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General Accounting Office
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Program Evaluation and
Methodology Division

B-235483

May 24, 1989

The Honorable David Pryor
Chairman, Special Committee on Aging
United States Senate

Dear Mr. Chairman:

Your letter of October 26, 1988, requested that we review the implementation plans proposed by the Health Care Financing Administration (HCFA) for the drug utilization review (DUR) system required to be established under the Medicare Catastrophic Coverage Act of 1988. In the course of performing this work, we have reviewed several existing computerized DUR systems, both private and public.

Your May 1, 1989, letter indicated that the Senate Special Committee on Aging is evaluating proposals to amend title XVIII of the Social Security Act to improve the DUR system to be established under the Medicare Catastrophic Coverage Act of 1988. (See appendix I.) You stated that the descriptive information we have compiled on the extent to which various DUR systems possess key attributes—as specified in the Special Committee on Aging report and the conference report on Medicare's prescription drug coverage and in our discussions with your staff—would be especially useful.[1]

As we understand it, the Committee needs information on the extent to which the DUR systems can identify adverse reactions that may result from

- the interaction of the prescribed drug with one or several other drugs being used by the beneficiary,
- the interaction of the prescribed drug with a known allergy present in the beneficiary,
- the interaction of the prescribed drug with a known physical condition or illness present in the beneficiary,
- the interaction of a prescribed drug with over-the-counter drugs,
- incorrect dosages, and
- under- and overutilization of the prescribed drug.

[1]See Special Committee on Aging, U.S. Senate, Medicare's New Prescription Drug Coverage: A Major Step Forward, But Big Problems Still Exist, 100th Cong., 2nd sess. (Washington, D.C.: U.S. Government Printing Office, October 1988); and U.S. Congress, House of Representatives, Medicare Catastrophic Coverage Act of 1988: Conference Report, 100th Cong., 2nd sess., Report No. 100-661 (Washington, D.C.: U.S. Government Printing Office, 1988).

The types of drug and patient data the Committee is interested in include

- the drug name,
- dosages,
- quantities,
- methods of administration,
- last date dispensed,
- identity and location of the prescribing physician or dentist,
- identity and location of the dispensing pharmacy, and
- information on diagnosis/condition.

This report presents information on the DUR systems we have reviewed and on how they compare to the provisions specified by the Committee.[2] It is important to state clearly that these DUR systems are in no way representative of the full universe of available DUR systems, nor are we endorsing them as the best systems; rather, they are the systems that we became aware of during the course of our ongoing work for the Committee. The systems we reviewed were those at Giant Pharmacies, Long Pharmacies, Thrift Pharmacies, Walgreen Pharmacies, National Data Corporation (NDC) Clinical Screening Program, Home Shopping Network (HSN)—a mail-order pharmacy—and the Tri-Service Micro Pharmacy System of the Department of Defense (DOD).[3]

We examined these DUR systems by reviewing the available literature and documentation on them, observing their operations in site visits to pharmacies, and discussing these systems with experts. The following paragraphs describe the extent to which those systems present the attributes you are interested in, as well as the extent to which these attributes are identified in the conference report as being under the current Medicare authority for point-of-sale (POS) DUR screening. (See appendix II for a tabular representation of the key attributes of the DUR systems.)

Adverse Interactions

Looking first at the issue of identification of drug interactions, we found that all seven systems provide information on drug-to-drug interactions.

[2]See Glossary for definitions of terms.

[3]In addition, we also examined PCS, Inc., which is currently in the process of developing a prospective DUR system, Health Information Designs, Inc., and First Data Bank. Since PCS, Health Information Designs, and First Data Bank do not have fully operational DUR systems at present, we have not included them in our review.

The DUR systems differ with respect to other specific types of interaction effects they examine. For example, not all the DUR systems examine the duplication of drugs (at the ingredient level) or therapeutic overlap. All seven systems examine drug-to-allergy interactions. Six of the seven systems have the capability to examine the interaction of prescription drugs to over-the-counter (OTC) drugs and the interaction of drugs and disease conditions. To make use of the drug-disease function, the private systems are dependent either on the physician to provide the diagnostic information/code or on the patient to provide this information by filling out the patient profile. Five of the seven systems have the capability to identify for interactions of drugs to food. Three of the seven systems included information on minimum and maximum dose range in their drug interaction programs. With one exception, the DUR systems we observed in operation contained no age-specific information on the elderly (for example, what the appropriate dose for the prescribed drug should be for a seventy-year-old beneficiary). Representatives of NDC indicated that their DUR system had some age-specific information on the elderly population but would not demonstrate the extent to which this information was used, citing the proprietary nature of the system.

