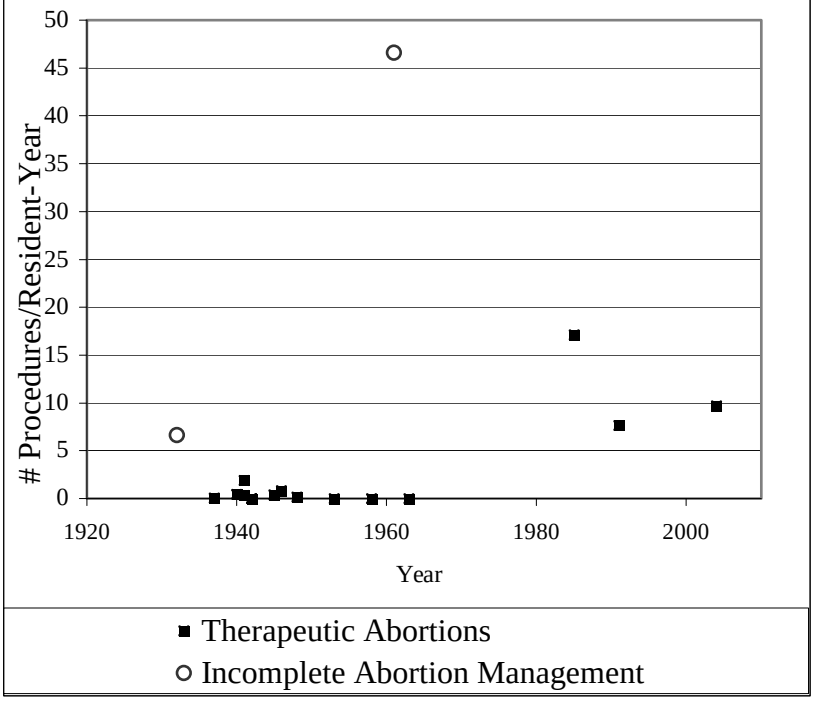

Figure 1: Procedural Experience of Obstetrics-Gynecology Residents. Most data points reflect individual hospitals where numbers of procedures were available. Values shown here were calculated using information on program size from the AMA directories of internship and residency programs. Pre-1985 data represent total procedures performed although it is possible that residents were not involved in each case. Data points from 1985 on reflect multiple programs and are specific to resident experience. (2, 8, 9, 27, 30, 34, 35, 40, 42, 49, 52, 64-67, 83-119)

A third consequence of legalization was that because training now relied on interruption of viable pregnancy rather than management of women requiring intervention, residents opposed to the practice of abortion could now more easily evade training on moral grounds. Even in programs with routine training in abortion in which residents currently are generally expected to participate, those with moral objections can opt out. This differed from previous eras in which a woman with complications required medical treatment. Fourth, because training focused on legal elective abortion, residents not only gained experience with surgical management, but with abortion counseling. Finally, another significant change in abortion provision in the past few decades has been

the adoption of the procedure by many family medicine programs within their curricula as well as obstetrics and gynecology. However, training is not universal, and family medicine programs are not required to offer training to their residents.

Perhaps one of the most fundamental changes in abortion training is not the clinical experience of residents with specific techniques or the number of procedures performed, but the distribution of training. Prior to legalization, all obstetrics and gynecology residents had ample experience in managing complications of abortion and very little experience with therapeutic abortion regardless of their religious beliefs concerning the procedure. After *Roe*, the average number of procedures performed by residents has declined, but with a skewed distribution in which experience in concentrated in those residents who choose to pursue training, either by not opting out of the routine expectations of their programs or by seeking elective rotations. It may be argued that this change is relatively unimportant if, after all, those residents gaining clinical experience with abortion are the only ones who were ever likely to offer the procedure to their patients. Perhaps training has been lost only for those who would not have included it in their practice because of personal objections. This argument may sound reasonable, but the clinical exposure of residents to abortion has been correlated to their likelihood to perform abortions after residencies, and this difference cannot be attributed solely to the self-selected nature of the group. Studies looking at attitudes of residents toward abortion have shown that residents are more likely to view the procedure favorably and to express intent to offer or consider offering the procedure after completion of training than prior. This suggests that limiting procedural training to those with prior interest in abortion provision does impact the number of future providers and can only decrease availability.

