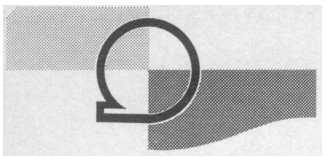

Statistical Elements of Medicare

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THE THEME of this conference is an appropriate framework for discussing the statistical elements of Medicare. In the 10 months following Medicare's inception, much of the related statistical work was devoted to developing, testing, and refining data collection systems. The conference theme is also appropriate because the data collection systems set up for Medicare are integrated with information systems and claim processes. These systems and processes focus on the definition and maintenance of an orderly flow of data from hospitals, nursing homes, and other providers of medical services. These data are necessary for the payment of bills incurred for medical services under the Medicare program.

Knowledge of the benefits available under Medicare and of the way in which it is administered will contribute to an understanding of the Medicare statistical program.

Medicare Benefits

Medicare provides two coordinated health insurance programs for the aged—a basic hospital insurance plan and a voluntary supplementary medical insurance plan (*1*, *2*).

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The hospital insurance program (HI) pays for services that the aged person receives in a participating hospital for up to 90 days in a "spell of illness" (a period beginning with the first day of hospitalization and ending 60 days after discharge from a hospital or extended care facility). Essentially, full payment is made for the cost of care during the first 60 days of hospitalization after a deductible of $40. For each of the remaining 30 covered days in a spell of illness, the patient pays $10 of the daily cost. [As a result of the Social Security Amendments of 1967, a lifetime reserve of 60 days of inpatient hospital coverage is provided each beneficiary. Effective January 1, 1968, a beneficiary can use these days when he exhausts his regular 90 days of coverage. Each of the reserve days is subject to $20 a day co-insurance, payable by the patient.]

The HI program pays 80 percent of the cost of outpatient hospital diagnostic services during a 20-day period after a deductible of $20. [This provision is also changed by the 1967 amendments. Effective April 1, 1968, all hospital outpatient services are covered by the supplementary medical insurance plan.]

The HI program also pays the cost of up to 100 days of care in a participating extended care facility during a spell of illness if the patient has been transferred to that facility from a hospital following a hospital stay of at least 3 days. The cost of the first 20 days is covered in full; the patient pays $5 of the daily

cost for each of the remaining covered days. Covered also are up to 100 home health care visits annually after discharge from a hospital following a stay of at least 3 days or from an extended care facility.

The supplementary medical insurance program (SMI) provides payment for 80 percent of the reasonable charges for physician and other related medical services following payment by the patient of the first $50 of such charges during the calendar year. The program covers physician services regardless of the place of service; up to 100 additional home health visits each year; diagnostic X-ray and laboratory tests; X-ray, radium, and radioactive isotope therapy; prosthetic devices; the rental of durable medical equipment and ambulance services where medically indicated.

With few exceptions, all persons 65 and over are entitled to hospital insurance benefits. The exceptions are retired Federal employees covered under the Federal Employees Health Benefits Act of 1959 and aliens admitted for permanent residence but having less than 5 consecutive years of residence. Enrollment for the SMI program is voluntary, subject to payment of a monthly premium of $3 by the person—an amount matched by an equal sum from the Government. For approximately 1 million persons receiving public assistance in 25 States, the $3 premium is paid by State welfare agencies.

At the beginning of the Medicare program, 18.9 million aged persons were covered by hospital insurance while about 17.6 million were enrolled for supplementary medical insurance benefits. By the middle of 1967, 19.1 million aged persons were covered by hospital insurance, while 17.7 million were enrolled for supplementary medical insurance.

Administration of Medicare

Administration of the Medicare program is essentially tripartite. Basic policy and administrative responsibility is vested in the Department of Health, Education, and Welfare and delegated to the Social Security Administration. In each State, State health agencies, operating under agreement with the Department and working in close cooperation with the Public Health Service, are responsible for determining whether hospitals and other institutions that wish to participate in the program meet the conditions of participation spelled out in the Social Security Act (*3*).

