

Problems of Case Finding and Data Collection In Ambulatory Care Settings

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Abstract: The experience gained in a four-year ambulatory care study suggests that major problems of patient care data collection include: 1) Difficulties in obtaining listings of patients by diagnosis/condition that accurately reflect the actual practice experience; 2) Inaccurate coding or identification of the reason for patient visits; and 3) Inability to find the medical record within the system. Data presented here suggest there are certain regularities in completion rates characteristic of research sites and of diagnostic categories. (*Am J Public Health* 70:282-283, 1980.)

We would like to highlight for future researchers some of the problems and some of the regularities we encountered in identifying cases and locating outpatient records in various sites in a four-year study of ambulatory care.

Other studies have reported abstract completion rates for ambulatory care from 20 per cent in the Hare and Bar-noon study¹ to 65 per cent in the Hulka 1978 study,² 67 per cent in the Hawaii study,³ and 68 per cent in the Hulka and Cassel study.⁴ While these reports can be studied for rough guidelines about probable sources of missing data, there is no clearcut information on the degree of intersite variability in case completion rates or on whether the differences in rates persist over time.

Method

The Ambulatory Care Study was a four-year study designed to evaluate and improve the quality of physician performance in five outpatient sites, using feedback of performance measures and other interventions. The process of care measures involved relating medical care recording in ten diagnoses to optimum criteria developed by panels of physicians. It was necessary to obtain large numbers of cases in the ten specific diagnostic categories (Table 1) from each of the five participating sites.

The sites of practice included two sets of clinics associ-

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ated with medical schools, two group practice settings, and the offices of private practitioners in one county of a Mid-western state.

All patient visits for the ten diagnostic categories during six consecutive weeks in three time periods, 1974/75, 1976 and 1977, were searched for and listed.

Problems occurred at three points in the process of data collection: 1) obtaining a universe listing of patient visits by diagnosis, 2) finding charts at many of the sites, and 3) miscoding in our universe listing.

The development of a universe listing was impeded by the lack of standardized systems of billing utilizing a uniform method of diagnosis coding, by the problems inherent in having private practitioners keep a record of patient visits by diagnosis, and by problems specific to certain diagnoses. The routine periodic examinations (adult, gynecologic and pediatric) sometimes were difficult to find because of the incentive from insurance companies for recording illness-oriented diagnoses. Drug listings had to be obtained through the pharmacy in some sites, perhaps skewing the listing obtained. Anemia, often considered a symptom rather than a disease, had to be supplemented by a listing of abnormal values obtained from the laboratory.

The problem of finding charts was found to be most severe in a university hospital site.

There are several possible reasons for the high rates of miscoding, and the variable rates for the different diagnosis. These include:

- Simple coding errors on the part of finance clerks not trained in medical coding, or physicians unwilling to take the time to code carefully;
- The diagnosis listed as primary may have been one of a number of alternatives being considered;
- A suspected diagnosis may not be confirmed by laboratory test or repeated examination. This may be especially true of infections and hypertension.

Percentages of abstract completion rates by diagnoses, sites and year are presented in Table 1. Kendall's coefficients of concordance (W) were calculated to answer three questions: 1) do sites have characteristic completion rates and sources of missing data that are relatively stable over time?; 2) do the different completion rates for different diagnoses persist over data collections?; and 3) within a time period are some diagnoses consistently more troublesome than others from site to site?

Results

The overall completion rates by site show a fairly high degree of relative stability over the three data collections:

TABLE 1—Per Cent of Abstract Completion Rates by Data Collection, Diagnostic Category, and Site of Practice

