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REPORT TO THE CONGRESS



BY THE COMPTROLLER GENERAL OF THE UNITED STATES

UNITED STATES
GENERAL ACCOUNTING OFFICE

OCT 2 1975

LIBRARY SYSTEM

Potentially Dangerous Drugs Missing In VA Hospitals--Different Pharmacy System Needed



Large quantities of drugs which may be more than normally susceptible to loss could not be accounted for at VA hospitals which used the conventional pharmacy system--the ward stock system.

An alternative pharmacy system--the unit dose system--provides better drug controls. Despite VA endorsement of the unit dose system, only 7 of 171 VA hospitals use it. In view of the significant drug losses, VA should strengthen drug controls now.

MWD-75-103

SEPT. 30, 1975

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COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-133044

To the President of the Senate and the
Speaker of the House of Representatives

We reviewed the pharmacy systems used in Veterans Administration hospitals to determine how effective they were and whether the drug controls they provided were sufficient to prevent pilferage.

We made our review pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53), and the Accounting and Auditing Act of 1950 (31 U.S.C. 67).

Copies of this report are being sent to the Director, Office of Management and Budget, and to the Administrator of Veterans Affairs.

A handwritten signature in black ink, reading "Thomas B. Atwell".

Comptroller General
of the United States

D I G E S T

New pharmacy systems and procedures have evolved in the general medical community to provide better control over drug dispensing. The unit dose system has been widely accepted as providing better control than the traditional ward stock system.

In the unit dose system, drugs are delivered by the pharmacy to the ward just before time of administration. In the ward stock system, most drugs are stored on the wards.

The unit dose system, in addition to reducing the risk of drug pilferage because it eliminates large ward stocks, may also contribute to better patient care, primarily by reducing medication errors and freeing nursing time from medication preparation. (See p. 6.)

Despite Veterans Administration (VA) endorsement of the unit dose system, only 7 of its 171 hospitals use it.

GAO reviewed these 2 types of pharmacy systems at 11 VA hospitals--9 ward stock hospitals and 2 unit dose hospitals--to determine how effective they were and whether the drug controls they provided were adequate. Use of drugs which have the potential for abuse or addiction, such as tranquilizers, hypnotics, and sedatives, was also reviewed. (See p. 13.)

GAO found that:

- Large quantities of the drugs tested--24 to 57 percent of those withdrawn from stock--could not be accounted for at the nine ward stock hospitals. (See table, p. 15.)
- By contrast, at the two hospitals with unit dose systems, 9 to 12 percent of the drugs tested could not be accounted for. (See table, p. 16.)

--Missing drugs may be primarily attributed to pilferage and waste. (See p. 17.)

As many as 1.1 million tablets and capsules of the drugs tested--43 percent of those withdrawn from stock--could have been unaccounted for at the 9 ward stock hospitals during fiscal year 1974. Significant drug losses could also have occurred at other VA ward stock hospitals. (See p. 27.) On the other hand, the 2 unit dose hospitals had about 30,000 tablets and capsules--about 11 percent of those withdrawn from stock--estimated to be missing during fiscal year 1974.

Drug losses could be reduced and patient care improved in VA hospitals by converting the 164 hospitals presently using the ward stock system to the unit dose system. It may not be economically feasible, however, to convert all the hospitals to the unit dose system in a short period of time.

In the interim, drug controls in ward stock hospitals can be improved and strengthened to prevent losses. VA also needs to improve control over drugs in pharmacies and warehouses. (See p. 28.) The Administrator of Veterans Affairs should:

--Establish a definite timetable for VA-wide conversion of ward stock hospitals to the unit dose system, with conversion priority given to large general hospitals.

--In the interim, strengthen drug controls at ward stock hospitals. (See p. 28.)

VA agreed that drug controls at ward stock hospitals need to be strengthened and listed actions taken or planned to implement GAO's recommendations. VA plans to convert six more hospitals to the unit dose system in fiscal year 1977. Development of a timetable for the systemwide conversion to the unit dose system will depend on an evaluation of these conversions.

The Department of Justice agreed with GAO's recommendation that VA adopt the unit dose system. It said that numerous routine regulatory investigations by the Drug Enforcement Administration at VA facilities have found many of the weaknesses observed by GAO. (See p. 29.)

C o n t e n t s

| | <u>Page</u> |
|--|-------------|
| DIGEST | i |
| CHAPTER | |
| 1 INTRODUCTION | 1 |
| Pharmacy operations | 1 |
| Ward stock drug systems | 2 |
| Advantages | 5 |
| Disadvantages | 5 |
| Unit dose drug systems | 6 |
| Advantages | 6 |
| Disadvantages | 10 |
| Life-cycle costs | 10 |
| Scope of review | 11 |
| 2 WAYS TO REDUCE DRUG LOSSES AND IMPROVE PATIENT CARE | 12 |
| Large quantity of drugs missing | 13 |
| Methodology used to test for drug accountability | 13 |
| Results of drug accountability review | 15 |
| Reasons why drugs were missing | 16 |
| Medication error | 16 |
| Borrowing of drugs | 17 |
| Pilferage and waste | 17 |
| Inefficient administrative procedures at unit dose hospitals | 18 |
| Need for VA Central Office direction for implementing the unit dose system | 18 |
| Opportunities to improve drug controls in ward stock hospitals | 19 |
| Reduce quantities of drugs kept on wards | 19 |
| Tighten controls over ordering and delivering drugs to wards | 20 |
| Present ward stock ordering procedures | 20 |
| Proposed ward stock ordering procedures | 22 |
| Better controls needed in inpatient pharmacies and drug supply warehouses | 22 |
| Inpatient pharmacies | 24 |
| Drug supply warehouses | 25 |

| | | <u>Page</u> |
|----------|--|-------------|
| CHAPTER | | |
| 3 | CONCLUSIONS AND RECOMMENDATIONS | 27 |
| | Conclusions | 27 |
| | Recommendations | 28 |
| | Agency comments | 29 |
| APPENDIX | | |
| I | Letter dated August 18, 1975, from the Administrator of Veterans Affairs | 30 |
| II | Letter dated August 22, 1975, from the Assistant Attorney General for Administration | 33 |
| III | VA facilities reviewed | 34 |
| IV | Principal VA officials responsible for administering activities discussed in this report | 35 |

ABBREVIATIONS

| | |
|-----|---------------------------|
| GAO | General Accounting Office |
| VA | Veterans Administration |

CHAPTER 1

INTRODUCTION

Section 612 of title 38 of the United States Code provides that veterans who have medical disabilities incurred or aggravated in line of military duty are entitled to all reasonable medical services necessary to treat such disabilities. Veterans are also entitled to medical care for non-service-connected conditions without regard to their ability to pay if they (1) are released or discharged from military service for disabilities incurred or aggravated in the line of duty, (2) have compensable service-connected disabilities, or (3) are 65 years of age or older. Veterans of any war or of any military service after January 31, 1955, may be provided similar treatment if they certify they are unable to pay.

The Veterans Administration's (VA's) Department of Medicine and Surgery administers VA's health care delivery system. At the end of fiscal year 1974, VA was providing care in 171 hospitals, 173 outpatient clinics, 84 nursing care units, and 18 domiciliaries. About 1.1 million veterans received treatment in these facilities during the year at a cost of \$2.6 billion. Total expenditure for drugs dispensed to inpatients and outpatients was \$89 million--\$35 million for inpatient drugs and \$54 million for outpatient drugs.

PHARMACY OPERATIONS

All of VA's medical care units have pharmacies. The hospital pharmacy is part of a total medication, or drug, distribution system which includes ordering and receiving medications into the hospital, supplying medications to wards, filling physician medication orders, administering medications to patients, and recording results of medication therapy. Traditionally, VA hospital pharmacies have been responsible only for ordering and receiving medications into the hospital and dispensing them to the wards.

There are two basic systems used to dispense drugs to hospital inpatients--the traditional ward stock system and the unit dose system. In a 1972 report to the Congress, 1/ we stated that hospital pharmacy literature and studies published during the last several years showed traditional ward stock medication systems have experienced major medication errors, staff inefficiency, and drug losses. As an

1/"Study of Health Facilities Construction Costs," Enclosure B, November 20, 1972, B-164031(3), p. 85.

alternative to the ward stock method, the unit dose drug system has been widely accepted by the general medical community. The unit dose system has also been endorsed by the Joint Commission on Accreditation of Hospitals. At the beginning of calendar year 1975, 7 VA hospitals had complete unit dose systems and the remaining 164 used the ward stock system.

We reviewed the two basic types of pharmacy systems used in VA hospitals to determine their effectiveness and the adequacy of the drug controls they provided.