Of great importance is the role of the third member of the administrative trio—the HI intermediary or the SMI carrier. Under the hospital insurance program, each hospital selects an intermediary to act as the link between it and the Social Security Administration. The intermediaries review and pay hospital claims for the cost of providing care to beneficiaries. The intermediaries make these payments to providers for covered items and services on the basis of reasonable cost determinations and assist in the application of safeguards against unnecessary use of covered services.

Under the supplementary medical insurance program, the Secretary of Health, Education, and Welfare selects carriers to serve as intermediaries. The principal functions of these carriers are to determine reasonable charges in their respective areas for each medical care service paid for under the program and to review and pay claims to, or in behalf of, beneficiaries for services provided.

Thus, all claims are directed to the intermediaries or carriers for processing and actual payment. Information comes to the Social Security Administration as a byproduct of this process.

The Statistical System

The primary objective of the health insurance statistical system is to provide data to measure and evaluate the operations and the effectiveness of the two parts of the program. Benefit payment operations furnish the means of obtaining extensive, systematic, and continuous information about the amount, kind, and cost of medical care services used by the aged. Information from the application forms of hospitals, extended care facilities, home health agencies, and independent laboratories seeking to participate in the Medicare program provide data on the characteristics of each provider of services. The claim number assigned to each beneficiary serves to link the various services he uses under the program with his demographic characteristics as recorded in the eligibility files.

The data collection system has two inherent characteristics that determine to a considerable degree the scope, detail, and flexibility of the

available data. First, data are collected and maintained on each beneficiary so that he and his medical experience under the program form the basic unit of measurement and analysis. Second, detailed records for each bill paid under the hospital insurance program and for a sample of beneficiaries under the medical insurance program are maintained at the central offices of the Social Security Administration in Baltimore, Md. Except for the intermediary operating statistics, such as those relating to workloads, time lags, costs, and the like, all statistics are centrally prepared.

Program Statistics

Program statistics are derived from four distinct but related computer-tape records—the master eligibility record, the provider record, the hospital insurance utilization record, and a sample of medical insurance bills.

Master eligibility record. The master eligibility record identifies each aged person eligible for health insurance benefits and indicates whether he is entitled to hospital benefits, supplementary medical insurance benefits, or both. The master eligibility file was established by combining the existing Old Age, Survivors, and Disability Insurance and the Railroad Retirement records on beneficiaries with the records created from the applications of uninsured persons 65 and over seeking to participate in the health insurance program. The same sources are used to keep the eligibility records current—to add the newly aged, eliminate beneficiaries who die, and identify those who withdraw from the supplementary medical insurance program.

The master eligibility record was used to create the health insurance identification cards that are sent to each enrolled person. The card contains the enrollee's claim number and indicates whether he is eligible for one or both parts of the Medicare program.

The claim number is the link between the master eligibility record and all other records used in the program. The master eligibility record also contains information identifying the State and county of residence, date of birth, sex, and race of each enrolled person. The record has been further annotated to indicate selected subgroups, such as public assistance recipients whose medical insurance premium is being paid by a State welfare agency. The eligibility record thus provides significant demographic characteristics which may be linked to the utilization and cost data for both parts of the program. Finally, the eligibility record provides population data for each part of the program and therefore can serve as a base for the computation of a variety of utilization rates—computations limited only by the record's demographic content.

Provider record. Every hospital, home health agency, extended care facility, and independent laboratory must apply for participation in the hospital insurance program in order to be reimbursed for its services. Each institution or agency must also meet the conditions for participation spelled out in the health insurance provisions of the Social Security Act and by the regulations under the act. Data included on the application forms used by these institutions are recorded in the central provider record and will be updated as facilities are recertified periodically, new ones apply for participation, and some leave the program.

The detailed information about each provider recorded on statistical tapes includes such items as the State and county in which the institution is located; number of beds; type of control; major types of services provided; accreditation status, medical school affiliation, and approved training programs; staff characteristics, including the number of physicians, registered nurses, qualified speech therapists, licensed practical nurses, home health aides, and other skilled medical care personnel; annual adult admissions and discharges; number of patient days and persons served; and current reimbursement rate. When the information in this provider file is combined with utilization data, the characteristics of facilities that provide care can be related to the kinds and amounts of service used by the aged.