The decline in the number of programs offering abortion training to their residents in the 1980s and early 1990s caused great concern over the future of abortion access for women in the United States (120). In the face of dwindling numbers of providers, the legal status of the procedure was clearly not the only barrier to access, and legalization could become meaningless with insufficient numbers of trained providers. Subsequent surveys have shown reversal of this trend, with greater numbers of programs offering training, and with an increased move toward routine rather than optional training, especially among programs in obstetrics and gynecology. Because abortion has become predominantly an outpatient procedure, it has been hard for residents to gain procedural experience in their primary training sites. Partnerships between residency programs and clinics offering pregnancy terminations have been successful in providing opportunities for residents to learn about counseling, procedures, and complication management. Programs offering routine training have not only prepared those already interested in becoming abortion providers, but have influenced the attitudes of residents who previously expressed greater reluctance to offer or refer their patients for abortion. The alarming trend of decreasing abortion training in the decades following legalization is gradually being reversed, but only by continuing to expand training to greater numbers of future physicians can access to abortion be protected for women in years to come.

References

1. Westhoff, C. 1994. Abortion training in residency programs. *J. Am. Med. Womens Assoc.* **49**:150-152.

2. Eastwood, K.L., Kacmar, J.E., Steinauer, J., Weitzen, S., and Boardman, L.A. 2006. Abortion training in United States obstetrics and gynecology residency programs. *Obstet. Gynecol.* **108**:303-308.

3. Dirckx, J.H. 2001. Stedman's Concise Medical Dictionary for the Health Professions:3.

4. Reagan, L.J. 1997. *When Abortion was a Crime.* University of California Press. Berkeley. 387pp.

5. Gellhorn, G. 1928. The treatment of septic abortion. *Am. J. Obstet. Gynecol.* **16**:547-552.

6. Findley, P. 1922. The slaughter of the innocents. *Am. J. Obstet. Gynecol.* **3**:35-37.

7. Taussig, F. 1931. Abortion in relation to fetal and maternal welfare. Part II. *Am. J. Obstet. Gynecol.* **22**:868-878.

8. Cosgrove, S.A., and Carter, P.A. 1944. A consideration of therapeutic abortion. *Am. J. Obstet. Gynecol.* **48**:299-314.

9. Hesseltine, H.C., Adair, F.L., and Boynton, M.W. 1940. Limitation of human reproduction: therapeutic abortion. *Am. J. Obstet. Gynecol.* **39**:549-561.

10. Cheney, C.O. 1934. Indications for therapeutic abortion from the standpoint of the neurologist and psychiatrist. *JAMA* **103**:1914-1919.

11. Taussig, F.J. 1936. *Abortion, Spontaneous and Induced: Medical and Social Aspects.* The C. V. Mosby company. St. Louis. 536pp.

12. Wyser, D.D., and Mayer, M.D. 1927. Therapeutic abortion by means of the roentgen ray. *Am. J. Obstet. Gynecol.* **14**:62-68.

13. Pottenger, F.M. 1934. Indications for therapeutic abortion in tuberculosis. *JAMA* **103**:1907-1910.

14. Ingraham, C. 1932. Therapeutic abortion in pulmonary tuberculosis. *Am. J. Obstet. Gynecol.* **23**:1-13.

15. Pardee, H.E.B. 1934. Cardiac conditions indicating therapeutic abortion. *JAMA* **103**:1899-1902.

16. Herrick, W.W. 1934. Phases of cardiovascular and renal disease indication abortion. *JAMA* **103**:1902-1907.

17. Wagener, H.P. 1934. Lesions of the optic nerve and retina in pregnancy. *JAMA* **103**:1910-1913.

18. Meyer, M.D., Harris, W., and Wimpfheimer, S. 1936. Therapeutic abortion by means of X-ray. *Am. J. Obstet. Gynecol.* **32**:945-957.

19. Adair, F. 1931. The address of the chairman of the Committee on Prenatal and Maternal Care. *Am. J. Obstet. Gynecol.* **21**:767-783.

20. Eastman, N.J. 1944. Therapeutic abortion. *Am. J. Obstet. Gynecol.* **48**:892-893.

21. Jones, T.W. 1944. Is abortion murder? *Am. J. Obstet. Gynecol.* **48**:895-896.

22. Hendry, W.B. 1931. Hemorrhage in the early months of pregnancy. *Am. J. Obstet. Gynecol.* **21**:211-217.

23. Hall, R.E. 1970. Abortion in a Changing World. **1**:377.

24. Taylor, C.T. 1944. The Abortion Problem.:182.

25. Taussig, F.J. 1944. Effects of abortion on the general health and reproductive function of the individual. In *The Abortion Problem.* C.T. Taylor, editor. The Williams and Wilkins Co. Baltimore. 39-48.