Ward stock drug systems

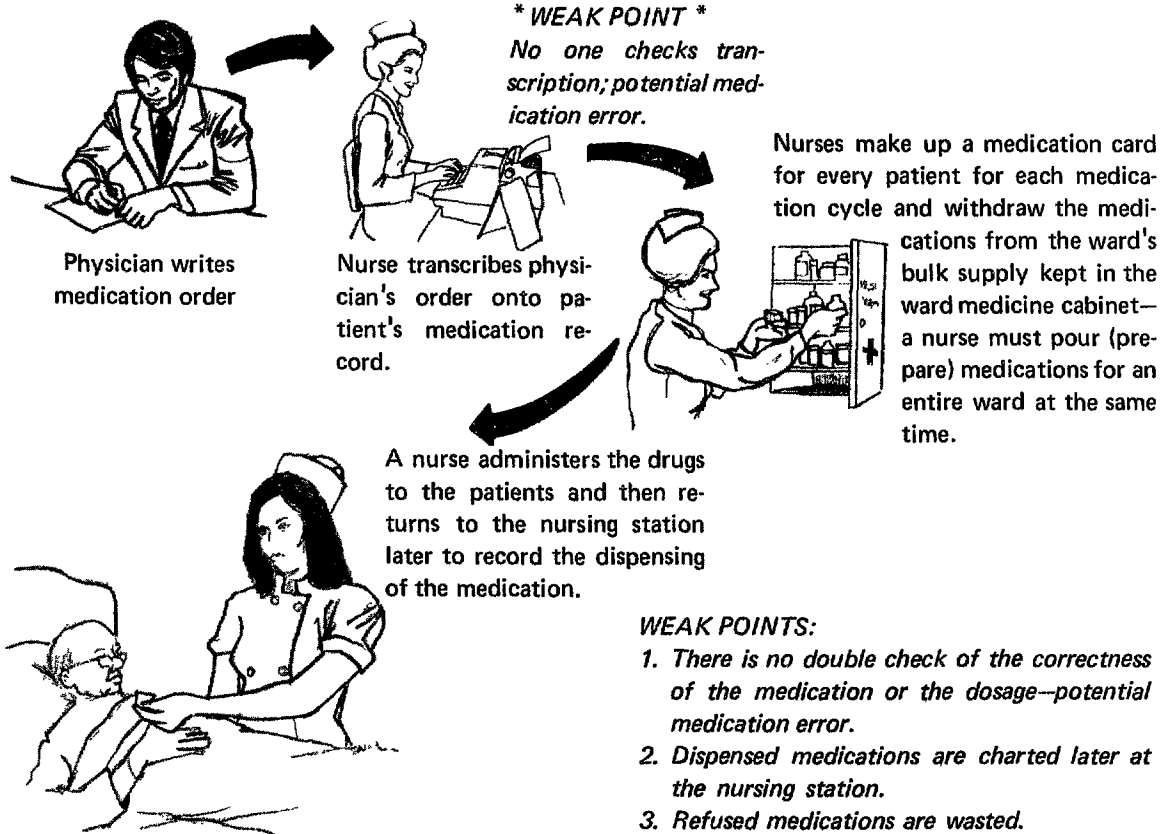
The ward stock system has two variations. One involves stocking all drugs on the wards. Under the other the pharmacist dispenses virtually all drugs on individual prescription orders. When a patient's original supply nears depletion, a nurse must order a refill from the pharmacy.

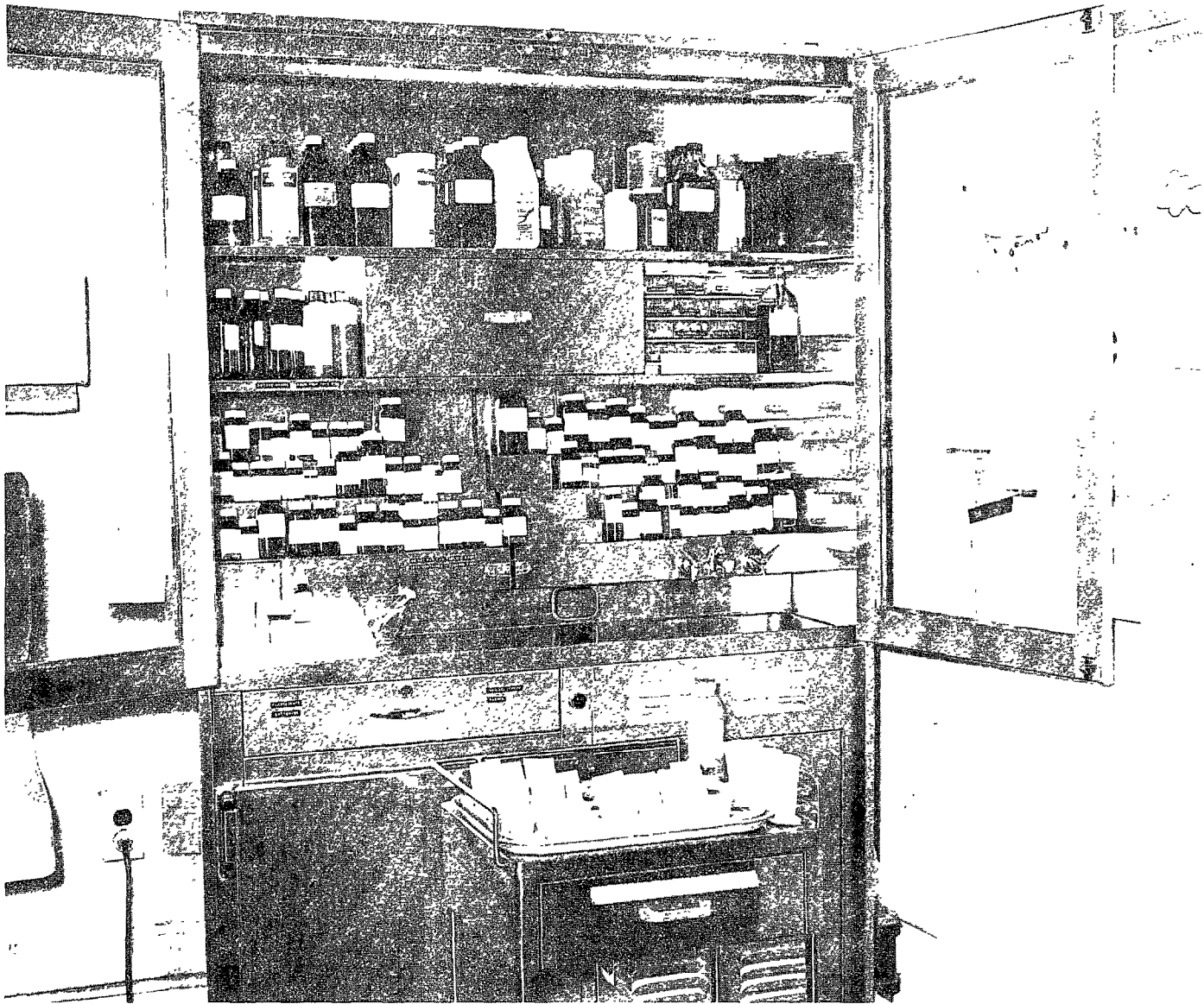
The most commonly used pharmacy system in hospitals today is a combination of the two variations described above. Frequently used drugs are stocked on the hospital wards at each nursing unit. Less commonly used drugs are ordered from the pharmacy when prescribed by a physician.

Regardless of the method used, nurses are primarily responsible for coordinating all medication activity in the wards. (See diagram, p. 3.) Nurses receive and transcribe doctors' orders for medications, order medications from the pharmacy, and maintain drug stocks in ward medicine cabinets. (See picture, p. 4.) They also prepare each patient's medication from ward stocks, administer doses, and record amounts dispensed.

The pharmacy's responsibility in the ward stock system primarily involves procuring medications from outside the hospital and distributing them to the wards. The pharmacy may also be involved in various research and education programs and may provide outpatient prescriptions. Pharmacy personnel, however, are not directly involved in patient medication.

WARD STOCK DRUG DISPENSING PROCEDURE





WARD STOCK MEDICATION CABINET

(VA Photography)

Advantages

The main advantage of the ward stock system is ready access to most commonly used drugs. Stat ^{1/} and one-time drug orders are easily filled from ward stock without involving pharmacy personnel. This lessens demand on the pharmacy, especially in the evening, at night, and on weekends.

Disadvantages

The American Society of Hospital Pharmacists strongly discourages use of ward stock systems for a variety of reasons, ^{2/} including:

- Increased potential for medication errors because of inefficient procedures used to schedule, prepare, administer, control, and record during drug distribution and administration.
- Increased potential for medication errors because pharmacists do not review individual patient medication orders.
- Increased potential for substantial drug losses due to pilferage by hospital personnel.
- Increased drug costs due to waste, obsolescence, and deterioration (patient safety could be jeopardized by unnoticed drug deterioration).
- Lack of proper drug storage facilities in many hospital nursing units.
- Excessive devotion of nursing effort to preparing medication doses and conducting other medication-related activities.

Several studies by the American Society of Hospital Pharmacists have confirmed most of the disadvantages mentioned above. They attributed high medication error rates at ward stock hospitals to nursing errors in selecting and administering medications, in transcribing physicians' orders, and in administering medications at the wrong time.

^{1/}From the Latin statim, signifying "immediate" as applied to prescriptions.

^{2/}American Society of Hospital Pharmacists, "Statement on Hospital Drug Control Systems," May 17, 1974.

Drug pilferage was attributed to the easy accessibility of ward stock. Some studies have shown that 22 to 25 percent of total professional nursing time involves medication-related activities not associated with direct patient care.

Unit dose drug systems

Numerous variations of the unit dose system also exist, primarily in the degree to which pharmacy personnel are involved in administering medications. All unit dose systems, however, share one common feature. The pharmacy delivers medications to patient care areas in unit dose packages just before time for administration. A unit dose package is one which contains the prescribed dosage of medication, such as one tablet or capsule. (See the unit dose medication cycle diagram, p. 7.)

