PHARMACY UNIT CHARGE SYSTEM

# 326 - 67

AUTHORS: G. WHITLOCK
          M. JACOBS.
October 20, 1966

Mr. Morris N. Throne, Deputy Executive Director  
Mr. Jules M. Hinkes, Associate Director  
Sinai Hospital of Baltimore, Inc.  
Belvedere Avenue at Greenspring  
Baltimore, Maryland 21215

Dear Mr. Throne and Mr. Hinkes:

This report represents a study done by Community Systems Foundation on "Narcotics Inventory Control and Pharmacy Staffing - Methods."

Mr. Jacobs and I would like to express our appreciation to the following people for their cooperation and assistance:

Mr. Harry Goldberg, Chief Pharmacist  
Mrs. Chris Hernandez, Assistant Chief Pharmacist  
Mrs. Elizabeth Drozd, Associate Director of Nursing Service  
Miss Jean Fisher, Assistant Directors of Nursing Service  
Miss Mary Tudor

Sincerely,

George F. Whitlock  
Project Director  
Community Systems Foundation

GFW: aeh  
Enclosure
RECOMMENDATIONS

1. Implement the Narcotics Inventory Control System outlined in Section II. This system saves approximately 3,600 nursing hours per year by eliminating the need for nursing to inventory the narcotics on the nursing units.

2. Implement the recommendations presented in Section III c, concerning operating methods used in the Pharmacy. The recommendations include:
   a. Combine narcotics inventory and dispensing with ward stocking.
   b. Reschedule workload so that slack time will be utilized.
   c. Assign specific duties to each Pharmacist and Clerk, and delegate responsibility for certain Pharmacy operations.
   d. Batch inpatient prescriptions.
   e. Provide facilities in the Pharmacy for collecting charges for outpatient prescriptions.

3. Eliminate the part-time clerks position.
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I. INTRODUCTION

The Community Systems Foundation was asked to study several facets of the Pharmacy's operation. This report presents the findings of a study concerning narcotics control, staffing, and general Pharmacy operation. It is divided into two main sections: Narcotics Inventory Control and Pharmacy Staffing and Methods Study.
II. NARCOTICS INVENTORY CONTROL

A. Narcotics Control System

The objectives of a good Narcotics Inventory Control System are as follows:

1. To insure control of narcotics on the nursing unit;

2. To simplify the procedures and minimize the time required of both Nursing and Pharmacy personnel by the system; and

3. To minimize the inventory of narcotics which must be kept on the nursing units.

This section of the report will compare the present systems in use to these objectives and will then describe a new system.

In one Narcotic Control System in use for several years in the Hospital (see Flow Chart 1, Appendix A), a nurse from each unit comes to the Pharmacy several times a week, in order to replenish the supply of narcotics on that nursing unit. This system requires a great deal of nursing time for traveling to and from the Pharmacy and waiting for the requisitions to be filled, and is therefore in serious contradiction to the second objective, which is to minimize the time required of nurses by the system.

The other system presently in use (see Flow Chart 2, Appendix A), which has been used on a trial basis for several months on selected nursing units, eliminates the need for a nurse coming to the Pharmacy in order to have a requisition filled. However, this system requires that an active and reserve supply of each narcotic be kept on each nursing unit. The result is that there is a rather large inventory of narcotics on the nursing units, a situation which is in direct opposition to the objective of minimizing the inventory of narcotics on the nursing unit.

In addition to the above, both systems lack adequate control over the narcotics supply on the nursing units, because nurses are responsible for both administering the narcotics to patients and auditing the narcotics supply kept on the nursing unit. A general accounting rule for the auditing of the supply of any good is that the person auditing the supply not be the same person who is responsible for its disbursement. Therefore, neither of these systems meet the first objective, that of insuring control over the supply of narcotics on the nursing units.

*In this report, the term narcotics includes barbiturates and control drugs.
It is now obvious that a new control system is needed which meets the objectives set forth. The procedural flow for such a system is outlined in Flow Chart 3, Appendix A. In this system, a Pharmacist goes to each nursing unit three times a week. While on the nursing unit, the Pharmacist takes an inventory of narcotics and compares the number of dosages physically used since the last inventory to the number of units recorded as being dispensed on the Narcotics Administration Record. Any discrepancies would immediately be noted and a Discrepancy Sheet would be completed by the Pharmacist, one copy of which would be signed by the nurse in charge and then sent to the Director of Nursing Service, while another copy would be retained by the Pharmacy. Following the inventory, the Pharmacist would re-stock those narcotics which had fallen below a previously determined minimum level.

