

HOUSE STAFF

427 - 68

AUTHOR: V. MACLEOD

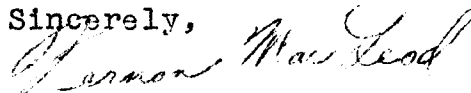
TO: Mr. W. J. Hindman
FROM: Vernon MacLeod
SUBJECT: House Staff Project

Dear Mr. Hindman:

About two months ago a study of House Staff utilization was undertaken by CSF. Two basic objectives were set forth for the study. The first objective was to determine the actual work load of House Staff physicians and from this work load recommend the optimum size House Staff. The second objective was to determine the best method of maintaining the required House Staff. This report contains the results and recommendations that apply to the first objective. As soon as decisions are made with regards to this first objective, the second objective will be studied.

At this time I would also like to express my thanks for the cooperation I received from the members of the House Staff and Department Heads in the Hospital. Special thanks go to Mrs. Norman for her work in preparing this report.

Sincerely,



Vernon MacLeod,
Managing Director

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I. PRESENT SITUATION

A. DUTIES:

By talking to members of the House Staff and Department Heads in the Hospital, the following list of house staff duties was developed:

1. Assisting private physicians with surgery. House Staff participation on surgery cases varies from no assistance on some cases to having as many as two house staff physicians participate on other cases. Also in connection with surgery cases, members of the House Staff will write the Pre-Op and Post-Op orders for the patient. Occasionally a member of the House Staff will also dictate the Operative Notes.
2. Twenty four hour coverage of the Emergency Room. House Staff physicians are responsible for providing 24 hour, 7 day per week coverage of the Emergency Room.
3. Currently work up the History and Physicals for admitted patients. Normally all medical admissions are seen by a member of the medical House Staff and a surgical patient by a member of the surgical House Staff.
4. Currently make patient rounds daily. Members of the House Staff visit patients in the house, checking complaints and making some notes on the charts.
5. Other miscellaneous duties performed by the House Staff are shown in the list below.
 - a. check patient complaints
 - b. start IV's
 - c. male catheterizations

- d. levine tubes
- e. dress wounds
- f. remove post-op packs
- g. check T & A's before the patient goes home
- h. inject dye for X-rays
- i. signatures on charts

I. PRESENT SITUATION

B. SCHEDULE:

As of January 19, 1967, House Staff physician scheduling is made up of three full-time surgical physicians, one full-time medical physician, and part-time physicians. This present staff varies from the budgeted staff by a sizable figure. The budgeted staff is for seven full-time House Staff physicians. Four of these would be surgical and three would be medical. Also, with seven full-time physicians, part-time physicians for week-end coverage are included in the budget.

Because of the variance between actual staffing and budgeted staffing, and due to staffing changes from one week to the next, a routine weekly schedule is not presented in this section. However, in order to get a good estimate as to how many house staff hours are presently being spent at Baltimore County General Hospital, payroll records for six months were checked and tabulated. The six month period and associated data collected is shown in Table I.

TABLE I

<u>Payroll Period Ending:</u>	<u>Regular House Staff Hours</u>	<u>Regular House Staff Salary</u>	<u>Total Sal.=Regular Sal.+ Part-time or Overtime Salary</u>
5/22/66	560	\$ 2319.22	\$ 2739.22
6/05/66	560	2319.22	2655.90
6/19/66	496	2060.76	2764.76
7/03/66	560	2319.22	2439.22
7/17/66	520	2180.78	3087.45
7/31/66	560	2353.86	2713.86
8/14/66	520	2180.78	2740.78
8/28/66	480	2007.70	3377.70
9/11/66	296	1280.79	2270.79
9/25/66	400	1730.80	3625.80
10/09/66	344	1488.49	2630.11
10/23/66	400	1730.80	2809.51
11/06/66	400	1730.80	2624.12
Totals for $\frac{1}{2}$ yr.	6,096hrs.	\$25,703.22	\$36,479.21
Estimate for One full year	x2 12,192hrs.	x2 \$51,406.44	x2 \$72,958.42

Summarizing the above table, the following general facts can be made:

1. Regular house staff hours are about 12,200 per year.
2. Part-time and over-time hours are about 6,400 per year.
3. Total house staff hours are about 18,600 per year.
4. Total cost of house staff is about \$73,000 per year.

