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Asymptomatic Diagnosis Of Malignant Disease

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I. THE VALUE OF ASYMPTOMATIC DIAGNOSIS OF MALIGNANT DISEASE.

A six and one-half year report from the Cancer Detection Center, The University of Minnesota (March 1, 1948 to September 1, 1954).*

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The goal of the Minnesota Cancer Detection Center has been to develop a workable and accurate method of cancer examination including all internal organs as well as readily accessible external organs. Until a simple serodiagnostic or biologic test is available, such an effort is the only available means of detecting malignant disease in its early stages.

"Cancer Detection" implies the process of finding malignancies before symptoms or signs herald their presence, in addition to the diagnosis of precancerous conditions. Through the application of a well conceived routine plan of examination in doctors' offices, we believe several types of serious malignancy can be identified in advance of their usual signs and symptoms. More important than this, the 28 per cent of our population over the age of 45 years who harbor precancerous conditions can be alerted for close observation or therapy.

During the six and one-half years, from March 1, 1948 to September 1, 1954, cancer detection examinations have been performed on 6,754 men and women. One hundred and forty-seven cancers have been discovered at the Detection Center, and proved with biopsy or surgery. Treatment has been under the direction of the patients' personal physicians. Furthermore, a total of 2,797 lesions considered to be precancerous have been detected in 1,894 examinees, an incidence of 28 per cent for people over 45 years of age. Table I demonstrates the ratio of new patient examinations and the incidence of malignancies found.

TABLE I

CANCER INCIDENCE
March 1, 1948 to September 1, 1954

	MALE	FEMALE
New Patients	3311	3443
Recheck Examinations	4923	4740
Total Patients Examined	6,754	
Total Examinations	16,417	
Cancer Incidence (147)	23.2 per 1000 patients examined 2.32% 8.97 per 1000 examinations performed	
Overall Incidence of Cancer in C.D.C. Population (190 cancers)		2.81%

In order to facilitate the study and assure maximum cancer case finding a lower age limit of 45 years has been established. Recently the lower age limit for males has been raised to 50 years. The high incidence of carcinoma of the cervix in women in the fifth decade indicated the advisability of maintaining the lower age limit for females at 45 years.

It is obvious that all people have some symptoms during any given interval of time. We have not been able to fulfill the original concept of obtaining a group of completely asymptomatic examinees for cancer detection observation. Therefore, our examinees with malignant

disease have been separated into symptomatic and asymptomatic cases in reference to the particular organ or organ system in which the malignancy was found. In the group of 147 patients found to have cancer, 68 patients had no symptoms referable to the organ or organ system in which the malignancy was detected and 79 patients had symptoms referable to the organ or organ system involved. Survival figures appear significantly better in the asymptomatic group. Table II demonstrates the value of the recheck examination in detecting asymptomatic cancers.

TABLE II

VALUE OF REPEATED RECHECK EXAMINATIONS
March 1, 1948 to September 1, 1954

	ASYMPTOMATIC	SYMPTOMATIC	TOTALS	%
New	32	48	80	54.5
Recheck	36	31	67	45.5

Table III presents the cancers found in six and one-half years of operation, according to site and relationship to symptoms.

TABLE III

CANCERS FOUND AT CANCER DETECTION CENTER
March 1, 1948 to September 1, 1954

SITE	ASYMPTOMATIC	SYMPTOMATIC	TOTALS
Stomach	9	5	14
Colon	13	5	18
Rectum	5	3	8
Small Bowel	1	0	1
Lung	3 (metastatic)	1	4
Urinary Bladder	1	1	2
Kidney	0	0	0
Breast	8	2	10
Ovaries	4	1	5
Cervix	6	2	8
Uterus	0	5	5
Prostate	5	7	12
Skin	6	36	42
Lower Lip	0	3	3
Floor of Mouth	1	0	1
Thyroid	1	2	3
Hodgkin's disease	1	0	1
Myeloma	1	0	1
Lymphosarcoma	thyroid 1 mesocolon 1 stomach 1	0	3
Lymphatic leukemia	0	6	6
TOTALS	68	79	147
			147

Method of Examination

Principles of completeness and economy have been important considerations in developing the pattern of the examination. Laboratory procedures have been reduced to bare essentials, requiring only a minimum amount of technical assistance.

A detailed history form is completed by the patient prior to his visit to the Center. The patient brings a urine and stool specimen (collected after 3

days on meat free diet) the morning of the examination. A routine urinalysis is performed (urine sugar, albumin, microscopic for cells if urine is positive for albumin). A benzidine test on the urine has been tried, but is not as accurate as microscopic cell study to detect occult urinary bleeding. The stool is examined for occult blood with the guaiac and benzidine test. Routine examination of the blood includes hemoglobin determination, white blood cell count, differential count and cell morphology.

Every patient has a Levine tube passed for gastric analysis using one dose of histamine (0.5 mgm.) as stimulant. The standard sodium hydroxide and Toepfer's reagent determination for free HCl has proved most satisfactory. The quininium ion urinary excretion test has been tried and proved too time consuming in the laboratory for large numbers of determinations daily.

Chest x-rays are taken on each patient. Suspicious lesions or single nodules are further investigated with planigrams of the involved area. Sputum is studied for malignant cells by the Papanicolaou method. If no diagnosis is forthcoming, bronchograms, bronchial washings, and bronchial biopsy (if possible) are recommended.

All patients come to the Center prepared with enemas for a proctosigmoidoscopic examination. The scope is passed to the 25 cm. level, unless peculiar conformity of the bowel (acute angulation) or stricture prevents passage of the instrument. The following conditions are checked for: 1. Small adenomas (2-3 millimeters); 2. Polyps (sessile or pedunculated); 3. Character of the mucosa (bleeds easily, inflamed, small ulcerations); 4. Diverticula, diverticulitis; 5. Hemorrhoids, fissures, fistulas; 6. Frank ulcerating carcinomas or intramural tumors. Excision biopsy and fulguration is recommended for all small adenomas and polyps. During the digital examination of the rectum, the prostate is palpated for hypertrophy or nodules.