26. Findley, P. 1931. The undergraduate teaching of obstetrics. *Am. J. Obstet. Gynecol.* **21**:783-808.

27. Drane, W.H. 1936. The treatment of incomplete abortion. *Am. J. Obstet. Gynecol.* **31**:1029-1034.

28. Taussig, F. 1931. Abortion in relation to fetal and maternal welfare. Part I. *Am. J. Obstet. Gynecol.* **22**:729-738.

29. Whelpton, P.K. 1944. Frequency of abortion: its effects on the birth rates and future population of America. In *The Abortion Problem.* C.T. Taylor, editor. The Williams and Wilkins Co. Baltimore. 15-27.

30. Dannreuther, W. 1946. Therapeutic abortion in a general hospital. *Am. J. Obstet. Gynecol.* **52**:54-65.

31. Heffernan, R.J., and Lynch, W.A. 1953. What is the status of therapeutic abortion in modern obstetrics? *Am. J. Obstet. Gynecol.* **66**:335-345.

32. Hall, R.E. 1970. Abortion in a Changing World. **2**:220.

33. Pearse, H.A., and Ott, H.A. 1950. Hospital control of sterilization and therapeutic abortion. *Am. J. Obstet. Gynecol.* **60**:285-301.

34. Calderone, M.S. 1958. Abortion in the United States.:224.

35. Hammond, H. 1964. Therapeutic abortion: ten years' experience with hospital committee control. *Am. J. Obstet. Gynecol.* **89**:349-355.

36. Colpitts, R.V. 1954. Trends in therapeutic abortion. *Am. J. Obstet. Gynecol.* **68**:988-997.

37. Moore, J.G., and Randall, J.H. 1952. Trends in therapeutic abortion a review of 137 cases. *Am. J. Obstet. Gynecol.* **63**:28-40.

38. Tietze, C. 1950. Therapeutic abortions in New York city, 1943-1947. *Am. J. Obstet. Gynecol.* **60**:146-152.

39. Schaefer, G., and Epstein, H.H. 1952. Results following therapeutic abortion in pulmonary tuberculosis. *Am. J. Obstet. Gynecol.* **63**:129-135.

40. Russell, K.P. 1951. Therapeutic abortion in a general hospital. *Am. J. Obstet. Gynecol.* **62**:434-438.

41. Loth, M.F., and Hesseltine, H.C. 1956. Therapeutic abortion at the Chicago Lying-in Hospital. *Am. J. Obstet. Gynecol.* **72**:304-311.

42. Rovinsky, J.J., and Gusberg, S.B. 1967. Current trends in therapeutic termination of pregnancy. *Am. J. Obstet. Gynecol.* **98**:11-17.

43. Tietze, C. 1968. Therapeutic abortions in the United States. *Am. J. Obstet. Gynecol.* **101**:784-787.

44. Eliot, J.W., Hall, R.E., Willson, J.R., and Houser, C. 1970. The obstetrician's view. In *Abortion in a Changing World.* R.E. Hall, editor. Columbia University Press. New York and London. 85-95.

45. Yow, M. 1970. A pediatrician's view. In *Abortion in a Changing World.* R.E. Hall, editor. Columbia University Press. New York and London. 106-110.

46. Kummer, J.M. 1970. A psychiatrist's view. In *Abortion in a Changing World.* R.E. Hall, editor. Columbia University Press. New York and London. 96-105.

47. James, G. 1969. The role of the medical school in family planning. In *Family Planning and Medical Education.* H.V. Hyde, and L.S. Bloch, editors. Association of American Medical Colleges. 115-123.

48. Levin, A.C., Rizzi, J.N., and Veprovsky, E.C. 1962. Management of incomplete abortion. *Am. J. Obstet. Gynecol.* **83**:9-12.

49. Decenzo, J.A., and Cavanaugh, D. 1967. Management of incomplete abortion on an outpatient basis. *Am. J. Obstet. Gynecol.* **97**:17-20.

50. Morse, W. 1948. The surgical management of incomplete abortion. *Am. J. Obstet. Gynecol.* **56**:173-179.

51. Riva, H.L., Des Rosiers, J.L., Teich, J.C., and Kawasaki, D.M. 1963. Surgical management of incomplete abortion. *Am. J. Obstet. Gynecol.* **85**:35-37.

52. Braungardt, C.D., Kaufman, R.H., and Franklin, R.R. 1963. The out-patient management of incomplete abortion. *Am. J. Obstet. Gynecol.* **86**:151-159.