This does not include fringe benefits.

II. WORK LOAD EVALUATION

A. OPERATING ROOM:

In order to determine the required house staff hours needed for assisting with surgery cases, six months of data was compiled from the O.R. log book. The results of this data is shown in Table 2.

TABLE 2

Month	Total Operative Procedures	Procedures Perf. with no house staff assist.	Procedures Perf. with H.S. assist.
June 66	235	164	71
July 66	162	110	52
August 66	229	174	55
September 66	183	131	52
October 66	143	88	55
November 66	190	130	60
	1142	797	345

From Table 2 the percentage of procedures utilizing House Staff assistance is 30%. On a yearly basis this would be about 700 procedures.

Besides the data collected in Table 2, a detailed analysis of September and October was made to compute the average O.R. time per assisted case and non-assisted case. See Appendix A. The results were a time of 1.6 hours per assisted case and .64 hours per non-assisted case. This shows very definitely that the House Staff assists with the longer and more complicated procedures. Therefore, on an annual basis, the required house staff hours for surgery are 700 cases times 1.6 hours per case which equals 1,120 hours.

It should also be noted at this time that the available elective operating room hours per year are equal to 2,080. This was computed by using the following formula:

2 operating rooms x 4 available hours per day/per room x 5 days per week x 52 weeks per year = 2,080 hours per year. By comparing the 2,080 available hours with 1,120 house staff hours, we find that if in fact all house staff assistance was given during the elective hours, 54% of elective time would have house staff participation. In reality this figure is probably about 50% as the House Staff does assist on a few emergency cases occurring during non-elective hours.

Also, while looking at the Log Book, other important observations were made. The main observation was that the number of cases utilizing two house staff physicians was very minimal. In fact, the average for the six months observed was one per month.

It was also determined that the amount of time spent by House Staff physicians on Pre-op and Post-op orders plus dictation of Op notes was minimal. A very conservative estimate of 5 minutes per case is allowed for these activities. Using 5 minutes per case, a figure of 58 hours per year is spent on these activities. This was computed in the following manner:

5 min./case x 700 cases/year x 1 hr./60 min.

II. WORK LOAD EVALUATION

B. EMERGENCY ROOM:

The first step in analyzing the Emergency Room work load was to determine the average number of patients treated in the Emergency Room by day of week and the average number of patients treated by hour of the day. This was done using a seven week period of the Emergency Room log book. The results are shown in the tables below.

TABLE 3 Average Patients Treated By Day of Week

DAY:	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.	Sun.
AVE. PAT.	42	31	35	40	33	33	40

TABLE 4 Average Patients Treated By Hour of Day

<u>HOUR</u>	<u>PATIENTS</u>	<u>HOUR</u>	<u>PATIENTS</u>	<u>HOUR</u>	<u>PATIENTS</u>
12am-1am	.75	8am-9am	1.00	4pm-5pm	2.60
1am-2am	.60	9am-10am	1.80	5pm-6pm	2.90
2am-3am	.35	10am-11am	2.00	6pm-7pm	2.80
3am-4am	.25	11am-12pm	2.10	7pm-8pm	3.10
4am-5am	.20	12pm-1pm	1.80	8pm-9pm	2.80
5am-6am	.05	1pm-2pm	2.10	9pm-10pm	1.90
6am-7am	.20	2pm-3pm	1.60	10pm-11pm	1.60
7am-8am	.20	3pm-4pm	2.30	11pm-12pm	1.00
				TOTAL	36.00

Table 3 shows that Monday, Thursday, and Sunday have the highest work load. This is somewhat unexplainable as usually Friday, Saturday, and Sunday are the high days. However, the % variance from the highest day to the lowest day is only 25%. This figure would be very important if the total number of cases seen was much higher on a day to day basis. In other words, the additional 11 patients seen on Mondays as opposed to Tuesdays is not enough to affect staffing.

