

APPENDIX A: THE MANITOBA STUDY*

The Manitoba Health Care System and Claims Data

In carrying out this research, claims data were used from records of the Manitoba Health Services Commission (MHSC), which operates the Manitoba health insurance program. The entire population of Manitoba (in 1973, 1,027,866 people) is covered by health insurance. The program includes virtually universal coverage (including visits to chiropractors) for residents wherever their care is rendered. There is no fee associated with physician visits or hospital usage, and there are few coverage limits. Cosmetic surgery is excluded as is routine dental care. There are also limits on certain types of services. Only one eye examination a year is covered unless medical conditions indicate otherwise. Similarly, there is an upper limit on the amount of chiropractic services covered (in 1979, the limits were \$70 per single person, \$140 for a family of three or less, etc). A small number of physicians have opted out of the Provincial insurance scheme. In such cases, the Province pays the patient rather than the physician for services delivered, and the physician may charge the patient the difference between the MHSC benefit and his or her posted fee.

Physicians are paid on a fee-for-service basis, and in order to be paid, they must submit a claim identifying services rendered to their patients. These claims contain identifying information on the patient, the physician, and the diagnosis (coded at MHSC by ICDA-8). Every discharge from Manitoba hospitals also results in a claim that will contain information on the attending physician and surgeon as well as the patient, up to three diagnoses, and up to three surgical procedures. Each of these files is maintained separately, with no routine record integration. However, since patient numbers and physician numbers are unique across files, it is possible to build files on individuals (all instances of care received from various physicians and in various hospitals over time).

The Hysterectomy Research

For our research on hysterectomy in Manitoba, a sample of hospital discharges in 1973 which included hysterectomy (ICDA procedure codes 69.1-69.7) as

the first, second, or third surgical procedure was abstracted for further analysis. Exactly 1,148 cases meeting this initial criterion were selected. Given this all inclusive definition, hysterectomy rates in Manitoba are as follows: 4.37/1,000 females aged 15 to 20; 4.87/1,000 females aged 21 to 39; 15.82/1,000 females aged 40 to 49; 5.80/1,000 females aged 50 and over. Seventy-two percent of the surgery was done by gynecologists, 14 percent by general practitioners, and 13 percent by general surgeons. Forty-three percent was done in Winnipeg teaching hospitals, 33 percent in Winnipeg nonteaching hospitals, 6 percent in rural hospitals with 125 beds or more, and 18 percent in smaller rural hospitals. Approximately half of Manitoba's and 79 percent of the active physicians (above a minimum earning level) practice in Winnipeg, the Provincial capital and site of the medical school.

After examination of the diagnoses and the additional surgical procedures which these women had undergone, we decided to exclude all women who had had as a first, second, or third diagnosis a malignancy (ICDA 140-209). Seventy-two women were excluded from the study on this basis. One additional woman who had had a complete abdominal hysterectomy combined with a cesarean section was excluded from the study. Subsequent analysis of hysterectomy patients has since been restricted to the 1,075 women remaining. These include only women who have had an abdominal hysterectomy (partial, subtotal, or complete, ICDA 69.1-69.2) or a vaginal hysterectomy (total and subtotal, ICDA 69.4).

For these 1,075 women, we abstracted all discharges from hospitals which occurred in the 12 months following hysterectomy as well as the 12 months prior to hysterectomy. For each of these discharges, it was possible to examine up to three associated diagnoses and up to three operative procedures. In addition, for the 12 months before and the 12 months after hysterectomy, all claims for visits to emergency room or outpatient clinics were abstracted (including one diagnosis and one operative procedure if performed). Finally, all out-of-hospital physician visits (whether they occurred at home or in the physician's office) for the 12 months before and the 12 months after hysterectomy were abstracted. These claims included one diagnosis. For a woman who had a hysterectomy in January 1973, the periods of claims examined would be as follows: 1) for the 12 months before, claims from January 1972 through December 1972 would be pulled; and 2) for the 12

*Sources: N. L. Roos, et al., "A New Audit Procedure Applied to an Old Question: Is the Frequency of T & A Justified?" *Med Care* 15(1): 1, 1977; and N. L. Roos, Jr, et al., "Using Administrative Data Banks for Research and Evaluation: A Case Study," *Evaluation Quarterly* 3(2): 236, 1979.

months after period, claims from February 1973 through January 1974 would be examined.

By using the unique family registration number combined with sex and birth year, it was possible to build histories for individual women.

Validity and Reliability of Claims Data

We have been doing health services research using claims data from the Manitoba insurance system for the past 5 years. An important part of this research effort has been devoted to examining the validity and reliability of the claims as a data source. Two articles have been published (68,70) and report some of the extensive analysis which we have done on the validity and reliability of claims information in conjunction with our research on tonsillectomy. We have found that the data-transcription error rate from physician's written diagnosis to claims ICDA-coded diagnosis is less than 3 percent. The interobserver and intraobserver reliability of diagnosis recorded on the claims compares favorably with published studies in clinical settings. Reliability is higher when diagnoses are grouped than when any single diagnosis is examined. The diagnoses are valid in the sense that surgeons performed operations consistent with previous diagnoses recorded for the patient.

We have conducted reliability checks comparing diagnoses recorded on medical and hospital claims

with diagnoses recorded in hospital and physician records. The overall correspondence between diagnoses in these two sources is reasonably good. (Disagreements range from 10 to 30 percent, depending on how fine the distinctions being made are.) We have also made comparisons between diagnoses recorded on hospital claims and diagnoses recorded in *Vital Statistics*. These comparisons suggest a very close correspondence between diagnostic information contained in *Vital Statistics* and the diagnostic information contained on a hospital claim during the admission when a patient died.

In a special study of validity of claims as they relate to hysterectomies, the procedures billed for by surgeons and anesthesiologists were compared with the procedures recorded in the hospital file when a hysterectomy was coded. The reverse comparison was also made; that is, the procedures recorded in the hospital file were compared with those for which the surgeon and/or anesthesiologist had billed for hysterectomy. In both comparisons, 94 percent of the records were an identical match. Where there were discrepancies, the discrepancy was almost always due to a date discrepancy or to the surgeon's billing for a more extensive procedure associated with an abdominal malignancy to which the hysterectomy would have been incidental. In all these cases, the more extensive procedure was also recorded in the hospital claims.