All women receive a pelvic examination including bimanual palpation of adnexal areas, and direct visual inspection of the vaginal vault and cervix. Any adnexal mass is considered suspicious in this age group, and pelvic laparotomy advised. Suspicious findings in the cervix includes: 1. Rough area on lip of cervix; 2. Polyps; 3. Blood at the os (not menstruating); 4. Atrophic cervical mucosa; 5. Erosion of the cervix; 6. Cervicitis.

Papanicolaou smears are made of vaginal secretions and scrapings of the cervix. Suspicious areas are biopsied. Positive Papanicolaou smears must be confirmed later by positive biopsy. Suspicious (Class III) smears, in an otherwise normal vagina, indicate need for repeated cytologic examination every six weeks until smears are negative or biopsy proves the presence of a carcinoma.

After the laboratory work has been completed and the proctoscopic and pelvic examinations performed, a clinician examines the patient thoroughly for the remaining problems of a more general nature.

Criteria for Special X-ray Studies

While summarizing the results of examination, the clinician determines whether further x-ray studies are needed according to the following plan:

Gastric Intestinal Series X-rays are ordered for:

1. Patients with histamine achlorhydria and hypochlorhydria (less than 30° free acid).
2. Patients with occult blood in the stool.
3. Patients with strong family history of gastric carcinoma.
4. Patients with unexplained hemoglobin level below 11 grams.
5. Patients with vague symptoms of gastric pathology which in any sense could be interpreted to being due to gastric carcinoma by the examining physician.

6. Any evidence of undue weight loss.

The air contrast technique is helpful in cases of suspected gastric polyps or small mucosal defects.

Barium Enema Colon X-rays are indicated for:

1. Patients with abnormal findings on proctoscopic examination.
2. Patients with occult blood in the stool.
3. Patients with unexplained hemoglobin level below 11 grams.
4. Patients with a family history of large bowel malignancy.
5. Patients who have vague symptoms that could possibly be due to malignancy of the large bowel as determined by the examining physician.
6. Any evidence of undue weight loss (10 pounds or more).

In addition to routine barium enema x-rays, all patients found to have polyps on proctoscopic exam are given air contrast barium enema studies.

Intravenous Pyelogram X-rays are ordered for patients with:

1. Blood in the urine.
2. Costovertebral pain or tenderness.
3. Palpable mass in region of kidney.

Results of Six and One-half Years' Operation

Esophagus and Stomach:

Fourteen gastric carcinomas have been found, seven in males and seven in females. All patients had achlorhydria or severe hypochlorhydria and would have been picked up by x-ray performed on this basis alone exclusive of other indications for performance of a G. I. Series. In only two cases (with symptoms) was the hemoglobin below 11.0 grams. Occult blood was present in the stool of only three asymptomatic patients and one patient with symptoms. Table III demonstrates that in nine patients the gastric cancers gave no symptoms, while in five patients symptoms were present.

Polypoid type carcinomas were found in five of the nine asymptomatic patients and scirrhous carcinoma in three patients. In the five gastric cancer patients with symptoms, four had scirrhous carcinoma, and only one had a polypoid lesion. Table IV demonstrates the results of early diagnosis (asymptomatic patients) compared with late diagnosis (symptomatic patients) in the gastric cancer group. Six of the patients are living and well up to five and one-half years in the asymptomatic group. There is only one survivor in the group of patients with symptoms at time of diagnosis.

Early polypoid lesions have a good chance for cure with subtotal gastrectomy. Since virtually 100 per cent of polyp-bearing stomachs are achlorhydric, the gastric analysis seems to be a satisfactory method for indicating those patients with a likelihood for polyps. Polyps greater than 2 cm. in diameter have a 50 per cent chance of being malignant when found. Of those 1 cm. or less in diameter when detected about 11 per cent are malignant.

For early asymptomatic gastric cancers the most significant criterion indicating need for gastrointestinal series x-rays is achlorhydria. Twenty-five per cent of Cancer Detection Center patients are achlorhydric. We do not know of a stomach cancer that has been found during this six and one-half years among the three-fourths of our patients who have normal gastric acidity.

One examinee presented during the first six months of operation of the Center with total obstruction of the esophagus due to known esophageal carcinoma. He was too ill to undergo the examination and is not counted in the series of cancers picked up in the Center. This was the only esophageal cancer seen during the first five years of function of this Center.

TABLE IV

COMPARISON OF GASTRIC CANCER PATIENTS
March 1, 1948 to September 1, 1954

TOTAL NUMBER 14		ASYMPTOMATIC 9	SYMPTOMATIC 5
Achlorhydria		8	5
Hypochlorhydria		1	0
Occult Blood		3	1
X-ray Diagnosis (1st visit)		1	2
X-ray Diagnosis (subsequent visit)		8	3
Type of Lesion	Schirrhous	3	3
	Carcinoid	1	0
	Polypoid	5	1
	Ulcerating	0	1
Local Extension		1	5
Positive Lymph Nodes		3	4
Alive		6 ($5\frac{1}{2}$, 4, $2\frac{1}{2}$, 1, 1, 1/3 yrs.)	1 ($2\frac{1}{2}$ yrs.)
Deceased		3	4

4 patients failed recheck examinations. (achlorhydric) - developed gastric cancer --- 1 living - 1 year.