Associated with this system is a new Narcotics Administration Record. This record consists of two sheets, one for narcotics and the other for barbiturates and control drugs. This record would be collected by the Pharmacist each time he inventoried a nursing unit and it would replace the twenty to twenty-five sheets which are currently kept on each nursing unit (see Appendix B), one sheet for each narcotic stocked on that unit. Due to a correspondence with the Bureau of Narcotics (see Appendix C), several changes have been made in the Administration Record.

This Administration Record will simplify the task of recording each dose administered to a patient. It will also reduce both the time it takes the nurses to record these doses and the time it takes the Pharmacy to complete the inventory on the units.

This system meets all the objectives previously set forth for a good Narcotics Inventory Control System. Control over the supply of narcotics on the nursing units will be insured by having a Pharmacist inventory the narcotics on the units and verify that all doses are accounted for. If any discrepancies occur, it is just as easy to check the nurse’s notes for several days as it is for one, once the patient’s chart has been opened.

This system also simplifies procedures and minimizes the time required for narcotics control. Nurses are spared both the task of inventorying the narcotics three times a day, and the necessity for ordering narcotics. This would mean a savings of approximately thirty minutes a day per nursing unit, or a total of 3,600 nursing hours per year. Also, the Pharmacist will be able to schedule his rounds to the units at his convenience, rather than have continuous interruptions in the Pharmacy as requests to fill narcotics requisitions come in.

The inventory of narcotics on the units will be decreased with the implementation of this system. As realistic stock levels for each nursing unit are determined, it will be found that, in many cases, the reserve supplies can be eliminated. With the elimination of the reserve supply, the crowded condition in the narcotics cabinets can be eliminated.
B. Recommendations

The following are recommendations that should be implemented along with this system:

1. Establish realistic stock levels for every narcotic on each nursing unit, using data on previous usage;

2. Change the layout of the narcotics cabinets so that the shelves which are currently too high for some nurses to reach would be lowered;

3. Specify that the inner compartment of the cabinets be used solely for narcotics, and the shelves in the cabinets be used to store barbiturates and control drugs;

4. Request that nurses keep the medicine rooms locked, and have them leave the key in a central place on the nursing unit;

5. Have a master key made for the narcotics cabinets, for use by the Pharmacist doing the inventory and stocking;

6. Maintain control over access to narcotics on the nursing units by allowing only authorized personnel to open the narcotics cabinets; and

7. Add a locked compartment to one of the delivery carts now in use, so that the narcotics could be safely stored while the Pharmacist takes the cart on his rounds.
III. PHARMACY STAFFING AND METHODS STUDY

A. Pharmacy Staffing

With the aid of the Hospital Staffing Methodology Manual developed by the University of Michigan's Hospital Systems Research Group and Industrial Systems Research Laboratory, an analysis of the Pharmacy's workload was made. All phases of Pharmacy operation were included, from the dispensing of drugs to the ordering of supplies.

Using workload data from the Pharmacy, in conjunction with time standards presented in the Staffing Methodology, an estimate of Pharmacy workload was made. The results are presented in Appendix D.

The results indicate that 151.7 Pharmacist man-hours are needed, as compared to 193.0 existing Pharmacist man-hours. Also, it is estimated that 68.4 clerk man-hours are needed as compared to 60.0 existing clerk man-hours. Transforming man-hours into equivalent full-time personnel, which includes allowances for sick days, holidays and vacation days, these figures become 4.07 Pharmacists required versus 4.83 Pharmacists existing and 1.83 clerks required versus 1.50 clerks existing.