This is further emphasized by the fact that for staffing purposes in this report, a figure of 36 patients per day will be used.

This means that the additional work load on Monday represents only a 15% increase over the average of 36 patients.

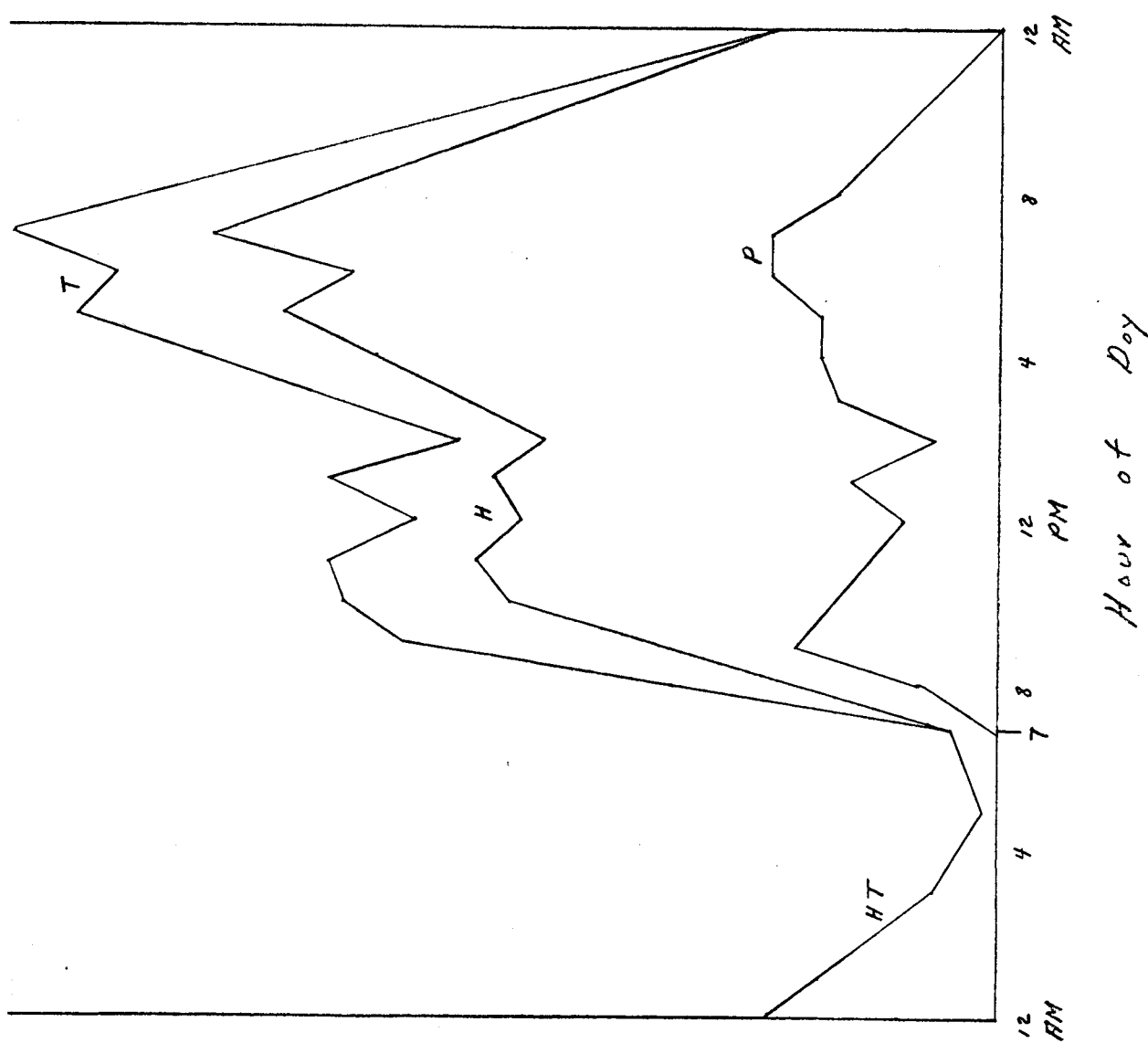
More important than Table 3 is Table 4. This table shows the average work load by hour of the day. Briefly, the highest load occurs between 7 and 8 p.m. and the lowest work load between 5 and 6 a.m. Also the percent variance here is 6,100%.