- - -

Colon and Rectum

Twenty-six cases of cancer of the rectum and colon have been detected: 14 in males and 12 in females. Nineteen of the 26 lesions (75 per cent) were within reach of the sigmoidoscope. Of these, fifteen were in the 9 cm. to 16 cm. level. Four lesions were in the ascending colon or cecum and one was in the descending colon.

Of the 26 patients, 18 were free of symptoms for G. I. tract disease and 8 had symptoms referable to the G. I. tract. Only three of the 18 asymptomatic patients had occult blood in the stool; three of the 8 patients with symptoms had occult blood. Here again, for early lesions not causing symptoms, the stool occult blood determination is not a satisfactory screening device for indicating necessity of x-ray examination.

Routine examination of the rectum and sigmoid through the sigmoidoscope has proved to be the most useful screening device for large bowel lesions. Table V compares the colon and rectal cancers with and without symptoms. Of the group of 18 symptom-free patients, 17 are living and well up to five years. Only 3 of the 8 patients who had symptoms referable to the colon at the time of diagnosis are living and well, (5, 5, 3 years).

There is no etiologic relationship between diverticulitis and carcinoma of the colon. However, inflammatory strictures due to diverticulitis often cannot be differentiated from constricting adenocarcinoma by x-ray studies. Exploratory laparotomy and resection of the involved area should be performed for potentially obstructing inflammatory lesions, thereby circumventing the risk of unsuccessful differentiation of the benign from the malignant process.

Female Pelvic Organs:

Eight cancers of the cervix have been

TABLE V

RECTAL AND COLON CANCERS
March 1, 1948 to September 1, 1954

TOTAL NUMBER 26		ASYMPTOMATIC 18	SYMPTOMATIC 8
Diagnosed first visit		10	7
Occult Blood		3	3
Hemoglobin below 12.5		2	2
Proctology positive		14	5
Barium enema positive		4 (also 8 of 14 procto pos.)	2 (also 4 of 5 procto pos.)
Type of Lesion	Ulcerating	5	6
	Polypoid	13	2
Lymph nodes positive		4	3
Alive		17	3
		5 years -- 7	5 years -- 2
		4 years -- 2	3 years -- 1
		3 years -- 2	
		2 years -- 3	
		Less than 2 years -- 3	
Deceased		1 (C.V.A.)	5
Rectum - primary		5	3
Sigmoid - primary		8	3
Remainder - primary		5	2

- - -

found and proved. Six women were without symptoms and two had symptoms of pelvic disease when examined. Two women in the asymptomatic group had negative Papanicolaou smears, but suspicious areas noted during inspection of the cervix indicated the need for biopsy. In only one case (asymptomatic) was the cervix entirely normal in appearance and the positive Papanicolaou smear was the specific indication for biopsy which proved the presence of the carcinoma.

One hundred and twenty-six women had positive Papanicolaou smears, and 8 of this group proved to have cervical cancer (6.6%). It is possible that an indeterminate number of the patients in whom a suspicious Papanicolaou has been reported, will eventually prove to have cervical carcinoma. However, it must be emphasized, that visual inspection of the cervix with biopsy of any suspicious areas provides an excellent chance of detecting lesions early; particularly when such examinations are repeated at yearly or six month intervals.

Endometrial Carcinoma

Five endometrial carcinomas have been found, and all had symptoms and signs of disease (abnormal spotting). Papanicolaou smears were negative. Diagnosis was established by dilatation and curretage. All patients are living and well after surgery. No good screening technique is yet available for early endometrial carcinoma. Bleeding and discharge from the cervical os, and uterine enlargement remain the only well proved danger signs.

TABLE VI

C.D.C. --- CERVIX AND ENDOMETRIAL CANCERS
March 1, 1948 to September 1, 1954

Positive Papanicolaou Results Reported	126
Class III	113
Class IV	13
Proven cases of cancer of cervix and endometrium	13

CERVIX	ASYMPTOMATIC 6	SYMPTOMATIC 2
Positive pelvic exam (suspicious findings)	5	2
Positive Paps	4	2
Positive pelvic exam and negative Pap	2	0
Negative pelvic exam and positive Pap	1	0
Squamous cell carcinomas	6	2
Living and well	5 (5, 5, 3, 2, 2 yrs.)	2 ($3\frac{1}{2}$, 2 yrs.)

ENDOMETRIUM	5
Vaginal bleeding	5
Negative Paps	5
Positive vaginal findings (exclusive of blood at os)	2
Surgical therapy	5
Living and well	5 (2, 2, $\frac{1}{2}$, $\frac{1}{2}$, $\frac{1}{2}$ yrs.)

Ovarian Carcinoma

Of 100 women who reported back to their physicians with a diagnosis of suspicious adnexal masses, five proved to have carcinoma of the ovary. Four of these patients were asymptomatic and one had symptoms. (Table VII) All were detected by means of bimanual palpation. In every case the surgical specimen revealed early cystadenocarcinoma of the ovary without spread to other tissues. Four patients are living and well. Pelvic examination is the only method for detection of these early ovarian tumors. Laparotomy is necessary to establish the nature of a palpable mass.

Prostate

Seventy-six patients were reported to have prostatic nodules suspicious for carcinoma. (Table VIII) Twenty-five had resection or biopsy of the lesion, and 12 carcinomas were proved histologically. We have accepted only histologic proof of malignancy, as against clinical impression. Nine patients have been treated for carcinoma of the prostate on clinical evidence only.