Under the unit dose system, a pharmacist interprets the physicians' orders and records them in patient medication profiles in the pharmacy. Pharmacy personnel then prepare the doses and place them in medication carts containing an individual drawer or cassette for each patient. (See picture, p. 8.) The pharmacy delivers the medications to patient care areas at least once every 24 hours.

Nurses administer the individually packaged drugs to the patients directly from the personal cassettes. The medications dispensed are immediately recorded in the patients' records, which are carried on the ward medication cart. (See picture, p. 9.)

There are two basic types of unit dose systems: (1) centralized, in which all doses are prepared in a central pharmacy and (2) decentralized, in which doses are prepared in two or more satellite pharmacies located in or near patient care areas. Whether the system is centralized or decentralized, basic methods and procedures do not differ. The logistics of delivering medications in each hospital environment may determine which approach is followed; however, the centralized system allows somewhat greater management efficiency and control while the decentralized provides closer pharmacist-physician-nurse-patient relationships.

Advantages

The basic advantages of the unit dose system over the older, traditional ward stock system include:

- Reduced medication errors because each dosage unit is properly labeled from the time it is manufactured or the time it is packaged by the pharmacy until it is administered.

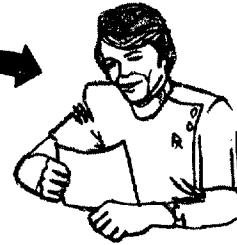
UNIT DOSE MEDICATION CYCLE



Doctor writes medication order.



Nurse transcribes order onto patient's medication record

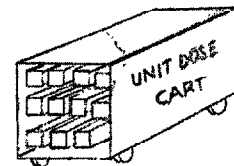


A copy of the doctor's order and the nurse's transcription are sent to the pharmacy, the pharmacist checks the accuracy of the transcription, and checks for possible drug interaction using the pharmacy's medication profile of the patient.

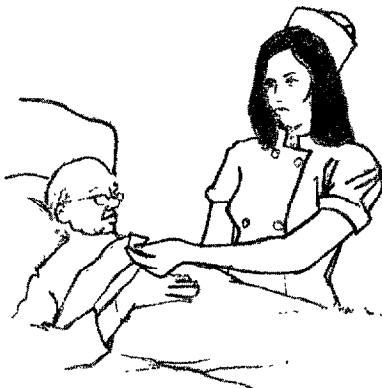
IF THE TRANSCRIPTION IS CORRECT
(If not it is corrected & nursing notified)

Copies of the nurses' transcriptions are used by pharmacy as patient medication profiles and unit dose filling records. The pharmacy and nursing use the same medication transcriptions (double check).

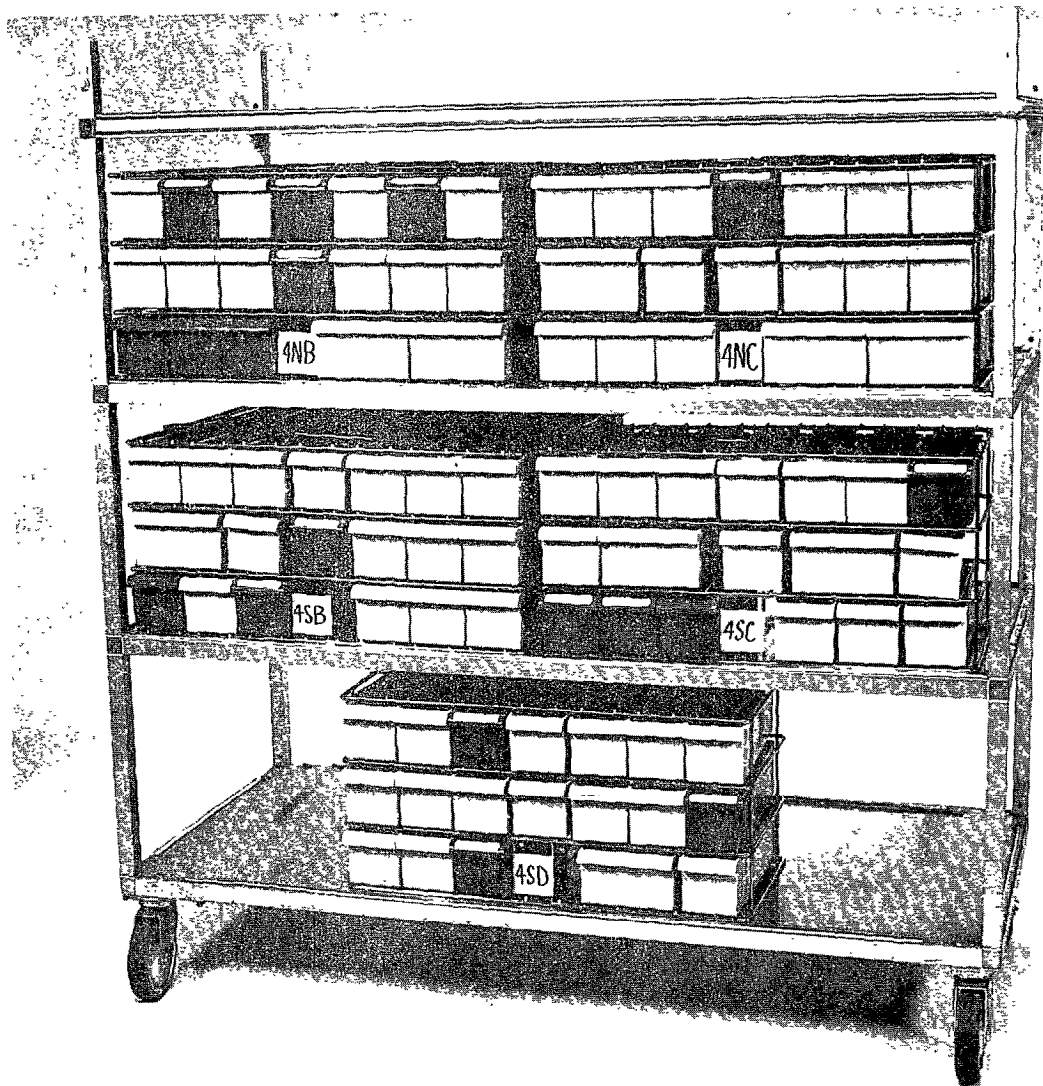
Using this transcription and filling record, enough unit dose medication is sent to the ward in individual patient medication drawers to last a 24 hour period.



TO THE WARD

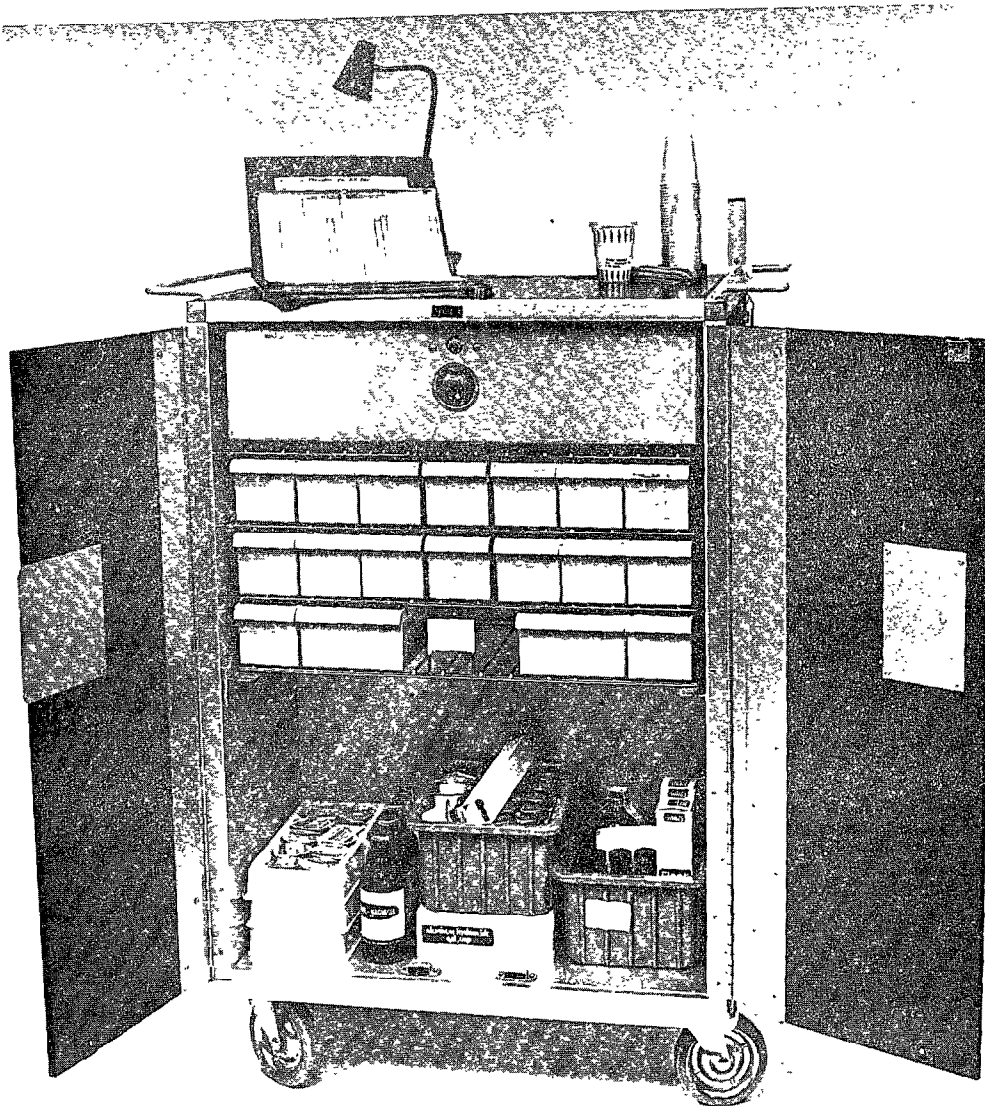


A nurse administers the individually packaged unit dose to the patient, checking the patient's medication record at the time she administers the medications—double check. The giving of the medication is immediately recorded in the patient's record. Refused medications are returned to the pharmacy still packaged.