Hospital insurance utilization records. Administration of the hospital insurance program requires that two facts be known about each aged enrollee at the time of admission to a hospital—his eligibility under the program and the extent to which he has used the benefits available to him under his current "spell of illness." Therefore, a master record has to be kept of the num-

ber of days of care received by each aged person in a hospital or extended care facility and, also, of the number of home health visits he has received. The Social Security Administration maintains this central record system on computer tape.

When the patient is admitted to a hospital, that hospital completes an admission notice and forwards it to the Social Security Administration through its intermediary. The Social Security Administration's central records are checked to determine the patient's eligibility and the amount of his remaining benefits. The records of all persons admitted to participating institutions are checked.

At discharge, the hospital completes a billing form (which also contains the admission information previously submitted) and sends it to the intermediary for payment. The intermediary reviews the claim and approves or rejects payment. After payment, the billing form is forwarded to the Social Security Administration so that its central utilization records can be updated. Each episode of hospitalization is recorded on these central records. In fact, provision is made for the recording of stays in nonparticipating institutions and for the recording of stays, or parts of stays, in participating hospitals that are not covered under the program because the beneficiary has already exhausted his benefit rights during his current spell of illness. The process of billing and payment for extended care facilities and for post-hospital home health services is the same as that described for inpatient hospital care. In addition, copies of all billing forms for outpatient hospital diagnostic services are also sent to the Social Security Administration.

From the claims and recordkeeping process just summarized, utilization histories can be constructed covering a variety of statistical variables—admission and discharge rates, length of stay, discharge status, charge and payment data (including figures on noncovered charges, deductible amounts, and co-insurance amounts), primary diagnoses, surgical procedures, and preoperative and postoperative lengths of stay.

Diagnostic and surgical information is coded centrally for only a 20 percent sample of the beneficiaries having inpatient hospital stays. Only the primary diagnosis at discharge as reported by the hospital is coded; the surgical procedure coded is the one related to the primary diagnosis at discharge. Diagnostic information is also coded for all bills for home health care and treatment in extended care facilities. The data on primary diagnosis and procedure are coded for a 40 percent sample of the bills for outpatient diagnostic treatment.

Since each admission and billing form contains both the beneficiary's claim number and the provider's number, the resulting utilization record can be readily matched to the eligibility files and the provider files. Thus, a tape record can be created for tabulation which will contain all the available information from the three files.

Sample of medical insurance bills. Basic statistics on the utilization of physician and related medical services covered under the supplementary medical insurance program are derived from a continuous sample of the bills paid by carriers to, or in behalf of, 5 percent of all enrolled persons. Carriers have been given specific digits of the health insurance claim number to use in selecting the sample.

The billing form used by physicians is designed to provide information on the time and place of each service, the exact procedure or service provided, the condition treated, the physician's or supplier's charge for the specific service, and the charge allowed by the carrier. For nonsurgical medical services, the information on the physician's billing form provides some descriptive data on the type of services the physician has provided during each visit. For surgical cases, for which the usual practice is to report the surgical procedure, the diagnosis, and the charge without specifying the number of times the surgeon has seen the patient, the statistical unit is the surgical procedure, not the visit.

As indicated, data reflecting physician and other medical services are based on bills paid. Once a person in the 5 percent sample meets the $50 deductible, copies of all his bills—also those used to meet the annual $50 deductible—are included in the sample sent to the Social Security Administration and coded. The sample does

not, however, provide data for persons who do not meet the $50 deductible.

For hospital-based physicians who have authorized the provider to collect their fees, a separate billing form, which is completed for each patient, is used. It includes descriptive information on the date and place of each service and the diagnoses, procedures, and charges. This form is also furnished for the 5 percent sample of beneficiaries. [Effective April 1, 1968, the medical insurance program provides full payment of the reasonable charges of hospital-based radiologists and pathologists. Charges for those physicians who have authorized the provider to collect their fees will be included in the total hospital bill. A separate billing form will continue to be used by those physicians who prefer to bill their patients directly. In both cases, full payment of the physician's reasonable charges will be made, and the $50 deductible will not apply.]