Five of the 12 proved cases were asymptomatic, and seven had symptoms of pro-

TABLE VII

CANCER DETECTION CENTER - OVARIAN CARCINOMAS
March 1, 1948 to September 1, 1954

Patients with suspicious adnexal masses - - -			100
Patients operated upon - - - - - - - -			45
Carcinomas proved - - - - - - - - -			5
		ASYMPTOMATIC	SYMPTOMATIC
Pelvic Exam Findings -- mass		4	1
Lesion	Multilocular cystadenocarcinoma	2	
	Papillary serous cystadenocarcinoma	2	1
Therapy	Surgical excision	4	1
Living and well		3 ($4\frac{1}{2}$, $3\frac{1}{2}$, 2 yrs.)	1 (3 yrs.)
Dead		1	0

TABLE VIII

CANCER DETECTION CENTER - PROSTATIC CARCINOMA
March 1, 1948 to September 1, 1954

Patients with prostate suspicious for cancer - - - - - -		76
Carcinoma proved histologically - - - - - - - - -		12
Treated as cancer but not proved histologically - - - - -		9
Patients under observation by family physician - - - - - -		32
Proved benign - - - - - - - - - - - - - - -		12
	ASYMPTOMATIC 5	SYMPTOMATIC 7
Living and Well	3	6

static obstruction. Two of the symptom-free patients had bony metastases, as well as two of the patients with symptoms. One out of the seven symptomatic patients is dead, and two of the three asymptomatic patients are dead.

No satisfactory screening test is available for prostatic cancer. Unfortunately, widespread bony metastases are found in many patients at the time symptoms of prostatic obstruction appear. It is only conjectural to assume that repeated

examination will significantly alter the outcome of prostatic cancer.

Skin:

Forty-two patients have had skin cancer diagnosed at the Center. Thirty-one of the lesions were basal cell carcinomas, and ten were squamous cell carcinomas. One pigmented nevus proved to be a malignant melanoma. All of these lesions were small and localized; treatment has been successful, and all of the patients are well at this time. Thirty-six of the 42 patients were aware of the presence of the lesion, but most considered it benign and of no consequence. (Table IX)

Senile keratosis of the skin is considered a pre-malignant lesion and 401 patients with keratoses have been found. A total of 325 pigmented nevi, exposed to chronic irritation, have been reported, but only the one malignant melanoma has been demonstrated.

No problem attends the diagnosis of skin cancer when clinicians are quick to submit biopsies of all suspicious lesions for histologic evaluation.

Lung:

Only one primary carcinoma of the lung was found in the first 6 years of function of the Detection Center. This lesion

TABLE IX

CANCER DETECTION CENTER - SKIN CANCERS
March 1, 1948 to September 1, 1954

Total Suspicious Skin Lesions		558
Cancers Proved and Treated		42
Squamous Cell Carcinomas 10	Extremities - - - 2 Trunk - - - - - - 1 Head and neck - - 7	
Basal Cell Carcinomas 31	Extremities - - - 3 Trunk - - - - - - 3 Head and neck - - 25	
Malignant Melanomas		1
No deaths		

was far advanced and the patient had obvious symptoms of pulmonary malignancy. Three metastatic carcinomas were picked up, one a metastatic melanoma (not our patient with melanoma) and the other two metastatic hypernephromas. No case of asymptomatic primary carcinoma of the lung has been detected, but one examinee was misdiagnosed. This is an unusual circumstance, perhaps owing to the exceptionally good detection of lung lesions in the mobile unit chest survey which has been extensively used in our state. Willingness on the part of our examinees to participate in a cancer detection program indicates a likelihood that they availed themselves of the opportunity for a chest x-ray examination.

There are no pathognomonic symptoms of <u>early</u> lung cancer. When symptoms are present during the earliest <u>phases</u> of lung cancer, they are the same as those produced by common respiratory diseases. These symptoms often respond to non-specific treatment, and serious delays in accurate diagnosis and treatment are fostered. The highly lethal nature of lung cancer makes it imperative that clinicians exercise a high index of suspicion towards silent lung nodules (coin lesions) and other suspicious pulmonary changes if a significant increase in five-year survivals is to be effected.

Breast:

One hundred and seventy-three women

had breast lesions considered suspicious for the presence of cancer. Ten (5.7 per cent) carcinomas have been proved at surgery, and 88 lesions have been established as benign. Twenty-seven lesions are not yet fully diagnosed. Eight of these tumors were unknown to the patients at the time of examination.

Nine patients are living and well, and one is dead of cerebral metastases 15 months after surgery. At the present time periodic physical examination of the breasts is the only proved method of detecting this cancer. (Table X)

TABLE X

CANCER DETECTION CENTER - BREAST LESIONS
March 1, 1948 to September 1, 1954

Breasts with suspicious lesions - - - - - - -		173
Surgery in 98 cases		10 Carcinomas
	8	asymptomatic
	2	symptomatic
Under observation of family physician - - - -		26
Negative at subsequent examination - - - - -		27
Dead of breast cancer (asymptomatic) - - - - -		1
Dead of other cause - - - - - - - - - -		1

Lesion found in exam interval-- 3 (living)

Patient failed recheck - developed cancer -- 2 (living)

Lesion missed by C.D.C. examiner 2(living)

Urinary Tract:

The kidney has been a difficult organ to survey with detection techniques. Routine urinalysis for detection of urinary tract bleeding has not been adequate as an indication of the need for advanced roentgen studies. Most kidney lesions are large enough to be palpated during physical examination before they have invaded the renal pelvis and caused urinary tract bleeding. The Detection Center missed the diagnosis in two patients who subsequently developed adenocarcinoma of the kidney. In the absence of an adequate screening technique, and with widespread use of roentgen pyelogram unfeasible, we probably will not improve in diagnosing these patients in an asymptomatic stage of the disease. No testicular or penile cancers have been found.

Lymphatic System:

Of six patients found to have lymphatic leukemia, four had palpable lymph nodes at the time of examination. None were asymptomatic. Five had symptoms of a mass, pain or weakness. There were 113 patients with a lymphocyte count above 45 per cent, and 107 patients of this group have not developed a lymphoma to the present time. Four of the six leukemia patients are alive up to five years after treatment. (Table XI)

Thyroid:

Three papillary adenocarcinomas of the thyroid have been proved at surgery, and one lymphosarcoma of the thyroid has been found. These glands were diagnosed as the sites of suspicious nodules.