For determining workload then, Table 4 and a figure of 36 emergency room patients per day including clinic visits, will be used. Also the fact that 21% of all Emergency Room visits are seen by private physicians will be used. Graph A on the next page sums up all of the above facts. The (T) line on the graph is the combined visits both house and private. The (H) line represents House Staff cases only. The (P) line represents private staff cases only. The (HT) line from 12 a.m. to 7 a.m. shows that no patients were seen by private physicians during this time.

The (H) line on Graph A fully describes the House Staff Emergency Room work load. However, to get an average man hour requirement, an average time per visit must be used. By talking with the House Staff physicians, Emergency Room nurses, and using data from other hospitals, an average time of 20 minutes per visit was obtained. On an annual basis then, the actual time spent by House Staff physicians in the Emergency Room is 3,460 hours. This was computed as follows:

$$79\% \times 36 \text{ cases/day} \times 365 \text{ days/year} \times 1/3 \text{ hour/case.}$$

Graph A



3

Average 2

Patient

Visits 1

0

One other fact which needs to be stated at this time is the seasonal variations in Emergency Room visits. Looking back at 1966, August was the high month with 1,099 visits, and February was the low month with 614 visits. Because of this seasonal variation and the fact that 36 visits per day is based on the high month of August, the figure of 3,460 hours is conservatively high. However, due to the increasing trend in Emergency Room cases, the figure of 36 cases per day will still be used for predicting staffing needs.

II. WORK LOAD EVALUATION

C. HISTORY AND PHYSICALS:

Upon studying this part of the House Staff's work load, it was found that the House Staff does the History and Physical for all patients excluding T & A's. This then, represents about 2,850 patients a year. Through discussions with the House Staff, Nursing Service, and other hospitals, an average time of 30 minutes per patient to do a History and Physical was made. This means that 1,425 hours per year are spent by the House Staff doing History and Physicals.

II. WORK LOAD EVALUATION

D. ROUNDS:

This particular activity is done by the House Staff but is not a required routine duty. In other words, to save House Staff time, this activity could be dropped. By admission of the House Staff themselves, the main advantage of this function is increasing knowledge of medicine and surgery. This is good and is necessary in a hospital where teaching is of prime importance. However, in a hospital where patient care is the prime objective and the hospital is by no means a teaching one, this can become an expensive by-product. At Baltimore County General, this function requires an estimated 730 hours per year. This figure is based on discussions with the House Staff and allots one hour per day per service for making rounds.

II. WORK LOAD EVALUATION

E. MISCELLANEOUS:

This is the hardest part of the House Staff's work load to evaluate without a long and involved study. However, in relation to the first three types of work load, these miscellaneous activities account for little time. An estimate of two hours per day is conservative, which is about 730 hours per year.

III. SUMMARY

A. CONCLUSIONS:

The table below summarizes House Staff utilization for the year 1966.