There are several reasons other than simple overstaffing or inefficient operating procedures which must be considered in analyzing the differences between existing and required staff time. They are as follows:

1. Unutilized slack time - the Methodology classifies all time not used for productive activities as overstaffing, even though this staffing coverage may be necessary. For example, there is one Pharmacist on duty from 5:00 P.M. to 10:00 P.M., seven days a week. Using figures for workload and associated standard times, one might use the Methodology to determine that only three hours per day of Pharmacists time is required during this period. The two hours idle time per day would be considered overstaffing in the Methodology, but if it is desired to keep the Pharmacy open during these hours, then these "extra" hours should not be considered overstaffing. A partial elimination of this slack time problem is possible (see Recommendations 1 and 2); and

2. Peak servicing loads - this problem is especially relevant to the filling of outpatient prescriptions. Due to the scheduling of several clinics for one time period, the number of outpatients coming to the Outpatient Pharmacy window is not random but occurs in peak loads. This means that, although most outpatients come to the window during several time intervals, a Pharmacist must still be available to fill outpatients prescriptions throughout the time during which clinics are scheduled. Although the Pharmacist may do other things while waiting for another outpatient prescription, the frequent interruptions to fill another prescription cause wasted time which is necessary in the present system but is classified as non-productive time in the Methodology (see Recommendation 4).
B. Current Staffing Analysis

1. Pharmacist - Although the Methodology does indicate an overstaffing of .76 equivalent full-time Pharmacists, after taking into consideration the factors mentioned above, it is felt that the over-all staffing for Pharmacists is approximately correct for this Pharmacy's operation. The small amount of unutilized time occurs at several periods during the day, and it is for the most part impossible to eliminate this time through rescheduling.

The staffing for the Pharmacy is depicted in Appendix E. The coverage each day is uniform and is modeled around the present workload. The only time which could be eliminated is a two-hour shift overlap occurring on Tuesdays, between 2:30 and 4:30 P.M.

Most of the other slack time will be eliminated with the implementation of the new Narcotics Inventory Control System. This system should require two to three hours per day, six days a week. This will add from one to two hours to Pharmacist time required; the other hour being currently used to fill narcotics requisitions in the Pharmacy anyway.

2. Clerk - Even though the Methodology indicates an understaffing of .33 equivalent full-time clerks for the Pharmacy, the transfer of responsibility for ward stocking from clerks to Pharmacists (see Part d., Recommendation 1) will make available considerable extra clerk time. The elimination of this duty for the clerks and the rescheduling of certain duties, which are currently being carried out by clerks but could be done by the Pharmacist on duty at night or on the weekends, indicate that the part-time clerks job can be eliminated. See Appendix F for a summary of Pharmacy man-hours.

C. Methods Recommendations

Although, as mentioned before, much of the difference between existing and required Pharmacist time is unproductive time which is nevertheless necessary, it is felt that changes in the operating procedures of the Pharmacy would make its operation more efficient and would also make available time for the Narcotics Inventory Control System outlined in Part A. The recommendations are as follows:

1. Recommendations for immediate implementation

a. Combine narcotics dispensing with ward stocking - as described in Part A, a Pharmacist will, under the new Narcotics Inventory System, go to each nursing unit three times a week and will then inventory and re-stock the narcotics cabinet. At the same time he should check ward stock items and replace any empty containers, and he should also check the medicine room for outdated or excess drugs. The clerk would be relieved of his present ward stocking responsibility;
b. Inpatient prescription processing - inpatient drug requisitions should be batched and divided into two groups, those requiring pre-packaged drugs and those requiring non-pre-packaged drugs. The pre-packs should be processed first by one Pharmacist. Then for non-pre-packs, a Pharmacist or clerk should prepare a label and price the requisitions while a second Pharmacist is filling the requisitions;

c. Job assignments - each Pharmacist and clerk should be given a list of the duties they are to perform. The list should be flexible to allow for unexpectedly large numbers of drug requisitions or prescriptions, but the general tasks to be performed by each of the Pharmacy personnel should be outlined. In addition, one staff Pharmacist should be assigned the responsibility for the Narcotics Inventory Control System while another is made responsible for pre-packaging;

d. Shifting workload - in order to utilize Pharmacist slack time mentioned in the staffing analysis, some duties should be shifted from peak hours to those times when the Pharmacy is currently least busy, such as at night and on weekends;

e. Outpatient cashiering - facilities should be provided for collecting money from outpatients and employees. Each outpatient is currently coming to the outpatient window twice; first to get the prescription priced so that he can go to the outpatient cashier, and then a return trip to the window so that his prescription can be processed. Many interruptions to the Pharmacy's operation could be avoided if both dispensing and cashiering were combined into one operation;