TABLE XI

CANCER DETECTION CENTER - MALIGNANT LYMPHOBLASTOMAS
March 1, 1948 to September 1, 1954

Lymphatic leukemia	ASYMPTOMATIC	SYMPTOMATIC
6	0	6
Positive physical findings		5
Elevated WBC		6
Living and well		4 (6, 5½, 3½, 2 yrs.)

Lymphosarcoma	ASYMPTOMATIC	SYMPTOMATIC
3	3	0
Thyroid		Living and well 4 years
Mesocolon		Living and well ½ year
Stomach		Living and well 1 year

Hodgkin's disease	1
Obscure palpable node	Living and well 1 year
Multiple myeloma	1
Bence Jones proteinuria ---- Bone marrow diagnostic	Living and well 1 year

A total of 191 thyroid adenomas have been reported. We believe about seven per cent of palpable, single, thyroid nodules will prove to be malignant (University of Minnesota study).

Pre-Cancerous Lesions:

Table XII presents eight types of lesions considered to be pre-cancerous and the number of patients detected with these conditions. It is impossible to calculate the potential salvage in this large segment of the over-all group (28 per cent) through prevention of malignancy by application of appropriate therapy during the pre-malignant stage of such lesions.

TABLE XII

PRECANCEROUS LESIONS
March 1, 1948 to September 1, 1954

TOTAL NUMBER	2797
Persons with precancerous lesions - 1894	28%
Adenomas and polyps of rectum and colon	1501
Gastric polyps	24
Kraurosis vulvae	36
Leukoplakia	318
Pigmented nevi in areas of irritation	325
Polyps of vocal cords	1
Senile keratosis	401
Thyroid adenomas	191

Discussion of Results of Six and One-Half Years' Function:

It is to be expected that a few cancers might arise in such a manner that detection center procedure would not screen out the lesion, or that failure of an examinee to cooperate would result in late diagnosis. Furthermore, an occasional misinterpretation of roentgenograms might result in undue delay in establishing the histologic nature of a questionable lesion.

In Table XIII the over-all number of patients known to have cancer in the Detection Center population (190) is separated into various categories. There were 147 malignancies credited to the examinations in the Center, or 77.4% of the total number of cancers. Forty-six per cent of the Detection Center pickups were non-symptomatic, and 54% had symptoms referable to the site of the malignancy.

The 22.6% of the total number of known cancers, not accredited to pick up in the examination procedure, can be separated into three categories: 1. Patients without signs or symptoms of malignant disease at the time of a Detection Center examination, and in whom the lesion became manifest during an examination interval and was diagnosed by the patient's personal physician (13.2% of total). 2. Patients failing to return for recheck examinations even though specific criteria indicating the value of follow-up procedures were present (5.2% of total). 3. Patients in whom a cancer was frankly missed during examination at the Detection Center, and became obvious within two months of the Detection Center examination (4.2% of total).

It is apparent that 17% of the total number of known cancers represent failures of examination methods, and an additional 4.2% were missed because of error by the examination physician.

Of the 147 cancers correctly diagnosed in the Cancer Detection Center, 39 were established by roentgenograms of one kind or another. Only 2 of the frankly "missed" cases were dependent upon x-ray methods for diagnosis and this constitutes 4.9 per cent failure for roentgen ray diagnosis during the six and one-half years of operation of the Center. This compares favorably with diagnostic experience in the x-ray department of the University of Minnesota Hospitals. All roentgen diagnostic methods have specific limitations, and clinicians responsible for patients must appreciate the necessity of bringing other more specific methods (microscopic examination of tissue) to bear on questionable cases.

One hundred and eight of the cancers correctly diagnosed were found either during physical examination or with a laboratory test. If we consider 21 of the "missed" lesions as failures of physical diagnosis or laboratory diagnosis, this represents 15.7 per cent inaccuracy as far as missing malignancies is concerned. It must be remembered, however, that many lesions were reported as suspicious (prostate, ovary, breast, thyroid) and proved to be benign. Again, the shortcomings of gross palpation or inspection are obvious, and the necessity for histologic and cytologic verification is amplified.

There is a small group of patients who have failed to follow recommendations for follow up procedures or recheck examinations, and ten of these patients have subsequently developed carcinoma. Four gastric cancers appeared in patients who were either achlorhydric or markedly hypochlorhydric. These lesions appeared as late as 64 months after the last visit at the Detection Center. Three patients are dead. Table XIV presents this group in detail.

Another segment of the Detection Center population had negative examinations as far as malignant disease is concerned, and during the 12 months interval of the recheck examination developed frank symptoms of malignancy. The lesions were diagnosed and proved by the family physicians. It is interesting that all cancers of the gall bladder or pancreas were diagnosed under conditions

TABLE XIII

CANCER INCIDENCE -- C.D.C. -- March 1, 1948 to September 1, 1954

TOTAL MALIGNANCIES KNOWN TO EXIST IN C.D.C. POPULATION --- 190

% of Total Cancers -- Attributed to C.D.C. Pick up 147

% of CDC Pick ups That Were Asymptomatic 68

% of Total Cancers Not Picked up in C.D.C. Examination . . 43

% of Total Cancers Without Signs or Symptoms During C.D.C. Exam. Manifest During Interval