53. Kurzrok, L. 1948. Use of estinyl in treatment of missed abortion. *Am. J. Obstet. Gynecol.* **56**:796-798.

54. Johnson, J.W., Cushner, I.M., and Stephens, N.L. 1966. Hazards of using hypertonic saline for therapeutic abortion. *Am. J. Obstet. Gynecol.* **94**:225-229.

55. Vladov, E. 1967. The vacuum aspiration method for interruption of early pregnancy. *Am. J. Obstet. Gynecol.* **99**:202-207.

56. Vojta, M. 1967. A critical view of vacuum aspiration: a new method for the termination of pregnancy. *Obstet. Gynecol.* **30**:28-34.

57. Eaton, C.J. 1969. Uterine aspiration for evacuation of the pregnant uterus. *JAMA* **207**:1887-1889.

58. Nilsson, C.A. 1967. Vacuum-aspiration of uterine contents in legal abortion and allied conditions. *Acta Obstet. Gynecol. Scand.* **46**:501.

59. Novak, F. 1970. Experience with suction curettage. In *Abortion in a Changing World.* R.E. Hall, editor. Columbia University Press. New York and London. 74-798.

60. Burkman, R.T., King, T.M., Burnett, L.S., and Atienza, M.F. 1974. University abortion programs: one year later. *Am. J. Obstet. Gynecol.* **119**:131-135.

61. Swartzberg, D. 1995. Elective acquaints medical students with abortion. *JAMA* **274**:1107-1108.

62. Espey, E., Ogburn, T., Chavez, A., Qualls, C., and Leyba, M. 2005. Abortion education in medical schools: a national survey. *Am. J. Obstet. Gynecol.* **192**:640-643.

63. Klamen, D.L., Grossman, L.S., and Kopacz, D.R. 1996. Attitudes about abortion among second-year medical students. *Med. Teach.* **18**:345-346.

64. Lindheim, B.L., and Cotterill, M.A. 1978. Training in induced abortion by obstetrics and gynecology residency programs. *Fam. Plann. Perspect.* **10**:24-28.

65. Darney, P.D., Landy, U., MacPherson, S., and Sweet, R.L. 1987. Abortion training in U.S. obstetrics and gynecology residency programs. *Fam. Plann. Perspect.* **19**:158-162.

66. MacKay, H.T., and MacKay, A.P. 1995. Abortion training in obstetrics and gynecology residency programs in the United States, 1991-1992.[see comment]. *Fam. Plann. Perspect.* **27**:112-115.

67. Westhoff, C., Marks, F., and Rosenfield, A. 1993. Residency training in contraception, sterilization, and abortion. *Obstet. Gynecol.* **81**:311-314.

68. ACGME. 2007. ACGME Program Requirements for Graduate Medical Education in Obstetrics and Gynecology. **2007**.

69. Castle, M.A., and Hakim-Elahi, E. 1996. Abortion education for residents. *Obstet. Gynecol.* **87**:626-629.

70. Shanahan, M.A., Metheny, W.P., Star, J., and Peipert, J.F. 1999. Induced abortion. Physician training and practice patterns. *J. Reprod. Med.* **44**:428-432.

71. Steinauer, J.E., Landy, U., Jackson, R.A., and Darney, P.D. 2003. The effect of training on the provision of elective abortion: a survey of five residency programs. *Am. J. Obstet. Gynecol.* **188**:1161-1163.

72. ACGME. 2007. ACGME Program Requirements for Graduate Medical Education in Family Practice. **2007**.

73. Marshall, J.H., Bergman, J.J., Berg, A.O., and Leversee, J.H. 1982. Outpatient termination of pregnancy: experience in a family practice residency. *J. Fam. Pract.* **14**:245-248.

74. Lerner, D., and Taylor, F. 1994. Family physicians and first-trimester abortion: a survey of residency programs in southern California.[see comment]. *Fam. Med.* **26**:157-162.

75. Talley, P.P., and Bergus, G.R. 1996. Abortion training in family practice residency programs.[see comment]. *Fam. Med.* **28**:245-248.

76. Steinauer, J.E., DePineres, T., Robert, A.M., Westfall, J., and Darney, P. 1997. Training family practice residents in abortion and other reproductive health care: a nationwide survey.[see comment]. *Fam. Plann. Perspect.* **29**:222-227.

77. Lesnewski, R., Prine, L., and Gold, M. 2003. New research abortion training as an integral part of residency training. *Fam. Med.* **35**:386-387.