Operating Statistics

As used in this paper "operating statistics" differ from "program statistics" in their focus, analytical scope, and complexity. Program statistics primarily measure the success of the health insurance program in meeting its objectives of providing hospital and medical insurance protection to the aged by use of the myriad measures previously described. Operating statistics, on the other hand, measure the performance of the agencies engaged in the administration of Medicare in terms of the claims volume, billing and processing lags, productivity, and administrative costs. Operating statistics also yield quick readings on selected aspects of the program, for example, on the number and kind of claims paid each month, the total amount reimbursed under the HI and SMI programs, and the average amount of each bill.

The central tape records are a partial resource for operating statistics, particularly for the HI program. Admission notices provide a tool for measuring (*a*) the volume of admissions to hospitals, extended care facilities, and home health agencies, (*b*) the time lag between admission and receipt of the admission notice in the central office in Baltimore, and (*c*) the number and rate of duplicate and erroneous notices transmitted. The billing system provides data on time lags between discharge of a patient and preparation of the bill by the medical facility, between receipt of the bill by the intermediary and the intermediary's determination as to whether or not it should be paid, and between the date the bill is received in Baltimore and the date it is posted to the central utilization record. All these data are available for each provider and each intermediary.

Operating statistics are also derived from reports submitted by individual HI intermediaries and SMI carriers on their monthly workloads and from "payment records" submitted by the SMI carriers.

Intermediary and carrier workload reports. The regular monthly operational report prepared by hospital insurance plan intermediaries shows the number of bills received and paid each month, the number denied because services are not covered or the person has exhausted his benefits, the number of bills that must be returned to the claimant because they are incomplete or inconsistent, and the number pending at the end of each month (including a separate figure for those pending more than 30 days). These data are categorized according to whether the bill covers inpatient hospital, outpatient hospital, extended care, or home health services. Carriers for the supplementary medical insurance program prepare a similar report; only the type of bill breakdown is different.

By combining the data from the monthly operational reports of the intermediaries with some of the data obtained from the master record system, we are able to assess the performance of each intermediary or carrier. The workload figures, along with the figures on benefit expenditures and administrative costs on the monthly and quarterly cost reports that each intermediary and carrier submits, provide the gross data for calculating a wide variety of measures which can be used to analyze and compare the performance of individual intermediaries and carriers.

Payment records for medical insurance. Administration of the supplementary medical insurance program does not require the establishment of a detailed central record of providers of services, since all licensed physicians and osteopaths are eligible to participate in the SMI program. Furthermore, no "spell of illness" con-

cept is involved; payment or reimbursement is made only after the carriers receive bills on which the combined reasonable charges exceed $50 during a calendar year.

To administer and operate the supplementary medical insurance program, the Social Security Administration must have accurate and complete information on the carriers' payments for physician services and for other medical services and supplies under this part of Medicare. For outpatient psychiatric services, the maximum payment limitation of $250 per year requires maintenance of a cumulative central figure. To meet these needs for information, carriers are therefore instructed to supply a machine-readable payment record of each bill paid. In the supplementary medical insurance program, a "bill" is defined as a request for payment from, or in behalf of, a beneficiary for services provided him by a single physician or medical supplier.

The SMI payment record supplements data in the intermediary and carrier workload reports. It shows the carrier's determination of reasonable charges, the amount of charges (if any) applied to the beneficiary's deductible, and the amount of reimbursement. In addition, it shows a summary of descriptive information about the most expensive service of procedure on the bill. The payment record has some obvious and important administrative uses. For example, it serves as an audit trail, permits identification of payments for duplicate services, and serves to verify the financial reports made by the carriers. It also has important statistical uses. The payment record provides a control on receipt of the 5 percent sample of SMI bills and a sampling frame from which to draw supplemental samples for special studies. These studies will be designed so as to provide specific information not obtainable from the basic 5 percent sample.