All systems provided an alert for severe drug interactions—that is, instances in which the health and safety of the patient may be in danger. The mechanism and coding scheme for these alerts differed across systems, but most systems used a rating scale, with a "1" being an alert for the most serious—that is, potentially life-threatening—interaction effect.

Type of Data Entered

All the DUR systems we reviewed provide all the drug and patient-related information specified by the Committee, except the capability to enter data on diagnosis/condition. All systems contained information on drug name, dosages, quantities, method of administration, last date the drug was dispensed, name and/or identifier for the dispensing pharmacy, and the name of the prescribing physician. All but two systems possess the capability for entering the diagnosis or condition that prompted the physician to write the prescription.

Data Security

The issue of data security was addressed to varying degrees by the systems. Each attempted to provide some safeguards against improper access and disclosure of its patient data. The Department of Defense (DOD) system has four different levels of safeguards to protect against unauthorized access to the data base. The major safeguards of the DOD

system include (1) allowing only authorized personnel to access the pharmacy function, (2) restricting user access to only those pharmacy functional components the user is authorized to perform, (3) restricting terminals to specific authorized functional components, and (4) providing an information trail for tracking unauthorized attempts to access the system. (At a minimum, this information trail identifies the user ID, password, terminal ID, and system date/time of each attempted access.)

System Networks

One way that all the existing systems are different from any proposed for HCFA's DUR system is the extent to which they are network systems rather than DUR systems that are specific to individual stores. The NDC system is fairly new and is not currently being used. The systems currently in use at Giant and Long Pharmacies contain only information on patients who come to stores within that particular chain for their prescriptions. That is, there is no way to tap information on prescriptions that might have been filled at other pharmacies for those some patients. The DOD system is limited to individual pharmacies within particular hospitals, with one exception. The DOD system in San Diego links 14 outpatient pharmacies, located in different parts of the city, to the main hospital pharmacy computer-system. Most Walgreen Pharmacies are store-specific, but they do have a link up of 85 pharmacies in the Chicago area through which information can be shared. All stores (450 pharmacies) within the Thrift chain are linked to a main pharmacy system. In addition, the experts we have spoken to are unanimous that a DUR system could be incorporated into the drug claim/bill processing computer system.

Summary

In summary, we found that all the attributes of a DUR system and the patient profile information of interest to the Committee are currently available in at least some operating DUR systems. We also found that issues of data security were dealt with, to some degree, by all systems. We hope this information will be helpful to the Committee in examining potential administrative and legislative actions in this area.

As we agreed with your office, unless you publicly announce the contents of this report earlier, we plan no further distribution of it until 30 days from the date of this report. At that time, we will send copies to the Secretary of Health and Human Services and other interested parties and will make copies available to others upon request. If you have any questions or would like additional information, please call me at (202) 275-1854.

This report was prepared in accordance with generally accepted audit standards under the direction of Michael J. Wargo, Director of Program Evaluation in Physical Systems Areas. Other major contributors are listed in appendix III.

Sincerely yours,

Eleanor Chelimsky
Assistant Comptroller General

Contents

Abbreviations

DOD	Department of Defense
DUR	Drug utilization review
HCFA	Health Care Financing Administration
HSN	Home Shopping Network
NDC	National Data Corporation
OTC	Over-the-counter
POS	Point-of-sale

Congressional Request Letter

United States Senate
SPECIAL COMMITTEE ON AGING
WASHINGTON, DC 20510-6400

May 1, 1989

The Honorable Charles A. Bowsher
Comptroller General of the United States
U.S. General Accounting Office
441 G Street, N.W.
Washington, D.C. 20548

Dear Mr. Bowsher:

The Senate Special Committee on Aging is evaluating proposals to amend Title XVIII of the Social Security Act to improve the drug utilization review (DUR) system established by the Medicare Catastrophic Coverage Act of 1988. The DUR system is intended to protect the elderly and disabled from adverse drug reactions, and to prevent expensive and avoidable hospitalizations that often result from such adverse reactions.