PHARMACY UNIT DOSE MEDICATION
DELIVERY CART

(VA Photography)



WARD UNIT DOSE CART SHOWING
INDIVIDUAL PATIENT CASSETTES

(VA Photography)

- More efficient use of nurses because the time they spend on medication preparation is reduced.
- Improved control over drugs leaving the pharmacy.
- Reduced drug pilferage from patient care areas because large ward stocks are eliminated.
- Reduced drug inventories throughout the hospital.

A number of studies support the statement of these advantages. One study compared medication errors in a hospital using the unit dose system with those of four hospitals using the conventional ward stock system. The results showed a range of over two to almost seven times more medication errors in the hospitals using the ward stock system than in the unit dose hospital. Another study found a unit dose system which had a 1.9-percent rate of medication error while its conventional counterpart had a 13-percent rate of medication error. Other studies cited savings in nursing time and in amount of drugs lost or pilfered after implementation of unit dose systems.

Disadvantages

The primary disadvantage of the unit dose drug system is that pharmacy costs increase at low drug-volume levels. Costs increase because (1) unit dose packaging requires more space than bulk packaging, (2) more equipment is needed to distribute medications to patient care areas, (3) more pharmacy personnel are needed, and (4) unit dose drugs, in some cases, cost more than drugs purchased in bulk. The pharmacy needs more help to control and distribute medications because certain ones are not available in unit dose form. The pharmacy must therefore package some of its own medications. However, the number of medications available in unit dose form has been increasing in recent years. The American Society of Hospital Pharmacists estimated that, in 1975, 90 percent of the major medications used in hospitals would be commercially available in unit dose form.

Life-cycle costs

Our earlier report included a comparative analysis of all annual-cost elements in unit dose and traditional ward stock hospitals. The life-cycle cost analysis showed that, at high prescription levels of over 250,000 prescriptions annually, unit dose systems had lower overall costs than ward stock systems. Hospitals with 400 or more beds, such as those we visited, generally fall into the latter category. The life-cycle savings were primarily attributed to reductions in nursing time spent preparing and administering medications.

The study concluded the subjective benefits of unit dose systems may override economic considerations at all drug-volume levels, regardless of quantifiable cost factors. Subjective benefits would include improved patient care due to more nursing time spent for direct patient-related activities, reduction in medication errors, and a closer relationship between physician and pharmacist.

SCOPE OF REVIEW

Our review was performed at 11 VA hospitals in Alabama, Arkansas, California, Florida, New York, and Texas (see app. II) and at the VA Central Office in Washington, D.C. Seven of the facilities were general hospitals and four were psychiatric hospitals. Three of the general hospitals used only ward stock systems; two more had ward stock systems except for one ward in each which was pilot-testing a unit dose system; and two had complete unit dose systems. All of the psychiatric hospitals used ward stock systems.

We tested the inpatient pharmacy system at each hospital for effectiveness and control. We also identified opportunities to improve the effectiveness of the systems.

VA hospital officials were invited to comment on test results dealing with drug control effectiveness and the quality of patient care delivered under both ward stock and unit dose systems. Their comments have been incorporated in the report.

We also examined VA regulations, policies, and procedures relating to hospital pharmacy operations and medication dispensing. Current industry literature on drug systems was also reviewed.

CHAPTER 2

WAYS TO REDUCE DRUG LOSSES

AND IMPROVE PATIENT CARE

Large quantities of tranquilizers, hypnotics, and sedatives were missing from selected wards at the ward stock hospitals we visited. VA hospital officials gave several possible reasons why the drugs were missing, including medication error, borrowing of drugs between wards by ward personnel, pilferage, and waste.

To test drug accountability, seven different drugs were reviewed. At each hospital, we selected, on the basis of the hospital's usage, five drugs for study in certain wards. Hospital officials and nurses agreed the wards selected were representative of the hospitals' drug distribution procedures.

During a 14-day test period, 24 to 57 percent of the drugs withdrawn from stock at the nine ward stock hospitals were missing. Large general hospitals generally had the higher loss rates. (See graph, p. 14.)

From our sample we estimated that, in fiscal year 1974, as many as 1.1 million tablets and capsules of the drugs tested could have been unaccountably missing at the nine ward stock hospitals. This is about 43 percent of the drug quantities withdrawn from stock at these hospitals during the year.

By contrast, at the two unit dose hospitals we reviewed, 9 to 12 percent of the drugs sampled were missing. Ninety-seven tablets and capsules were missing at each hospital, for a total of 194.

From these sample results we estimated about 30,000 tablets and capsules were missing in fiscal year 1974. This amounts to 11 percent of the selected drugs used at the two hospitals during the year.

In our opinion, VA should implement the unit dose system in its hospitals as soon as possible. In the interim, VA needs to strengthen drug controls in hospitals with ward stock systems to minimize drug loss.

LARGE QUANTITY OF DRUGS MISSING

We tested drugs on the basis of their potential for abuse and/or addiction as reported in the "Physicians Desk Reference to Pharmaceutical Specialties and Biologicals." The Drug Enforcement Administration also identifies drugs which have potential for abuse and/or addiction, classifying them as "controlled substances." These drugs are subject to more stringent controls against unauthorized use than are other drugs. The Administration classifies controlled drugs into five schedules. Schedule I drugs have the highest potential for abuse and schedule V the least. Three of the seven drugs we reviewed--one in schedule III and two in schedule IV--were classified by the Administration as controlled. Effective July 2, 1975, the Administration classified three other drugs we tested as schedule IV controlled substances. 1/

Administration officials told us that, although some of the drugs we selected have a "street" or illicit market value--ranging from \$0.10 to \$3--most abuse of these drugs is not generated on the street but from dependence built up through indiscriminate prescription and use.

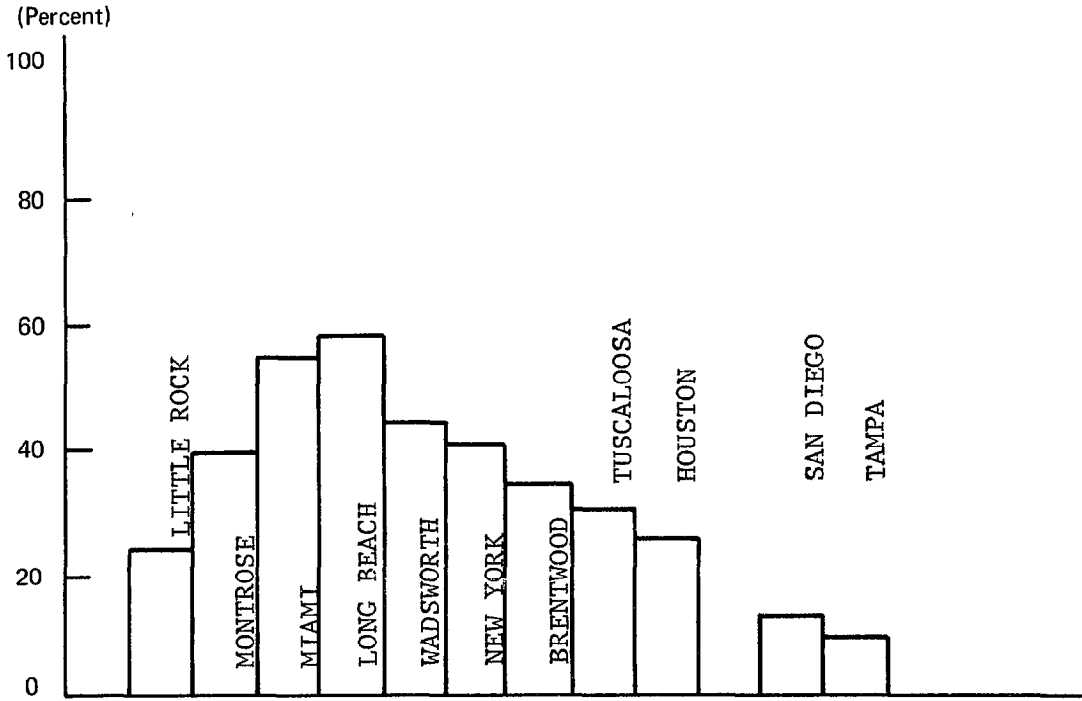
Methodology used to test for drug accountability

To test drug accountability, we compared drugs used as shown by inventory records with drugs administered to patients as shown in patient records.