HOUSE STAFF UTILIZATION

(1) Available House Staff Hours		18,600
(2) Assist in O.R.	1,120	
(3) Pre and Post Op work	58	
(4) Emergency Room	3,460	
(5) History and Physical	1,425	
(6) Rounds	730	
(7) Miscellaneous	730	
	<hr/>	<hr/>
Totals	7,523	18,600

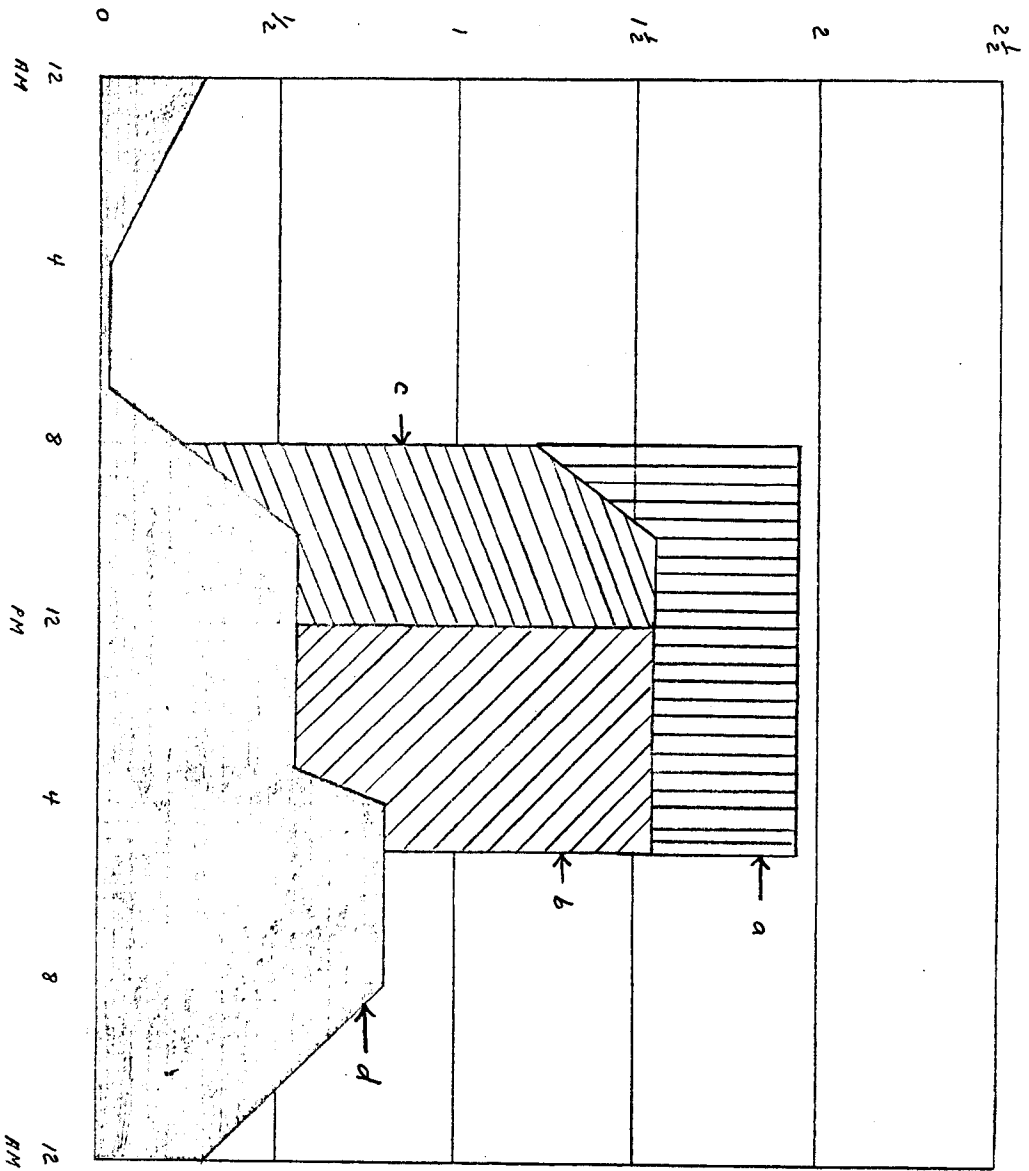
The above figures represent a 40% utilization. Also, this figure of 40% utilization is conservatively high.