f. Bells - bells should be installed at both inpatient and outpatient windows so that Pharmacy personnel know when someone is waiting to be serviced;

g. Doors to the Pharmacy - the doors to the Pharmacy should either be locked at all times or Dutch doors with snap locks should be installed. Due to the layout of the Pharmacy, it is not always possible to see that people entering the Pharmacy are authorized to do so;

h. Pneumatic tube system - frequent breakdowns of the tube system cause much confusion and extra work in the Pharmacy. The tube system should be inspected and repaired if its maximum efficiency is desired;

i. Storage area - add an additional row of storage shelves, so that pre-packing could be done in greater quantities and a reserve supply put on the shelves; and

j. Phones - add one phone to the central pre-packaging area and one phone to the outpatient counter so that persons working in these areas would not have to leave them in order to answer the phone. The large number of telephone calls which the Pharmacy receives and the fact that the Pharmacy has three telephone extensions and only two phones necessitates the addition of these phones.
2. Recommendations for further study

a. Capsule counter - the feasibility of purchasing a capsule counter for use in pre-packaging should be explored. Since over an hour a day is spent in pre-packaging, it may be found that a counter is economically justifiable; and

b. Machine labeling - investigate the possibility of purchasing a machine labeler which could be used to print labels for the Pharmacy operation as they are needed. Greater flexibility in the use of labels could then be attained.
CONCLUSIONS

The proposed Narcotics Inventory Control System will simplify the controlling and stocking of narcotics. The Pharmacy will have complete responsibility for restocking and inventorying narcotics on the nursing units. This will eliminate much work for nursing personnel and will allow them to spend more time for actual nursing activities.

With the implementation of the Narcotics Inventory Control System, it will be possible to eliminate the part-time clerks position. The acceptance of the methods recommendations will make possible more efficient use of Pharmacy personnel.

Since this report only presents the findings of the first two parts of the six part Pharmacy Study, it is possible that future staffing may be affected by the results of the studies still to come.
APPENDIX A
FLOW CHART #1

PHARMACY - PRESENT SYSTEM #1

1. A nurse brings a partially filled container of narcotics to the Pharmacy for refill, along with the accounting sheet for that drug.

2. The Pharmacist compares the number of drugs accounted for on the accounting sheet with the number of units in the partially filled container and the previous inventory.

3. Pharmacist dispenses a filled container of the narcotics and adds this number to the number of units in the partially filled container. All this is done while nurse waits.
FLOW CHART #2

PHARMACY - PRESENT SYSTEM #2

1. Each nursing unit has an active and a reserve supply of each drug.

2. When the active supply is completely used, a nurse sends the empty container and the completed accounting sheet to the Pharmacy. The reserve supply of the narcotic now becomes the active supply.

3. The Pharmacist checks the narcotics accounting sheet to see that all doses are accounted for. Pharmacist then dispenses a full container of the narcotic.

4. A messenger takes the full container to the nursing unit.

5. A nurse checks the container and signs a receipt.

6. A nurse puts the full container into the narcotics cabinet.
FLOW CHART #3

PROPOSED NARCOTICS DELIVERY AND INVENTORY SYSTEM

1. Pharmacist fills cart with a predetermined level of narcotics. Another Pharmacist verifies that this level of drugs is in the cart.

2. Pharmacist takes cart around to each nursing unit.

3. Nurse records each dose dispensed on the Narcotics Administration Record.

4. The Pharmacist checks to see that the number of dosages dispensed, which are recorded on the Narcotics Administration Record, equals the number of doses actually used since the previous inventory.

5. Pharmacist replaces any empty containers with full containers.
6. Pharmacist notes the new inventory level on the Narcotics Inventory Record. This entry will serve as the entry for the beginning inventory of the following period.

7. Pharmacist brings cart back to the Pharmacy and another Pharmacist checks to see that the drugs dispensed from the cart equal the number accounted for in the completed Narcotic Administration Records.
APPENDIX B
| Nursing Unit | 8 | 12 | 10 | 0 | 18 | 12 |

| Balance Brought Forward |  |
| Units Added |  |
| To Account For |  |

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**SINAI HOSPITAL OF BALTIMORE, INC.**

**NARCOTIC AND BARBITURATE ADMINISTRATION RECORD**

**Drug** MORPHINE SULFATE TUBEX  
**Date Issued**

**Issued by**  
**To Nursing Unit**

All preparations lost or otherwise unaccounted for must also be reported.