An initial inventory of five sample drugs was taken on the selected wards. From three to eight patient care wards were selected, depending on ward and hospital size. Records of pharmacy drug deliveries to the wards and drugs returned to the pharmacy were checked and amounts compiled. After 14 days, a final inventory was taken. We determined the quantities of the sample drugs actually used on the wards during the study period by (1) adding the pharmacy drug deliveries to the initial inventory and (2) then subtracting the final inventory. To determine the quantity of the drugs administered, we analyzed the medication chart of each patient in the wards during the period. Nurses' notes and physicians' progress reports were also screened for notations of medications given. The number of drugs

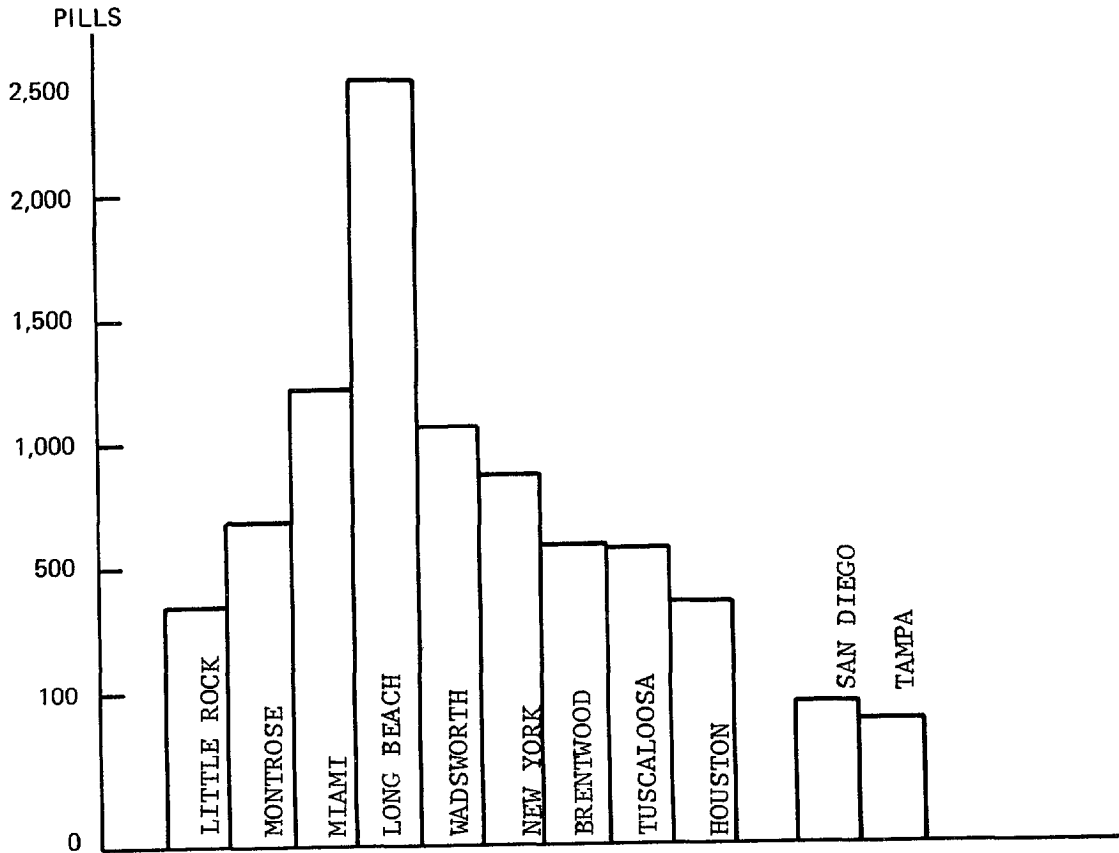
1/The seventh drug tested, Darvon-N, was not classified by the Administration as a controlled substance but was included in our review because of its heavy use by some VA hospitals.

SELECTED DRUGS MISSING IN VA HOSPITALS
14 DAY TEST PERIOD



WARD STOCK HOSPITALS

UNIT DOSE HOSPITALS



WARD STOCK HOSPITALS

UNIT DOSE HOSPITALS

administered, according to patient records, was compared with the number of tablets and capsules used, according to inventory records, to determine if any difference existed.

We used the same procedure at the two unit dose hospitals, except that we took daily initial and final inventories of unit dose delivery carts. Daily inventories were necessary because, under a unit dose system, no bulk deliveries are made to the wards. The actual quantities of sample drugs used were the difference between what was delivered to the wards--the initial inventory--and what was returned to the pharmacy--the final inventory. The number of drugs administered, according to detailed patient records, was then compared with the amounts used, according to the final inventories.

Results of drug accountability review

At the ward stock hospitals, about 8,500 tablets and capsules were missing--withdrawn from inventory but not administered. The numbers and percentages of missing drugs are shown below.

| <u>Ward stock hospital</u> | <u>Type</u> | <u>Tablets and capsules missing</u> | |
|----------------------------|-------------|-------------------------------------|--------------------------|
| | | <u>Number</u> | <u>Percent withdrawn</u> |
| Long Beach | General | 2,500 | 57 |
| Wadsworth | General | 1,233 | 55 |
| Miami | General | 1,198 | 30 |
| Houston | General | 543 | 36 |
| New York | General | 866 | 45 |
| Brentwood | Psychiatric | 709 | 40 |
| Tuscaloosa | Psychiatric | 586 | 41 |
| Little Rock | Psychiatric | 375 | 26 |
| Montrose | Psychiatric | 508 | 24 |
| | | <u>8,518</u> | 41 |

If the selected wards were representative--and hospital officials and nurses agreed that they were--during fiscal year 1974 as many as 1.1 million tablets and capsules--43 percent--of the sampled drugs could have been missing at the ward stock hospitals visited. The total cost of the drugs sampled was about \$88,000, and those we projected as missing cost about \$39,000.

Although we tested drugs which may be more than normally susceptible to loss, we believe that, when the VA-wide in-patient pharmacy budget of \$35 million is considered, loss of other drugs is a possibility. In addition, patients' reactions to several undesirable features of the ward stock system--increased potential for medication error, unnoticed drug deterioration, and use of nursing time in medication preparation rather than patient care--cannot be overlooked.

As shown below, about 194 tablets and capsules were missing at the 2 unit dose hospitals we visited.

| <u>Unit dose hospital</u> | <u>Type</u> | <u>Tablets and capsules missing</u> | |
|---------------------------|-------------|-------------------------------------|--------------------------|
| | | <u>Number</u> | <u>Percent withdrawn</u> |
| San Diego | General | 97 | 12 |
| Tampa | General | <u>97</u> | <u>9</u> |
| | | <u>194</u> | 10 |

Assuming again that the tested wards were representative, we estimate about 30,000 tablets and capsules--11 percent--of the drugs sampled were missing during fiscal year 1974. The total cost of the drugs sampled was about \$15,000, of which we estimate \$1,500 was the cost of the drugs missing.

Reasons why drugs were missing

We discussed with hospital officials the possible reasons for the large quantities of drugs missing at ward stock hospitals. The most common reasons they gave were (1) medication error--primarily the nurse's failure to accurately record doses administered on detailed patient records, (2) borrowing of drugs between wards, (3) pilferage, and (4) waste.

Medication error

We compared the drugs dispensed, according to patient medication records, with the doctors' orders for medication to find any differences which could be identified as medication errors. In reviewing over 1,900 patient records, we found 19 medication errors involving 6 doses given without a prescription, 6 doses prescribed but not given, 4 erroneous entries on patient records, 2 incorrect dosage strengths, and 1 dose administered at the wrong time. It was not possible to determine how many other medication errors could have occurred if, for example, doses were given without a doctor's

order and not recorded anywhere in the patient records. Therefore, medication errors we found could account for some drug loss but not, in our opinion, for the quantities we found missing.

Borrowing of drugs

--At the Long Beach VA Hospital, we asked the Chief of Nursing Service to record all drugs borrowed over a weekend when the pharmacy was closed. The records showed about 10 of 45 wards had borrowed some drugs but (1) the quantities were very small, usually 1 or 2 doses, and (2) the drugs borrowed were usually not part of the routine stock maintained on the ward; that is, the drugs were needed for a new patient or an ailment not common to the particular ward. Most of the borrowed drugs were not of the type we reviewed.

--At the Little Rock VA Hospital, the drug accountability test was conducted in two physically separate buildings containing four wards each. All operating beds in the two buildings were included in the test. Hospital officials told us there was borrowing between wards but not between buildings. In our opinion, however, none of the wards borrowed an appreciable amount of the selected drugs from another ward. There was no need to borrow; amounts of drugs on hand in initial inventories were usually sufficient to cover the number of doses given to patients without requiring deliveries from the pharmacy.

Pilferage and waste

Medication errors occur, but we did not find any instances which would account for substantial drug loss. Borrowing between wards also occurs to some extent, but our review showed (1) no obvious instances of borrowing in the controlled situations described above, (2) wards generally had more than enough of the selected drugs on hand at any given time--in some cases more than three times the amount used during the 14-day review period--and (3) replacement supplies were readily available from the pharmacy.

Therefore, we believe pilferage and waste are the main reasons for missing drugs. Large quantities of drugs are easily accessible on the wards--thereby facilitating pilferage--and medication spilled or refused by patients cannot be returned to stock and is therefore wasted.

Inefficient administrative
procedures at unit dose hospitals

We have shown that the unit dose system contributes to better drug control and substantially reduced drug losses. However, as might be expected, even under this system all drugs leaving the pharmacy must be tightly controlled and good administrative procedures must be used for the system to be fully effective.