Graph B summarizes the 7,523 hours per year into a daily work load picture showing how the work load is distributed over a 24 hour day. This same picture applies to every day of the week with one exception. The operating room time only applies Monday through Friday.

Graph B

- a = Rounds and Miscellaneous
- b = History and Physicals
- c = Operating Room
- d = Emergency Room

Required
Man
Hours
Per
Hour



III. SUMMARY

B. SUGGESTIONS:

Several things could be done to improve House Staff utilization. For example, without changing any duties, a schedule should be set up whereby two House Staff physicians are on duty Monday through Friday from 8 a.m. to 5 p.m. Currently there are four physicians on duty during this time. This alone would bring utilization up and reduce costs by about \$18,000 a year.

Using Graph B, an ideal staffing pattern would be set up with the following coverages:

M-F	8 a.m.- 5 p.m.	2 Physicians
S,S	8 a.m.- 12 p.m.	1 Physician
S,S	12 p.m.- 5 p.m.	2 Physicians
All week	5 p.m.- 11 p.m.	1 Physician
All week	11 p.m.- 8 a.m.	1 Physician on call

At this time no schedule has been worked up using the above coverages. If however, after reading this report administration desires a schedule, it will be worked up.

The above savings and staffing pattern assumes no changes in present House Staff duties. However, several suggestions are made here which could influence future House Staff requirements. Keep in mind these are only suggestions and only after a meeting with Administration and possible the Medical Staff will any recommendations be made.

DECREASE HOUSE STAFF REQUIREMENT:

- (1) Eliminate the duty of House Staff making rounds.
- (2) Distribute miscellaneous duties between private physicians and nurses.
- (3) Utilize operating room technicians for surgery cases.
- (4) Require private physicians to do their own History and Physicals.
- (5) Have private physicians alternate for coverage of the Emergency Room.

INCREASE HOUSE STAFF REQUIREMENT:

Have the House Staff perform certain functions now being done by nursing service.

APPENDIX

SEPTEMBER 1966

O.R. ANALYSIS

A

DATE	TOTAL PROCEDURE	NO ASSIST	ASSIST	TOTAL TIME	NO ASSIST TIME	ASSIST TIME
9- 1	8	7	1	9- 35	5- 35	4
9- 2	7	6	1	8	7	1
9- 5	2	2	0	1	1	---
9- 6	11	8	3	7- 50	4- 50	3
9- 7	8	7	1	5- 20	4- 0	1- 20
9- 8	6	4	2	5- 10	3- 20	1- 50
9- 9	10	5	5	8- 40	2	6- 40
9-10	1	1	0,	- 20	20	---
9-11	2	2	0	1- 50	1- 50	---
9-12	13	10	3	12- 35	6- 25	6-10
9-13	13	10	3	14- 15	6- 15	8
9-14	8	6	2	6- 30	2- 30	4
9-15	2	2	0	1- 30	1- 30	---
9-16	10	8	2	6- 55	4- 30	2- 25
9-17	4	2	2	5- 45	55	4- 50
9-19	6	2	4	6- 40	1- 5	5- 35
9-20	7	6	1	6- 15	2- 5	4- 10
9-21	11	8	3	8	5	3
9-22	3	3	0	4	4	---
9-23	4	3	1	3- 25	2- 20	1- 5
9-25	2	0	2	2- 25	---	2- 25
9-26	10	6	4	10- 15	5- 10	5- 5
9-27	10	7	3	10	4	6
9-28	11	8	3	8	2- 25	5- 35
9-29	6	1	5	6- 35	1	5- 35
9-30	8	7	1	6- 40	5- 40	1
TOTALS	183	131	52	167-20 .91 HOUR	84-35 .64 HOUR	82-45 1.6 HR.