78. Paul, M., Nobel, K., Goodman, S., Lossy, P., Moschella, J.E., and Hammer, H. 2007. Abortion training in three family medicine programs: resident and patient outcomes. *Fam. Med.* **39**:184-189.

79. Bennett, I., Johnson, M., Wu, J.P., Kalkstein, K., Wolff, E., Bellamy, S., and Fleischman, J. 2007. A family medicine training collaborative in early abortion. *Fam. Med.* **39**:164-166.

80. Wan, L.S., Lehfeldt, H., Tsuei, J.J., Sobrero, A.J., and Douglas, G.W. 1974. Continuing education in family planning for practicing physicians. *Am. J. Public Health* **64**:32-36.

81. Hemmick, R.S. 2003. Abortion care for emergency physicians. *Ann. Emerg. Med.* **41**:429-430.

82. National Abortion Federation. 2005. Early Options: A Provider's Guide to Medical Abortion. **2007**.

83. AMA. 1991. 1991-1992 Directory of Graduate Medical Education Programs.

84. AMA. 1966. *1966 Directory of Approved Internships and Residencies.* AMA. Chicago.

85. AMA. 1965. *1965 Directory of Approved Internships and Residencies.* AMA. Chicago.

86. AMA. 1964. *1964 Directory of Approved Internships and Residencies.* AMA. Chicago.

87. AMA. 1963. *1963 Directory of Approved Internships and Residencies.* AMA. Chicago.

88. AMA. 1962. *1962 Directory of Approved Internships and Residencies.* AMA. Chicago.

89. AMA. 1951. Approved internships. *JAMA* **147**:388-404.

90. AMA. 1951. Approved residencies and fellowships. *JAMA* **147**:405-462.

91. AMA. 1950. Approved internships. *JAMA* **142**:1149-1160.

92. AMA. 1950. Approved residencies and fellowships. *JAMA* **142**:1161-1215.

93. AMA. 1949. Approved internships. *JAMA* **140**:161-172.

94. AMA. 1949. Approved residencies and fellowships. *JAMA* **140**:173-225.

95. AMA. 1948. Approved internships. *JAMA* **137**:29-41.

96. AMA. 1948. Approved residencies and fellowships. *JAMA* **137**:42.

97. AMA. 1947. Approved internships. *JAMA* **134**:1323-1334.

98. AMA. 1947. Approved residencies and fellowships for veteran and civilian physicians. *JAMA* **134**:1335-1375.

99. AMA. 1946. Approved internships. *JAMA* **131**:1311-1321.

100. AMA. 1946. Approved residencies and fellowships for veteran and civilian physicians. *JAMA* **131**:1322-1354.

101. AMA. 1942. Approved internships. *JAMA* **119**:1311-1321.

102. AMA. 1942. Approved residencies and fellowships. *JAMA* **119**:1322-1344.

103. AMA. 1941. Hospitals approved for training interns. *JAMA* **117**:757-766.

104. AMA. 1941. Hospitals approved for residencies in specialties. *JAMA* **117**:767-788.

105. AMA. 1939. Hospitals approve for training interns. *JAMA* **113**:832-841.

106. AMA. 1939. Hospitals approved for residencies in specialties. *JAMA* **113**:842-860.

107. AMA. 1938. Hospitals approved for training interns. *JAMa* **111**:822-831.

108. AMA. 1938. Hospitals approved for residencies in specialties. *JAMA* **111**:832-841.

109. AMA. 1937. Hospitals approved for training interns. *JAMA* **109**:683-692.

110. AMA. 1937. Hospitals approved for residencies in specialties. *JAMA* **109**:693-707.

111. AMA. 1936. Hospitals approved for training interns. *JAMA* **107**:693-702.

112. AMA. 1936. Hospitals approved for residencies in specialties. *JAMA* **107**:703-715.

113. AMA. 1935. Hospitals approved for internships. *JAMA* **105**:699-708.

114. AMA. 1935. Hospitals approved for residencies in specialties. *JAMA* **105**:709-720.

115. AMA. 1934. Hospitals approved for internships. *JAMA* **103**:588-596.

116. AMA. 1934. Hospitals approved for residencies in specialties. *JAMA* **103**:597-608.

117. AMA. 1933. Hospitals approved for internships. *JAMA* **101**:699-707.

118. AMA. 1932. Hospitals approved for internships. *JAMA* **99**:747-755.

119. AMA. 1931. Hospitals approved for internships. *JAMA* **97**:629-637.

120. Arons, D.B. 2006. Shoot the Abortionist Twice: the Crisis in Abortion Training in the United States.