The following conditions we observed at the San Diego VA Hospital might explain some of the drug losses at unit dose hospitals.

--The pharmacy was not promptly notified of a patient's death, and it continued to send his medication to the ward for 5 days. In another case, the pharmacy continued to send medications to the wards for a day or two for four patients who had already been discharged.

--In three instances, the pharmacy sent drugs to the wrong patients.

NEED FOR VA CENTRAL OFFICE DIRECTION
FOR IMPLEMENTING THE UNIT DOSE SYSTEM

VA Central Office officials told us they have endorsed the unit dose system for several years. They have not, however, established a definite schedule for implementing the system at all VA hospitals. The officials told us that, under current policies, the VA Central Office Pharmacy Service can only recommend installing unit dose systems to the individual hospitals. Officials at each hospital must then decide whether or not to change the drug delivery system already in operation. If they decide to try a unit dose system, they must submit a proposal to the central office for approval. The system can be implemented when and if funds become available. Many of the proposals are for pilot projects on one or two wards, not for complete hospital conversions.

VA does plan to install unit dose systems in all new hospitals and in those which undergo major renovations. Of the 7 hospitals which have complete unit dose systems, only the Fargo, North Dakota, Hospital--with 224 beds--installed one as the result of renovation. Unit dose systems in the other six hospitals were installed when the hospitals were constructed. Seven more hospitals have some degree of unit dose dispensing--on one or two wards, perhaps--and eight

others plan to install it. No firm plans or target dates have been developed for complete changeovers, however.

Overall, little progress has been made toward VA-wide implementation of the system. We believe the VA Central Office needs to revise its policies and initiate a timetable for converting all VA hospitals to the unit dose system.

OPPORTUNITIES TO IMPROVE DRUG CONTROLS IN WARD STOCK HOSPITALS

While a VA-wide changeover to the unit dose system is desirable, immediate conversion is not practicable due to financial, personnel, and space considerations. In the interim, we believe efforts should be concentrated on improving drug control at ward stock hospitals. Several methods of improving this control are discussed below. Our suggestions for improvement are primarily directed toward drugs we studied, but applying them to all drugs within the hospitals would be desirable.

Reduce quantities of drugs kept on wards

Most of the ward stock hospitals we visited had large amounts of selected drugs stored on the wards. At four hospitals, from two to nearly four times as many drugs were available on the wards as were actually needed or used during our review. Three of the four psychiatric hospitals had the most stock on hand; ratios of amounts available to amount used were 3:1, 3:4:1, and 3:8:1, respectively.

We believe opportunities for drug loss, especially through pilferage, are enhanced when large stocks are maintained on the wards. A head nurse at one hospital told us the larger the quantities of drugs kept on the wards, the harder pilferage is to identify. Reducing drug quantities in the wards should decrease pilferage totals and facilitate pilferage detection.

We believe a quota system should be established to reduce drug stocks. Maximum amounts of each drug allowable on the ward should be determined and revised as patient needs change and as physicians change their prescribing preferences. Keeping active surveillance over ward stock levels by enforcing the quota and performing periodic tests similar to those we used could help insure acceptable levels are maintained at all times.

Tighten controls over ordering and delivering drugs to wards

All ward stock hospitals visited had essentially the same procedures for ordering drugs from the pharmacy. The illustration on page 21 shows the present system, and the illustration on page 23 shows a revised system we believe would provide better control over drug ordering and delivery.

Present ward stock ordering procedures

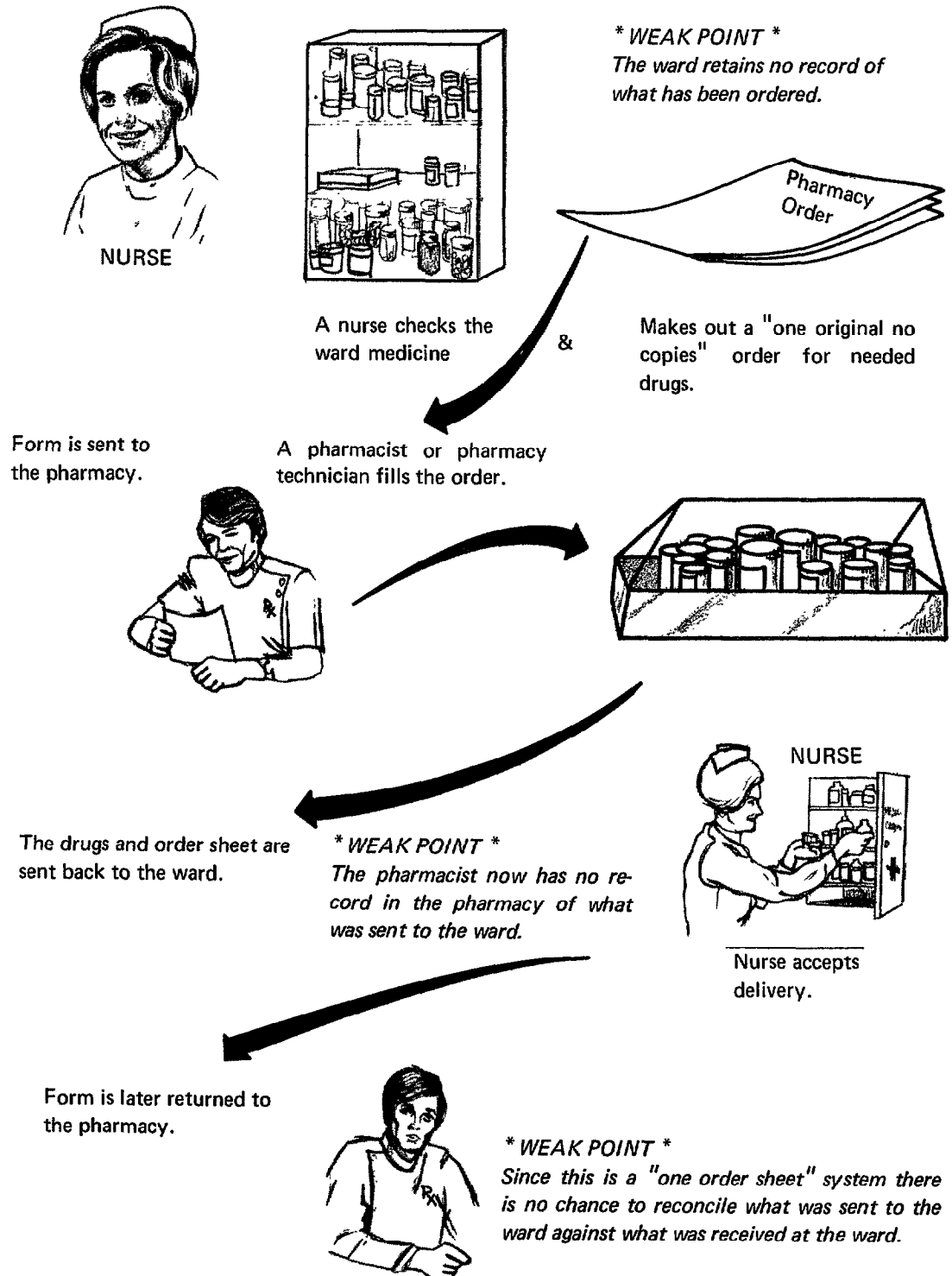
Generally, such controlled drugs as tranquilizers and hypnotics are ordered from the pharmacy by ward personnel--usually nurses--on a VA pharmacy order form overprinted with the drug name. The pharmacy fills the order, and the drugs are either delivered to the ward or picked up by ward personnel. Ward stocks of noncontrolled drugs--such as aspirin and vitamins--are ordered on similar but separate pharmacy order forms; in some hospitals, they are automatically replenished. Under automatic replenishment, ward personnel leave empty drug bottles outside the medicine cabinets and pharmacy technicians replace them with full ones. Two hospitals allowed automatic replenishment of all drugs.

VA Manual M-2, part VII, "Pharmacy Service," requires pharmacy orders for stimulant and depressant drugs--including tranquilizers and hypnotics--to be signed by the responsible physician, dentist, or registered nurse. Most pharmacy orders were signed by the registered nurse ordering the drugs, the pharmacist filling the order, and/or various people receiving the order. Orders were received by registered nurses, licensed practical nurses, licensed vocational nurses, graduate nurse technicians, ward secretaries, and even patients. At Brentwood VA Hospital certain patients were allowed to receive controlled drugs in unlocked containers on the ward or pick them up from the pharmacy.

When ordering drugs, most wards did not keep duplicate copies of the order form. The pharmacy's copy, when signed as "received," was usually the only proof drugs were actually received on the wards. Reconciliation was impossible, however, because ward records did not show exactly what was ordered against what was received.

With these procedures, it is possible for (1) drug orders to be lost or misplaced, (2) drugs to be pilfered before or after reaching the ward, and (3) orders to be

PRESENT WARD STOCK ORDERING PROCEDURE



duplicated if a nursing shift orders drugs without realizing an earlier shift may have already ordered the same ones. Pharmacy and nursing personnel at two hospitals confirmed drug order paperwork had been lost and orders misplaced because copies of ward orders and pharmacy deliveries were unavailable.