OCTOBER 1966

O.R. ANALYSIS

A

DATE	TOTAL PROCEDURES	NO ASSIST	ASSIST	TOTAL TIME	NO ASSIST TIME	ASSIST TIME
10- 3	6	4	2	7- 50	2- 45	5- 5
10- 4	5	4	1	3	2	1
10- 5	6	6	---	3- 30	3- 30	---
10- 6	5	1	4	3- 50	35	3- 15
10- 7	9	7	2	10- 10	6- 30	3- 40
10-10	8	5	3	7	3- 20	3- 40
10-11	11	3	8	12- 45	1- 40	11- 05
10-12	10	9	1	6- 15	4- 45	1- 30
10-13	8	3	5	9- 30	1- 30	8
10-14	4	4	---	1	1	---
10-15	1	---	1	1- 30	---	1- 30
10-17	8	6	2	5- 50	3- 15	2- 35
10-18	3	2	1	2- 10	1- 10	1
10-19	8	5	3	8- 50	3- 20	5- 30
10-20	5	3	2	11- 15	1- 35	9- 40
10-21	3	2	1	5- 50	1	4- 50
10-22	1	1	---	1	1	---
10-23	1	---	1	3- 30	---	3- 30
10-24	5	3	2	6- 10	1- 45	4- 25
10-25	7	2	5	8	1	7
10-26	8	5	3	6- 15	3- 50	2- 25
10-27	8	6	2	6- 45	5	1- 45
10-28	6	3	3	7- 35	2- 50	4- 45
10-31	7	4	3	5- 20	3- 15	2- 05
TOTALS	143	88	55	144-50	56-35	88-15
AVE./CASE				1 HOUR	.64 HOUR	1.6 HOUR

BALTIMORE COUNTY GENERAL HOSPITAL

5401 OLD COURT RD.

RANDALLSTOWN, MD. 21133

HISTORY

DATE: _____

1. CHIEF COMPLAINTS: (List in order of importance and state duration)

2. PRESENT ILLNESS:

3. PAST HISTORY: OCCUPATION:
INJURIES:

HABITS: ALCOHOL () TOBACCO () DRUGS ()

OPERATIONS:

BLEEDING TENDENCIES:

HISTORY

HISTORY OF PATIENT (Cont'd.)

4. FAMILY HISTORY: (If Living – Age – Health) (If Deceased – Age – Cause of Death)
Father:
Mother:
Siblings:
Others:

INQUIRY BY SYSTEMS

5. NERVOUS AND MENTAL: (If extensive use Neurological Report)
6. EYE, EAR, NOSE, AND THROAT:
7. CARDIO-RESPIRATORY:
8. GASTRO-INTESTINAL:
9. GENITO-URINARY:
10. GYNECOLOGY-OBSTETRICAL: Catamenia: Age () LMP () Cycle () Length ()
Flow: Scant () Moderate () Excessive () Pain: None () Moderate () Severe (). Comment:

Pregnancies:
Menopause:
Others:

BALTIMORE COUNTY GENERAL HOSPITAL

5401 OLD COURT RD.

RANDALLSTOWN, MD. 21133

PHYSICAL EXAMINATION

11. GENERAL:

12. SKIN:

Breast:

13. HEAD AND NECK:

Eyes:

Ears:

Mouth:

Thyroid:

Cervical Nodes:

14. CHEST:

Heart:

B/P _____

Lungs:

15. BACK AND SPINE:

16. ABDOMEN:

Liver:

Spleen:

Kidney:

Pelvic:

Genitalia:

Rectal:

PHYSICAL
EXAMINATION

(over)

PHYSICAL EXAMINATION (Cont'd.)

17. LIMBS:

18. LYMPHATIC AND VASCULAR SYSTEMS:

19. NEUROLOGICAL: (If extensive use Neurological Report)

20. IMPRESSIONS: (Indicate tentative diagnosis)

DATE: _____

House Officer

DATE: _____

Attending Physician