% of Cancers Not Diagnosed Through C.D.C. Because of Patient Failure

% Cancers Frankly Missed During C.D.C. Exam 8

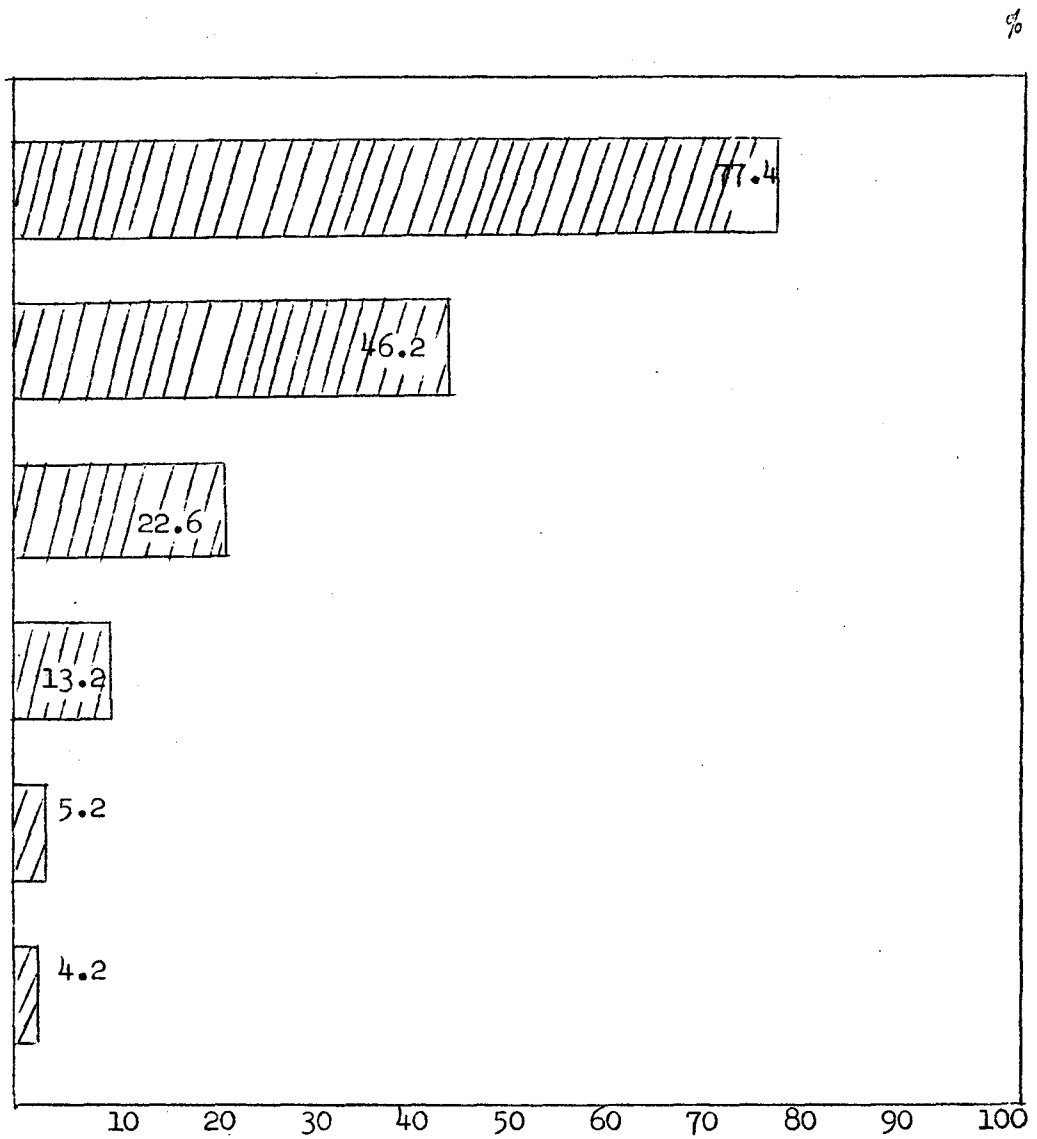


TABLE XIV

CANCER DETECTION CENTER - March 1, 1948 to September 1, 1954
6½ years

Patients Failing Recheck Examinations or Follow-up Procedures
Who Subsequently Developed Malignancy

ORGAN	NO. 10	MONTHS - LAST CDC EXAM TO DIAGNOSIS	REMARKS
Stomach	4	24 - 63 - 64 - 50	3 achlorhydric 1 hypochlorhydric 3 dead
Colon	2	6 - 24	1 dead
Breast	2	18 - 20	
Pancreas	1	25	dead
Meningioma	1	18	

other than the Detection Center examination. Unfortunately no criteria exist whereby we can focus our attention upon a select group with increased tendency to development of this form of malignancy. Our results bear out the universally grave prognosis for malignancies of the biliary and pancreatic systems. Table XV lists the lesions developing under these circumstances, and Table XIII reveals this group to be 13.2% of the total number of cancer patients in the Center. In Table XVI the failures of diagnosis in the Detection Center are presented. This small group constitutes 4.2 per cent of the total cancer patients in the Center. The colon lesion was misdiagnosed as diverticulitis by the roentgenologists and the lung cancer was passed over twice by x-ray diagnosticians at six-month intervals. Failure to strongly advise thoracotomy for this suspicious lesion rests with the Detection Center.

In Table XVII the mortality for the six and one-half years is represented as features of a bar graph. Since all skin lesions found in our patients have been early, and no deaths or serious recurrences have resulted, we have removed the skin cancers from each category in calculating the mortality percentages. This leaves only major forms of cancer for evaluation of results. Among the 40 patients not diagnosed at the Center for one reason or another, there have been 17 deaths, or mortality of 42.5%. In comparison, the symptomatic group of pick-ups at the Center show a mortality of 30.2% while the asymptomatic group in the Center has had only 11 deaths among 62 patients, or a 17.7 mortality. Even at this early date the pronounced trend toward lowered mortality is obvious, when malignant lesions are diagnosed and treated before symptoms or signs develop.