The Current Medicare Survey

In planning the health insurance statistical program, time lags and varying delays in the receipt and payment of bills by the carriers were anticipated and have been experienced. Several factors contribute to this delay. Physicians may delay in sending bills to their patients. Beneficiaries are instructed to accumulate their bills until the charges exceed the $50 deductible. Also, for beneficiaries whose physicians do not accept assignment of the bills, delays occur because beneficiaries must present receipted bills to the carriers to be reimbursed. [The receipted bill has been eliminated by the 1967 amendments.]

To shorten these delays and provide "current" information on the volume of medical services used under Medicare and the resulting charges incurred against the Medical Insurance Trust Fund, the Social Security Administration developed the Current Medicare Survey (*4*). This survey is intended to produce information within 3 months after the reference period—considerably in advance of the time when data become available from the basic claims system.

Selection of SMI sample. To obtain information on utilization of services and charges, the survey design calls for monthly personal interviews with nearly 4,000 persons who are selected from the primary 5 percent statistical sample of those enrolled in the supplementary medical insurance program. A sample was selected from the master eligibility record to represent the 17.5 million persons residing in the 50 States and the District of Columbia who were enrolled for medical insurance benefits as of July 1, 1966. Those persons selected in July 1966 remained in the sample through December 1966. Another sample was selected from the same source for interviews starting in October 1966, and these persons remained in the survey for 15 months. The cycle of 15 months was established because any expenses incurred by an enrollee in the last 3 months of a calendar year and applied to his deductible for that year may be carried over and applied to the deductible for the next calendar year. A small incremental sample is also drawn each month to include persons "aging into" the universe.

Survey procedures and data collection. The basic sampling unit is the individual beneficiary. Personal interviews are conducted monthly by the Bureau of the Census, acting as data collector for the Social Security Administration. Experienced field interviewers use a questionnaire to obtain information from each beneficiary about his use of medical care and of related services during the preceding month. Through careful editing and screening, those

items not covered by the medical insurance program are identified. Up to the present, only bills incurred for covered medical services have been coded and tabulated. Charges are accumulated so that the total covered amount for an enrollee may be located along a continuum from any point below the deductible to any point above.

The questionnaire is designed to elicit the name and address of respondent, date and place of physician visits, type of physician, condition treated, and other medical services received (including covered medical services received in hospitals, and nursing homes, as well as X-rays, medical tests, ambulance services, and the like). Also included are questions relating to the total amount of the bill, the portion of it not covered by the program, and the source of payment.

No attempt is made to ascertain charges or services for hospital-based physicians, such as pathologists and radiologists, except when the patient is aware of such treatment and is billed separately for their services.

The respondent often does not know the dollar amount of the physician's bill because he has received no bill by the date of the interview. The interviewer attempts to obtain this information in the next monthly interview, since the bill is frequently available by that time.

There are several instances, however, in which information about the physician's bill is not normally available to the beneficiary, regardless of elapsed time. Welfare beneficiaries, for example, do not generally know the amount of their bills. When information on charges is not available, an estimating procedure has been established, which is based on the assumption that charges will be the same for similar services rendered in the same area. For example, a physician's home visit in a specific locality is valued at the amount last reported in the sample for this type of service in the same area.

Sample results are inflated monthly by multiplying the sample data by a single weight obtained from the ratio of an independent estimate of the number of persons enrolled in the medical insurance program as of the beginning of the month to the number in the sample population.

Special efforts are made to obtain data on persons in the sample who have died during the survey month, because they probably have used more medical services during the survey month than other persons in the sample. The results of the first attempts to obtain this information point up the desirability of postponing the interview with the next of kin or other proxy respondent until the month following the death. On this basis, we obtained interviews for 93 percent of the known deaths occurring between July 1 and September 30, 1966.

Conclusion

Health insurance statistics depend for data on information systems that have been developed for administrative and operational purposes. In fact, health insurance statistics are geared to use administrative information systems as a basis for the development of recurrent program and operating statistics, as well as to serve as frames for special studies.

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