Proposed ward stock ordering procedures

We believe controls could be tightened considerably by (1) using a multicopy pharmacy order form and (2) making one nurse--and an alternate for absences--responsible for maintaining ward stock at quota levels and ordering from the pharmacy when necessary.

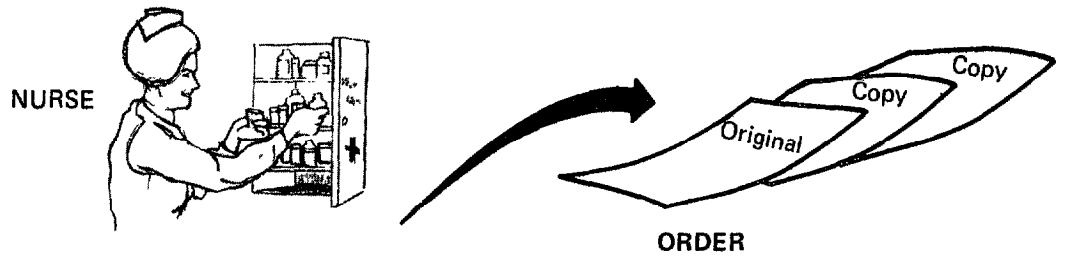
Under such a system, the nurse responsible for ordering drugs would check the medicine cabinet to see if they were at quota levels. If not, the nurse would complete and sign a three-copy pharmacy order form. The original and one copy would be sent to the pharmacy; the third copy would remain on the ward so all shifts would know what drugs were on order. The pharmacist would fill the order, record the quantities on the form, sign it, and keep a copy in the pharmacy. The drugs and the original order form would be sent to the ward in a locked container so any registered nurse on duty could verify the type and quantity of drugs shown in the original order form against the ward's copy. The nurse would sign the original form, if correct, and return it to the pharmacy where it would be matched with the copy on file there. Any discrepancies could be immediately reconciled.

Brentwood VA Hospital has already implemented a variation of the proposed system. Pharmacy orders have been revised, and copies will be retained on the wards. Scheduled times for pharmacy deliveries to wards have been instituted to insure the ward's head nurse will be there to accept delivery. If she is not present, the pharmacy technician will not leave the drugs. They will then have to be picked up later personally.

BETTER CONTROLS NEEDED IN INPATIENT PHARMACIES AND DRUG SUPPLY WAREHOUSES

We also tested and analyzed internal controls at both inpatient pharmacies and drug supply warehouses. The tests generally involved procedures similar to those used in the ward study, such as taking an initial inventory of the same

PROPOSED WARD STOCK ORDERING PROCEDURE



The nurse responsible for ordering drugs checks the ward medicine cabinet to see if the drugs are at assigned levels.

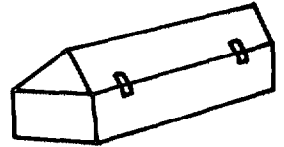
The nurse makes out and signs the order form – one original and two copies.

IF NOT

Original and one copy are sent to the pharmacy. The ward retains one copy so they know what's on order.



Pharmacist (or pharmacy technician with supervision) fills order; records quantities on the order form and keeps the copy of the order.



Drugs and original order are sent to the ward in a locked carrier.



A nurse verifies the type and quantity of drugs in the order against the ward's copy of the drugs. Nurse then signs the original form.



Signed original is returned to the pharmacy.



Pharmacy's copy of the ward order and the original are compared to make sure they match. Any differences are reconciled.

drugs reviewed on the wards, listing receipts and issues, taking a final inventory, and reconciling the inventories to the quantities received and issued. General observations on drug control were also made.

The tests were conducted at warehouses which supplied drugs to the pharmacies and at 4 of 11 inpatient pharmacies-- inpatient and outpatient drug supplies were combined in the other 7 hospitals. No separate records of inpatient usage were maintained.

Inpatient pharmacies

Large discrepancies existed between physical inventories and usage records on two of the four inpatient pharmacy drug reconciliations. No large discrepancies were found in the other two pharmacies. The following illustrations highlight the discrepancies and our observations on internal control weaknesses at the pharmacies involved.

--At Wadsworth VA Hospital 1,483 tablets of one of the drugs included in our sample were found missing after physical inventories were checked against deliveries to the pharmacy and issues to hospital wards. During the inventory, we were accompanied by a pharmacy staff member who assured us all possible drug storage locations in the pharmacy had been checked. One day after the reconciliation, we returned to the pharmacy to find the missing tablets. A paper bag containing them was found inside the room where most of the controlled drugs were stored. The bag was not marked with our inventory check so we could not determine whether the tablets had been misplaced somewhere in the pharmacy and not counted during the inventory or had been pilfered but subsequently returned.

Control against pilferage appeared inadequate in this pharmacy. Only a very large loss would have been noticed. Access appeared fairly easy; individuals were not effectively screened before admittance and gained entry by pressing a buzzer. At our suggestion, hospital officials agreed to move the buzzer to a location where anyone seeking admittance could be identified. They also planned to install a locking security screendoor on the storeroom for controlled and dangerous drugs.

--At the Miami VA Hospital inpatient pharmacy, a test of 8 drugs showed from 271 to 12,503 tablets and capsules missing. Attempted reconciliations of physical inventories with computerized receipt and issue records failed. The chief of pharmacy believed the discrepancies could be attributed to (1) pilferage, but only one or two of the eight drugs would have been prime targets for pilferage, (2) drugs missed during physical inventory counts, and/or (3) a combination of computer-paperwork errors, including lost documentation, incorrect computer entries, and delays between drug distribution and reporting. The chief of pharmacy agreed to conduct his own test of whether the inventories and computer reports could be reconciled. The results showed some discrepancies, but they were smaller than those our test found. We believe the most logical explanation for these missing drugs is some combination of computer-paperwork problems, but the possibility of pilferage cannot be ruled out.

We feel pharmacy officials should recognize pilferage opportunities and should continually review internal controls. Periodic drug inventories, similar to those described in this report, should be made to uncover any pilferage or accounting system inaccuracy.

Drug supply warehouses

Only the drug supply warehouse inventory at the New York VA Hospital revealed any major problems. We conducted tests three different times at this warehouse and were unable to completely reconcile the physical inventories with warehouse records. Each time drugs were issued, 3 working days were usually needed to complete the issue and update the records. Issue documents were dated when the issue was completed--usually on the third day. Drug stock, however, was removed from warehouse shelves on all 3 issue days. Supply personnel could not know, therefore, what stock had been removed until the 3-day issue was completed.

In one of our tests, we constructed an inventory period to eliminate the 3-day variances and were able to reconcile four of the five drugs inventoried. Inventories of the fifth drug showed 141,000 more tablets on hand than the records indicated. Supply personnel could explain neither the excess tablets nor the reconciliation failure.

Our tests demonstrated there was relatively little control over drugs until each issue was completed; pilferage opportunities existed during each issue period. Accordingly, we alerted hospital officials to these conditions.

Although 9 of 10 warehouse inventories showed no major problems, we did observe security weaknesses in 4 of the warehouses. The most common weakness was easy accessibility to drug stocks stored on open shelves. We told hospital officials of these opportunities for drug loss also.

CHAPTER 3

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

Substantial drug losses in VA hospitals should be reduced by using the unit dose system instead of the traditional ward stock system. The unit dose system could also improve patient care.

Our review showed an average drug loss of 43 percent in nine ward stock hospitals, while two unit dose hospitals had an average loss of only 11 percent. We estimate as many as 1.1 million tablets and capsules costing about \$39,000 could have been lost at these ward stock hospitals in fiscal year 1974. Estimated losses at the unit dose hospitals visited totaled approximately 30,000 tablets and capsules costing about \$1,500.

Projecting the 43-percent drug loss to all VA hospitals would not be valid. However, because the ward stock system is highly susceptible to drug losses and because large quantities of drugs were missing at the ward stock hospitals we visited, major drug losses could also be occurring at the 155 ward stock hospitals not included in our review.

The unit dose system provides better drug control because most drugs are not stored in the wards. In addition, it can improve patient safety by reducing medication errors. Other benefits include (1) providing for positive identification of medications in individually packaged and labeled doses until they are actually administered to the patients, (2) reducing nursing time devoted to medication-related activities, (3) involving pharmacists in interpreting physicians' orders, and (4) insuring that a complete patient profile is maintained in the pharmacy.

VA pharmacy operations could be improved by converting the 164 hospitals presently using the ward stock system to the unit dose system. Priority for conversions should be given to large general hospitals.

Not all hospitals are equally well suited for unit dose distribution. Some are more geographically spread out than others, necessitating the use of one or more satellite pharmacies rather than one central pharmacy. Also, unit dose distribution requires capital fund outlays for equipment and space and continuing expenditures for additional pharmacy personnel. We believe, however, that, once established, unit dose systems will prove less costly than ward stock systems,

especially at hospitals with high drug usage. In addition, we believe expenditures of time and money will be worthwhile in terms of tighter drug control and better patient care.

While it would be desirable to convert all hospitals to the unit dose system, this may not be economically feasible to do in a short period of time. In the interim, drug controls under the ward system must be improved and tightened.

Procedures for ordering and receiving drugs under ward stock distribution systems are inadequate to prevent drug loss. Also, many wards keep more drugs than necessary on hand. As a result, large quantities of drugs are readily available for pilferage and hospital drug costs are increased to maintain unnecessary supplies.