Staff from your Program Evaluation and Methodology Division have performed work on the Health Care Financing Administration's (HCFA) ongoing implementation of the DUR provisions of the Medicare Catastrophic Coverage Act of 1988. It is our understanding that in the course of performing this work for the Committee, GAO reviewed several existing computerized DUR systems, both public and private. It would be most helpful to the Committee if your staff could detail the key attributes of the different DUR systems studied by GAO. It is imperative that this analysis be completed as quickly as possible, to provide timely guidance in our consideration of administrative and legislative action in this area.

Should you or your staff have any questions regarding this request, please have your staff contact David Schulke or Chris Jennings of the Committee staff at 224-5364.

Thank you for your cooperation and assistance in this important matter.

Sincerely,

David Pryor
Chairman

Key Attributes of the DUR System

DUR system information	Pharmacy chains with DUR systems							Medicare authority for POS screening
	Long	DOD	Thrift	NDC	HSN	Walgreen	Giant	
Year implemented	1981	1981	1976	1989	1989	1981	1983	1991
Number of pharmacies with DUR	237	179[a]	450	None	N.A.	85[b]	95	
Extent to which adverse interactions can be identified								
Drug-to-drug	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Duplicate drug	No	Yes	Yes	Yes	Yes	No	Yes	Yes
Therapeutic overlap	No	Yes	No	Yes	Yes	No	No	Yes
Minimum dose	No	Yes	No	Yes	Yes	No	No	Yes
Maximum dose	No	Yes	No	Yes	Yes	No	No	Yes
Drug-to-allergy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Drug-to-OTC	No	Yes	Yes	Yes	Yes	Yes	Yes	N.A.[c]
Drug-to-disease	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Drug-to-food	No	Yes	Yes	Yes	Yes	No	Yes	N.A.[c]
Severity of alert	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Elderly-specific alert	No	No	No	Yes	No	No	No	N.A.[c]
Type of data entered								
Drug name	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dosages	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quantities	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Method of administration	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Last date dispensed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Prescriber ID	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dispenser ID	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Diagnosis/condition	No	Yes	No	Yes	Yes	Yes	Yes	Yes

[a]The DOD system in San Diego (14 pharmacies linked to a main computer) is included as one system in this estimate of 179 pharmacies; the other 178 pharmacies are independent systems that are not linked to a main computer.

[b]Of the 1,450 Walgreen's pharmacies, only 85 currently have a DUR system—all connected to a central computer system.

[c]The Medicare Catastrophic Coverage Act of 1988 does not specify that these attributes be covered by the DUR system.

Major Contributors to This Report

Program Evaluation and Methodology Division, Washington, D.C.	Michael J. Wargo, Director (202-275-3092) James H. Solomon, Assistant Director Sushil K. Sharma, Project Manager Gerald L. Dillingham, Project Advisor Bruce Thompson, Project Staff
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Glossary

Dosage Range	Range defined by the maximum and minimum doses required to achieve therapeutic benefit.
Drug-Drug Interaction	Occurs when two or more drugs given to a patient simultaneously lead to an effect(s) that is different from that obtained when the drugs are used independently.
Drug-Food Interaction	Occurs when the effect of a drug is modified by the timing of ingestion of all or specific foods.
Drug Overlap	Occurs when a patient is taking two or more drug products and at least one ingredient from each is from the same therapeutic class.
Duplicate Drug	Prescriptions for the same drug and for the same patient that are being used at the same time.
Last Date Dispensed	The date of last refill of a drug being screened for an interaction.
Over-The-Counter Drug	Medicines legally available to the general public without the necessity of a prescription.
Prescription Drug	A drug which may not be dispensed without written or verbal authorization from a recognized medical practitioner and one which bears the label "Federal law prohibits dispensing without a prescription."
Prospective Drug Utilization Review	A review that occurs before the prescription is dispensed to the patient (at point-of-sale). This review allows an opportunity to modify the patient's prescription, if warranted.
Therapeutic Class	A group of drugs that have the same intended use.

[redacted]