A comparison between mortality rates for the entire group of cancer patients picked up in the Center (asymptomatic plus symptomatic) with the over-all mortality for the total 190 cancer patients shows a rate of 16.3% deaths to 21.5% deaths.

SUMMARY

1. During six and one-half years' operation of the Cancer Detection Center at the University of Minnesota 147 malignancies were found in 6,754 examinees. A total of 16,417 examinations were performed. This represents 23.2 cancers per 1,000 patients examined (2.32 per cent), or 8.9 cancers per 1,000 examinations performed.

TABLE XV

CANCER DETECTION CENTER - March 1, 1948 to September 1, 1954
$6\frac{1}{2}$ years

Negative CDC Exam. Malignancy Manifested Presence During Exam Interval

ORGAN	NUMBER 23	
Kidney	1	
Gall bladder	2	
Tonsil	1	
Lymphosarcoma	1	(thyroid)
Prostate	2	
Corpus uteri	2	
Pancreas	3	
Breast	3	
Lower lip	1	
Urinary bladder	1	
Ovary	2	
Melanoma	2	(1 eye) (1 met. to brain)
Metastatic carcinoma (Primary unknown)	1	
Carcinoid appendix	1	

TABLE XVI

CANCER DETECTION CENTER - March 1, 1948 to September 1, 1954
$6\frac{1}{2}$ years

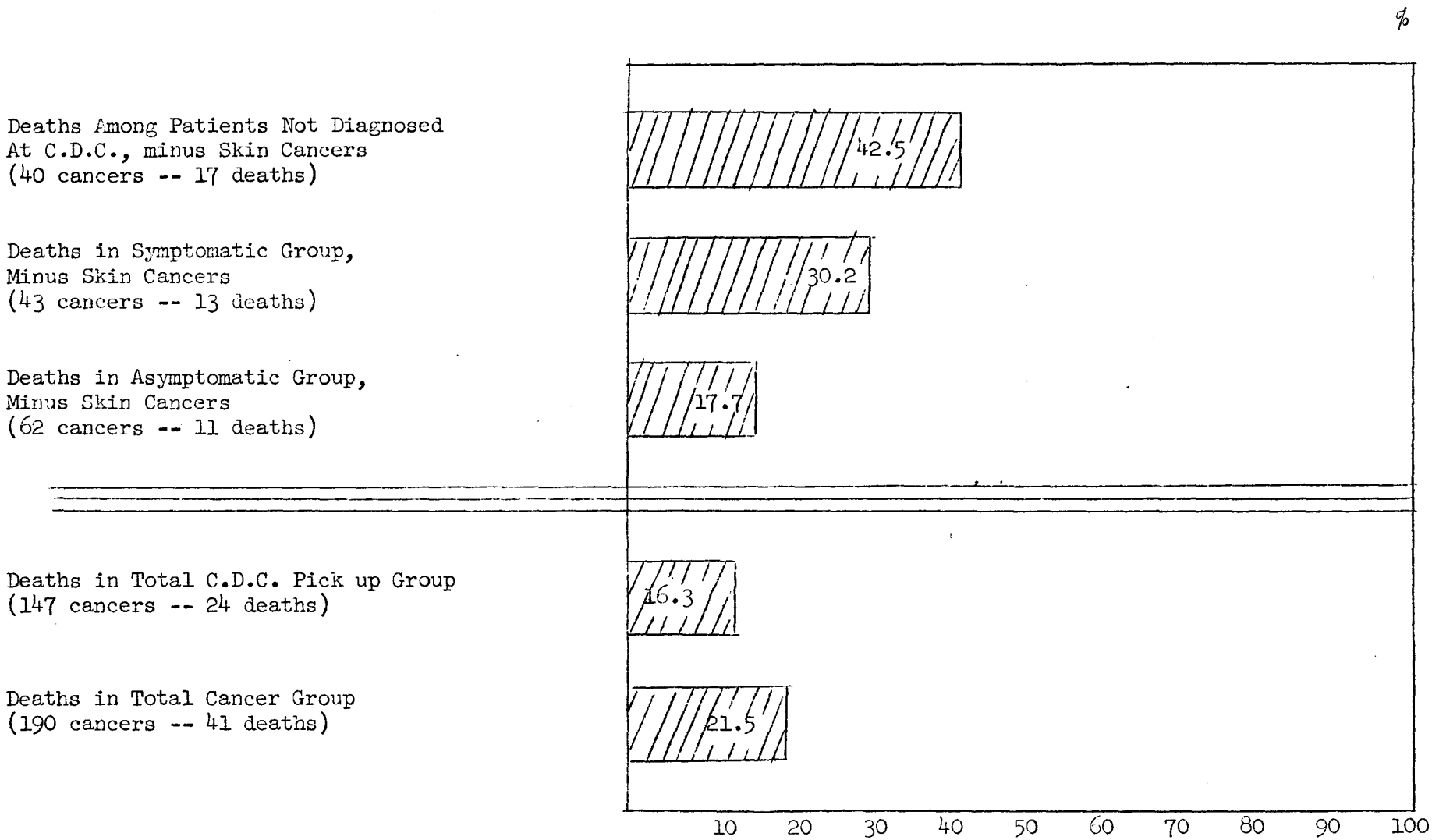
Failure of Cancer Detection Center to Diagnose Lesion Which Subsequently was Proved Elsewhere Within 2 Months*

Colon	1	(diverticulitis)
Kidney	1	(lower urinary tract symptoms)
Lung	1 (dead)	(failure x-ray diagnosis)
Breast	2	(nodule missed)
Skin	3 (1 dead - coronary)	(failure to recommend biopsy)

*Includes failure of Cancer Detection Center to advise appropriate or adequate follow-up procedures.