Ward stock drug operations could be improved and drug losses reduced by:

- Establishing and enforcing maximum drug quotas to keep on the wards.
- Maintaining adequate records of drugs ordered by and delivered to the wards.
- Reconciling any discrepancies between orders and receipts.
- Fixing drug supply responsibility on no more than two ward nurses for routine maintenance of ward drug levels.

Surveillance of drugs maintained on wards and ordered from the pharmacy is needed to insure quota levels are maintained at all times. Drug security and accounting control in pharmacies and warehouses should also be reviewed. Periodic tests, similar to those used in our review, should be conducted to insure adequate control.

RECOMMENDATIONS

We recommend that the Administrator of Veterans Affairs:

- Establish a definite timetable for the systemwide conversion of ward stock hospitals to the unit dose system, placing conversion priority on large general hospitals.
- Strengthen controls in the interim over drugs at ward stock hospitals by directing the hospitals to:



VETERANS ADMINISTRATION
OFFICE OF THE ADMINISTRATOR OF VETERANS AFFAIRS
WASHINGTON, D.C. 20420



August 18, 1975

Mr. George D. Peck
Assistant Director
Manpower and Welfare Division
U. S. General Accounting Office
Room 268, VA Central Office
Washington, D. C. 20420

Dear Mr. Peck:

We appreciate the opportunity to review and comment on your draft report relating to the need for better drug controls in VA hospitals. The VA recognizes that a unit dose system of distribution may help alleviate the problem of drugs missing in our hospitals.

The VA is planning to convert six hospitals to a unit dose (medication management) system in FY 1977 and will include 1,402 psychiatric beds and a cumulative total of 5,316 beds. An evaluation study will be made to gather data in FY 1976 and following the implementation of the unit dose system in the six hospitals in FY 1977. The development of a timetable for total conversion at all VA hospitals will be dependent upon the results obtained through the evaluation study.

We agree that in the interim, controls over drugs at ward stock hospitals should be strengthened. To accomplish this, the VA concurs in the recommendations made by GAO in reference to the control of drugs at ward stock hospitals.

Guidelines have been established in the VA manuals for ward stock drug control. Each facility will establish and enforce a ward stock quota system to reduce the quantities of drugs kept on hand on the wards. The Pharmacy and Therapeutics Committee at each facility will develop and emphasize drug utilization review procedures which can be implemented locally within the existing personnel ceiling. Pharmacy Service will have primary responsibility for review and removal of inactive drugs kept in these areas.

Adequate records of drugs ordered by and delivered to the wards will be maintained and all discrepancies will be reconciled. Drug dispensing records of all floor stock deliveries will be maintained by the Pharmacy and Nursing Services. Pharmacy will periodically assess

Mr. George D. Peck
Assistant Director
Manpower and Welfare Division

the current medication regimen by review of the patients chart and medication administration record to verify the need for the various drugs kept in the nursing units. Automatic replenishment programs by the pharmacy will be established where feasible within the existing budget level and personnel ceiling. Drug orders prepared by the nurse will be completed in triplicate, and copies will be retained on file by the nursing unit and the pharmacy. Each facility will provide an internal audit review system to check periodically the files maintained by Pharmacy and the Nursing and Supply Services.

Pharmacy will be responsible for review of the drug quota level and will maintain only active drug inventories in the ward. The nurse in charge and a designee will be the responsible officials for the ordering of drugs and coordinating with the pharmacy in maintaining stock quota levels.

The surveillance of drug dispensing by reviewing pharmacy and warehouse receipts and deliveries and ward stock drug levels will be emphasized. Pharmacy Service will maintain adequate records for the ordering and reviewing of all drugs, and all discrepancies will be clarified and resolved within a reasonable period of time. Monthly ward inspections will be maintained by Pharmacy and any discrepancies since the previous inspection will be reported. Review of the pharmacy and warehouse receipts and deliveries will be accomplished by a local inspecting team assigned by the Hospital Director to review the controlled substances which are dispensed.

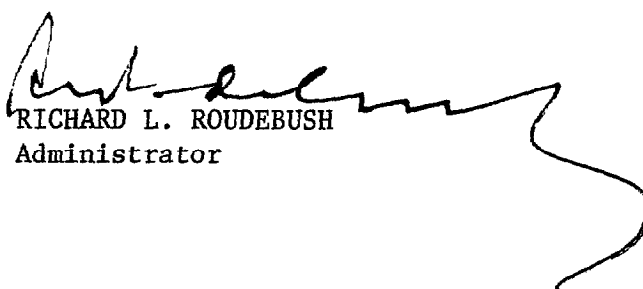
The VA concurs in principle with the recommendation that procedures to perform periodic tests similar to those in the GAO review be established. However, it is felt that the GAO method of review is not suitable for the VA. Therefore, the VA recommends that the following action be taken.

A Chief Medical Director's letter emphasizing the need for total Drug Utilization Review is being prepared. A multidisciplinary effort will provide accountability and assess the quality of local drug control. Pharmacy will periodically review the patients chart and the medication administration record to provide a simplified audit trail of those selected drug items as determined locally. The pharmacist practitioner will compare the drug orders with those drugs dispensed and will review the volume of drugs sent to the individual nursing unit. This monthly report will be

Mr. George D. Peck
Assistant Director
Manpower and Welfare Division

forwarded to the Pharmacy and Therapeutics Committee for review and action. Efforts will be coordinated at each facility to combine the control functions of the Pharmacy and Therapeutics Committee, Infectious Disease Committee, Medical Records Review Committee and the Pharmacy-Nursing Committee to provide a consolidated approach to Drug Utilization Review and drug control.

Sincerely,



RICHARD L. ROUDEBUSH
Administrator



UNITED STATES DEPARTMENT OF JUSTICE

WASHINGTON, D.C. 20530

Aug. 22, 1975

Address Reply to the
Division Indicated
and Refer to Initials and Number

Mr. Victor L. Lowe
Director
General Government Division
United States General Accounting Office
Washington, D.C. 20548

Dear Mr. Lowe:

This letter is in response to your request for comments on the draft report entitled "Drugs Missing in VA Hospitals-- Better Controls Needed."

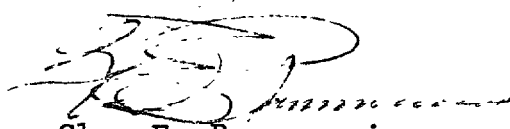
We have reviewed the draft report and agree with the GAO recommendation that Veterans Administration Hospitals adopt the unit dose system. Experience by the Drug Enforcement Administration (DEA) has shown that unit dose dispensing with appropriate records provides tighter control and less vulnerability to diversion than the ward stock bottle system.

DEA has conducted routine regulatory investigations at VA facilities on a number of occasions. Following several of these examinations the Compliance Investigators have pointed out to VA officials weaknesses in their system-- many of which are similar to GAO's comments.

DEA is prepared to offer technical assistance to the Veterans Administration to aid them in establishing an effective unit dose system.

We appreciate the opportunity given to us to comment on the draft report. Should you have any further questions, please feel free to contact us.

Sincerely,


Glen E. Pommerening
Assistant Attorney General
for Administration

VA FACILITIES REVIEWED

| <u>Organization</u> | <u>Location</u> | <u>Description</u> |
|----------------------------------|---------------------|--------------------------------|
| VA Central Office | Washington, D.C. | - |
| Brentwood Hospital | Los Angeles, Calif. | 470-bed psychiatric hospital |
| Houston Hospital | Houston, Tex. | 1,252-bed general hospital |
| Little Rock Hospital | Little Rock, Ark. | 779-bed psychiatric hospital |
| Long Beach Hospital | Long Beach, Calif. | 1,607-bed general hospital |
| Miami Hospital | Miami, Fla. | 790-bed general hospital |
| Montrose Hospital | Montrose, N.Y. | 1,463-bed psychiatric hospital |
| New York Hospital (Manhattan) | New York, N.Y. | 1,030-bed general hospital |
| San Diego Hospital | San Diego, Calif. | 586-bed general hospital |
| Tampa Hospital | Tampa, Fla. | 557-bed general hospital |
| Tuscaloosa Hospital | Tuscaloosa, Ala. | 681-bed psychiatric hospital |
| Wadsworth Hospital | Los Angeles, Calif. | 762-bed general hospital |

PRINCIPAL VA OFFICIALS
RESPONSIBLE FOR ADMINISTERING
ACTIVITIES DISCUSSED IN THIS REPORT

| | <u>Tenure of office</u> | |
|------------------------------------|-------------------------|-----------|
| | <u>From</u> | <u>To</u> |
| ADMINISTRATOR OF VETERANS AFFAIRS: | | |
| R. L. Roudebush | Oct. 1974 | Present |
| R. L. Roudebush (acting) | Sept. 1974 | Oct. 1974 |
| DEPUTY ADMINISTRATOR: | | |
| O. W. Vaughn | Nov. 1974 | Present |
| Vacant | Oct. 1974 | Nov. 1974 |
| R. L. Roudebush | Jan. 1974 | Oct. 1974 |
| F. B. Rhodes | May 1969 | Jan. 1974 |
| CHIEF MEDICAL DIRECTOR: | | |
| J. D. Chase, M.D. | Apr. 1974 | Present |
| M. J. Musser, M.D. | Jan. 1970 | Apr. 1974 |
| DIRECTOR, PHARMACY SERVICE: | | |
| R. F. Harding | Apr. 1972 | Present |

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