

## ACKNOWLEDGMENTS

*The generous assistance of Carl W. Tyler, Jr., MD, and Glen L. Urban, PhD, during the research upon which this article is in part based, and of Julian Strauss, DVM, and David M. Heer, PhD, in the preparation of the manuscript is gratefully acknowledged.*

## Reference

1. Williams, S. J. A Methodology for the Planning of Therapeutic Abortion Services. Health Serv. Rep. 87: 983-991, 1972.

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A significant cost differential obviously exists between inpatient and outpatient abortion services. The feasibility of providing outpatient vacuum aspiration procedures has been adequately demonstrated during the past few years, and as the fraction of women seeking early abortion increases the use of outpatient facilities should also increase. The effects of such a shift were also investigated.

As the fraction of outpatient abortions was increased from a low of 10 per cent to a high of 90 per cent, the costs of providing services decreased by about one-third. Hospital patient-day requirements dropped dramatically. Such a shift requires, however, that women with preexisting conditions that may significantly increase their risk of mortality or morbidity be carefully screened and directed to the facility best able to treat them.

The importance of the time point in pregnancy that the abortion is performed is evident. Early abortions have a multitude of health and economic benefits whereas late abortions present both an increased burden to the health care system and an increased threat to the woman's health.

The national requirements for abortion services, at the level of services experienced in New York, or even somewhat higher, are not excessive. The space each facility, and the time each gynecologist, would have to allocate to these services is also not excessive, especially as an increasing fraction of abortions are performed during early pregnancy.

Alternatives to abortion should also be widely available. The importance of contraceptive services, infertility treatment, and other aspects of comprehensive medical care for human reproduction should also be emphasized.

*Full text of the original article will be forthcoming in Public Health Reports.*

# Effects of Legalized Abortion on Neonatal Mortality and Obstetrical Morbidity at Harlem Hospital Center

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## Introduction

Changes in the New York state abortion law, permitting the termination of pregnancy at the discretion of the patient and her physician prior to the 24th week, were accompanied by a 50 per cent decline in the maternal

mortality<sup>1</sup> rate in New York City. There was an unexpectedly large decrease in the neonatal mortality rate,\* and, for

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\* Pakter, J. Personal communication.

the first time in a decade, a decline in the number of illegitimate births<sup>1</sup> was noted.

The apparent effects of the new law on perinatal and neonatal mortality and maternal morbidity and mortality at the Harlem Hospital Center are presented in this report.

### Subjects and Methods

The following neonatal and obstetrical data at Harlem Hospital Center for the years 1966 through 1971 were analyzed: total deliveries (live births plus fetal deaths); fetal deaths (fetuses dying in utero weighing 500 gm or more at delivery); neonatal mortality rates, expressed as deaths within the first 28 days of life (limited to those occurring in the hospital prior to discharge) per 1,000 live births (subdivided into two categories: 750 gm or less and greater than 750 gm); perinatal mortality rates, expressed as hospital neonatal deaths plus fetal deaths per 1,000 deliveries; surviving newborns weighing 750 gm or less at birth; maternal mortality; admissions for incomplete abortions\*; and voluntary abortions. The transition year of 1970 was divided into the first 6 months (preabortion liberalization) and the second 6 months (following liberalized legal abortion).

### Results

The total number of deliveries at Harlem Hospital Center declined from 3,149 in 1966 to 2,222 in 1968 and then remained virtually unchanged through 1971. During the latter year, the number of voluntary abortions (2,164) approximately equaled the number of deliveries (2,370). There was no decline in the number of fetal deaths in 1971. The in-hospital neonatal mortality rate, which averaged 33.9 deaths per 1,000 live births in the period of 1966 through 1969, decreased to 18.9 per 1,000 live births in 1971 ( $\chi^2 = 8.8, p < 0.005$ ). To a large extent, the decline was due to the decrease in the incidence of live-born infants weighing 750 gm or less from 18.9 per 1,000 (1966 to 1969) to 8.3 per 1,000 in 1971 ( $\chi^2 = 7.6, p < 0.01$ ). The survival rate of infants of this size at Harlem Hospital Center is 3 per cent.

The frequency of admissions for incomplete abortions in relation to the annual number of deliveries was significantly lower in 1971 (308/2,370) than in 1966 to 1969 (2,390/10,345) ( $\chi^2 = 36.7, p < 0.001$ ).

Maternal deaths have been rare throughout the study period. Since July, 1970, only two have occurred. One of these, which was abortion-associated, occurred in a woman with sickle cell anemia who died of complications of her primary illness.

\* This group was comprised primarily of women admitted for early spontaneous termination of pregnancy occurring either immediately prior to or following admission. However, there were undoubtedly some women in this group whose termination of pregnancy was secondary to some type of interference.

### Discussion

Prior to 1970, neonatal mortality rates at Harlem Hospital Center far exceeded those of both the white and nonwhite populations of the United States.<sup>2</sup> This was due primarily to the large number of infants with birth rates below 750 gm in whom the mortality is 97 per cent. During the period before 1970, the incidence of admissions for incomplete abortions was extremely high, with about one for every four deliveries. Following legalization of abortion, a marked decrease occurred in the number of very low birth weight nonviable infants and simultaneously in the neonatal mortality rate. Concurrently the number of admissions for incomplete abortions decreased. It is our impression that prior to July 1, 1970, many of the "spontaneous" abortions were performed illegally.

The decline in the number of nonviable but live-born premature infants is of special interest. There is strong indirect evidence that many illegal abortionists in this area preferred to delay the intervention until after the 16th week of gestation. The insertion of an indwelling catheter through the cervical os at that time would result in the live birth of an immature nonviable infant. It was this group of infants who contributed greatly to the previously high neonatal mortality rates.

It will be several years before the full impact of the voluntary abortion program can be determined. Thus far, the overall decline in neonatal and maternal mortality has been striking.

Performance of abortion in a hospital setting has been shown to be relatively safe<sup>3-5</sup> and is associated with minimal maternal morbidity and mortality. However, some centers have reported frequent adverse effects.<sup>6</sup> Careful evaluation of all direct and indirect effects of voluntary abortions is therefore of the utmost importance.<sup>7</sup>

### References

1. Pakter, J., and Nelson, F. Abortion in New York City: The First Nine Months. *Fam. Plann. Perspect.* 3:5-12, 1971.
2. Wegman, M. E. Annual Summary of Vital Statistics-1970. *Pediatrics* 48:979-983, 1971.
3. Rawlings, E. E., and Kahn, A. A. Effects of the Abortion Law, 1967, on a Gynecological Unit. *Lancet* 2:1249-1251, 1971.
4. Beric, B. M., and Kupresanin, M. Vacuum Aspiration, Using Pericervical Block, for Legal Abortion as an Outpatient Procedure up to the 12th Week of Pregnancy. *Lancet* 2:619-621, 1971.
5. Rovinsky, J. J. Abortion in New York City. *Obstet. Gynecol.* 38:333-342, 1971.
6. Stallworthy, J. A., Moolgaoker, A. S., and Walsh, J. J. Legal Abortion: A Critical Assessment of Its Risks. *Lancet* 2:1245-1249, 1971.

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