| Diagnostic Grouping | Site | 1974/75 | | | | | 1976 | | | | | 1977 | | | | | | | |
|-------------------------|------|---------|----|----|-----|----|-------|----|----|-----|----|------|-------|----|----|-----|----|----|-----------------|
| | | A | B | C | D | E | Total | A | B | C | D | E | Total | A | B | C | D | E | Total |
| Adult Examination | | 64 | 52 | 84 | 70 | 88 | 69 | 62 | 77 | 100 | 90 | 82 | 78 | 58 | 55 | 100 | 97 | 71 | 71 |
| Gynecologic Examination | | 62 | 86 | 96 | 86 | 70 | 79 | 50 | 72 | 94 | 83 | 66 | 66 | 43 | 68 | 72 | 84 | 64 | 62 |
| Pediatric Examination | | 63 | 57 | 80 | 90 | 89 | 75 | 44 | 55 | 81 | 80 | 84 | 67 | 41 | 75 | 80 | 90 | 89 | 71 |
| Drug Use | | 54 | 35 | 67 | 55 | 71 | 53 | 62 | 46 | 83 | 43 | 65 | 55 | — | — | — | — | — | — ^a |
| Anemia | | 56 | 28 | 71 | 64 | 74 | 61 | 43 | 43 | 92 | 75 | 99 | 77 | 23 | 54 | 100 | 52 | 95 | 66 ^b |
| Hypertension | | 53 | 57 | 83 | 91 | 86 | 70 | 53 | 71 | 74 | 80 | 83 | 70 | 50 | 60 | 69 | 73 | 73 | 63 |
| Organic Heart Disease | | 60 | 52 | 90 | 84 | 64 | 66 | 51 | 65 | 74 | 74 | 57 | 62 | 70 | 44 | 61 | 61 | 57 | 56 |
| Vulvovaginitis | | 34 | 42 | 74 | 72 | 67 | 51 | 37 | 57 | 84 | 58 | 60 | 54 | 39 | 37 | 64 | 41 | 59 | 48 |
| Urinary Tract Infection | | 42 | 46 | 49 | 67 | 86 | 55 | 33 | 56 | 58 | 64 | 50 | 47 | 25 | 23 | 31 | 35 | 39 | 30 ^c |
| Tonsillitis/pharyngitis | | 45 | 62 | 77 | 100 | 70 | 65 | 39 | 87 | 86 | 54 | 69 | 62 | 31 | 72 | 83 | 68 | 58 | 54 |
| TOTAL | | 53 | 52 | 77 | 77 | 77 | 65 | 46 | 64 | 81 | 71 | 70 | 63 | 42 | 53 | 74 | 66 | 64 | 57 |

a) Drug use omitted in 1977 due to funds cutback.

b) Anemias during 1977 restricted to iron deficiency anemias only.

c) UTI during 1977 restricted to Acute Adult UTI only (Pediatric Acute and Recurrent UTI and Adult Chronic UTI omitted).

Kendall's coefficient of concordance, $W = 0.78$, is significant at less than the .05 level of probability.

For each site and for each data collection, percentages were calculated of data missing due to three major sources—miscoding, visit sheets missing from the record, and unavailability or non-release of the record.* The sites had characteristic sources of missing data and these persisted over time. Kendall's W s were 0.87 ($p < .01$), 0.69 ($p < .10$), and 0.82 ($p < .05$) respectively for the three sources among the sites over the three data collections. For example, the sites with high miscoding rates in one data collection period had high rates in the other two data collection periods.

The relative rank order of completion rates by diagnostic category remained consistent over time. The Spearman coefficient of rank-order correlation between completion rates for the diagnostic categories in the first and second data collection was 0.62, $p < .05$. Budget cutbacks resulted in noncomparable bases for comparisons of drugs, anemia and urinary tract infection from the first two data collections to the third. The coefficient of concordance of the rank-ordered completion rates for the remaining seven comparable diagnostic groupings in Table 1 is $W = 0.84$ ($p < .01$), indicating a fairly high stability in the relative completion rates for these diagnoses over the three data collection periods.

Within each of the data collection periods, the diagnostic categories had consistently lower or higher completion rates from site to site. For each of the three periods separately, the completion rates of the diagnoses and conditions were rank ordered within each of the five sites. The coefficients of concordance among the sites' rank-ordered completion rates of the diagnosis and conditions were $W = 0.46$ in 1974 ($p < .02$), $W = 0.42$ in 1976 ($p < .05$), and $W = 0.51$ in 1977 ($p < .01$). For example, in each of the data collections, urinary tract infection and vulvovaginitis had low completion rates

in all the sites and periodic examinations typically had higher completion rates.

Discussion

The data indicate the extent of variation in completion rates as well as the completion rates themselves and the missing data problems characteristic of a site or a diagnostic condition are relatively stable over a three-year period of time.

The ambiguity of missing data is disconcerting, but there is some small comfort in this study of change over time that at least the sources of missing data remain fairly constant in a site. In preparation for either a longitudinal or a cross-sectional design, a pilot data collection could provide information on missing data rates characteristic of sites and diagnoses which would be useful for estimating the amount of oversampling necessary to obtain adequate numbers of cases for analyses.

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