I hereby certify that the below doses were given as per the written order, ordered by a physician on the treatment sheet of the below-named patients. **Date returned**  
**Signed**

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**DATE** | **TIME** | **PATIENT'S NAME** | **RM. NO.** | **DOSE** | **ADMINISTERED BY** | **PHYSICIAN** | **BALANCE** |
APPENDIX C
October 5, 1966

Mr. Carl Goebel  
U. S. Treasury Department  
Bureau of Narcotics  
103 South Gay Street  
Baltimore, Maryland 21202

Dear Mr. Goebel:

Thank you for sending me the material I requested on Federal Narcotics Regulations. Several questions still remain which did not seem to be covered in the literature you sent me, and I would, therefore, appreciate it if you could clarify the following points:

1. Is it necessary for the doctor who prescribes a narcotic to have his name appear on the Narcotics Administration Record, or is it sufficient for the doctor's name and the drug name to appear in the doctor's notes?

2. Can a nurse use ditto marks on the Narcotics Administration Record when she would otherwise have to sign her name many times?

3. Are three narcotic inventories required by law each day on each nursing unit?

I would appreciate a definite statement on these points as to what is required by law. The only information which I have been able to find covering these areas is in the form of suggested methods for handling narcotics and it does not state what is required by the Bureau of Narcotics.

Thank you for your assistance.

Sincerely,

M. Orry Jacobs  
Systems Engineering

MOJ:asah
Mr. M. Orry Jacobs  
Systems Engineering  
c/o Sinai Hospital of Baltimore, Inc.  
Belvedere Avenue at Greenspring  
Baltimore, Maryland 21215

Dear Sir:

Reference is made to your letter of October 5, 1966, relative to handling narcotic drugs in a hospital.

It is not necessary for the name of the physician prescribing narcotic drugs to appear on the Narcotics Administration Record in lieu of the written prescription. His name, however, should appear on the patient's chart as a record.

Ditto marks should not be used on the Narcotics Administration Record. It is imperative that the nurse administering the narcotics sign her name on each occasion.

Three narcotic inventories are not required by law. The accountability of narcotics is left entirely to the hospital.

Very truly yours,

[Signature]

Phillip R. Smith  
District Supervisor

Keep Freedom in Your Future With U.S. Savings Bonds
### FORM PY-5

#### COMPARATIVE SUMMARY

<table>
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</tr>
<tr>
<td>a) Man-Minutes/Week</td>
<td>11,580</td>
<td>9,102</td>
</tr>
<tr>
<td>b) Man-Hours/Week</td>
<td>193.0</td>
<td>151.7</td>
</tr>
<tr>
<td>c) Number of Equivalent Full-Time Personnel*</td>
<td>4.83</td>
<td>4.07**</td>
</tr>
</tbody>
</table>

* To arrive at the number of Equivalent Full Time Personnel, divide the man-hours/week by the number of hours per work week (which is normally equal to 40 hours per week).
** Includes time needed for vacations, holidays and sick days.
APPENDIX E
# Current Pharmacy Staffing

<table>
<thead>
<tr>
<th>Day</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
<th>Sunday</th>
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<tbody>
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<td>11-2</td>
<td>12-5</td>
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<td>8-11</td>
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<td>8-11</td>
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<td>8-11</td>
<td>8-11</td>
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</tbody>
</table>

- **Chief Pharmacist**
- **Staff Pharmacists**
- **Pharmacy Interns**
- **Clerk-Helpers**
APPENDIX F
<table>
<thead>
<tr>
<th></th>
<th>NOW</th>
<th>METHODOLOGY</th>
<th>PROPOSED (INCLUDES NARCOTICS SYSTEM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacist</td>
<td>193.0</td>
<td>151.7</td>
<td>190.5</td>
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<tr>
<td>Clerk</td>
<td>60.0</td>
<td>68.4</td>
<td>40.0</td>
</tr>
<tr>
<td>Total</td>
<td>253.0</td>
<td>220.1</td>
<td>230.5</td>
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</tbody>
</table>