TABLE XVII

MORTALITY -- CANCER DETECTION CENTER: March 1, 1948 to September 1, 1954



2. Sixty-eight examinees with cancer were symptom free for the organ or organ system in which the lesion was found. Seventy-nine had symptoms indicating a likelihood of cancer in the organ or organ system involved. In the asymptomatic group 36 cancers were found at recheck examination, indicating the value of repeated examinations to detect malignancies in their earliest stages.

3. Only in cancer detection centers, or cancer prevention clinics are large numbers of persons surveyed for cancer while they are without symptoms of disease. It seemed of value to emphasize the difference in survival between symptomatic and asymptomatic examinees found to have cancer in this study.

4. Six of nine asymptomatic gastric cancer patients are alive and well up to five years after surgery. There is one survival among five gastric cancer patients who were symptomatic at the time of diagnosis. Of 18 patients with colon cancer who were free of symptoms at time of diagnosis, 17 are living and well (11 over 3 years). Only 3 of the 8 colon cancer patients with symptoms at time of diagnosis are living. These results appear to substantiate the increased value of early diagnosis in terms of survival.

5. Twenty-eight per cent of our patients had pre-cancerous lesions. The value of treatment of these lesions in the prevention of cancer is incalculable.

6. Of all cancers developing in our examinees during this six and one-half years (190), 17.4 per cent are considered failures of the Detection Center. Roentgen ray techniques failed in 4.9 per cent of the 39 patients in whom the diagnosis was established by this modality. Misinterpretation of x-ray changes was the responsible factor. Of the cases detected by means of physical examination and laboratory studies (108), 15.7 per cent must be considered as failures for this method.

7. There were 17 deaths among the 40 patients in whom the malignant disease was not picked up in the Detection Center for one of several reasons (42.5%). This mortality contrasts with 30.2% deaths among patients with major cancers in the symptomatic group of C.D.C. pick-ups. The asymptomatic group of C.D.C. malignancies shows only 17.7% mortality. These calculations are made after elimination of the skin cancers in each category.

8. We believe that several types of serious malignancy can be identified in advance of their usual signs and symptoms through the application of a well conceived, routine, cancer detection examination performed at yearly intervals.

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II. MEDICAL SCHOOL NEWS

Coming Events

October 21 and 22	Dedication of the Mayo Memorial
October 21	Minnesota Medical Foundation Luncheon; Junior Ballroom, Coffman Memorial Union; 12:00 noon.
October 21	Dedication Banquet; Main Ballroom, Coffman Memorial Union; 6:30 p.m.
October 22	Meeting of the Minnesota Medical Alumni Association; Mayo Memorial Auditorium; 1:30 p.m.
October 22	Homecoming Clinics; Eustis Amphitheater; 2:00-4:00 p.m.
October 22	Minnesota Medical Alumni Association Banquet and Dance; Radisson Hotel; 6:30 p.m.
November 4-6	Continuation Course in Anesthesiology for General Physicians

* * *

In Honor of Dr. McQuarrie

Earlier this fall the University of Minnesota, the Northwestern Pediatric Society, and a host of pediatricians from all over the country joined in honoring Dr. Irvine McQuarrie, Professor and Head, Department of Pediatrics, on the 25th anniversary of his distinguished service to the University of Minnesota. More than 240 physicians attended the two and one-half day scientific program that was held from September 23 to 25 in the new Mayo Memorial Auditorium. The participants, almost all of whom were former students or associates of Dr. McQuarrie, included Doctors L. Emmett Holt, Jr., New York; Herman E. Hilleboe, New York; Lee Forrest Hill, Iowa; Ralph V. Platou, Louisiana; Robert S. Ely, Utah; Charles U. Lowe, New York; Arild E. Hansen, Texas; Hilda F. Wiese, Texas; Robert A. Aldrich, Oregon; Theodore C. Panos, Texas; Robert A. Ulstrom, California; Robert H. Alway, Colorado; Vincent C. Kelley, Utah; John Adams, California; James F. Bosma, Utah; E. Perry Crump, Tennessee; John A. Anderson, California; James B. Arey, Pennsylvania; Hunter H. Comly, Iowa; Forrest H. Adams, California; and William L. Bradford, New York.

One of the highlights of the reunion was the announcement of the establishment of the McQuarrie Pediatrics Fund which will be used to provide a lectureship in pediatrics, as a travel fund for Pediatrics staff members to attend special conferences, to provide fellowships, to provide necessary equipment that may be needed from time to time by the Department; and, for any other purpose within the Department of Pediatrics as approved by the Committee.

We are, indeed, pleased that Dr. McQuarrie has been honored in this most fitting manner for his long and distinguished service.

* * *

Faculty News

Dr. William Schofield, Associate Professor, Division of Clinical Psychology, has been elected a Diplomate in Clinical Psychology by the American Board of Examiners in Professional Psychology.

At a meeting of the Southern Minnesota Medical Association held in Winona on September 13, Dr. C. Walton Lillehei presented a paper on "The Newer Concepts of Cardiac Surgery." Dr. William Bernstein, President of the Association, presided at the meeting.

Dr. John W. Smillie, former faculty member, has been appointed Assistant Professor of Ophthalmology, University of Michigan Medical School, and Chief, Ophthalmology Section, Veterans Administration Hospital, Ann Arbor.

* * *

Publications of the Medical School Faculty

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III. UNIVERSITY OF MINNESOTA MEDICAL SCHOOL
WEEKLY CALENDAR OF EVENTS

Physicians Welcome

October 18 - 23, 1954

Monday, October 18

Medical School and University Hospitals

9:00 - 9:50 Roentgenology-Medicine Conference; L. G. Rigler, C. J. Watson and Staff; Todd Amphitheater, U. H.

9:00 - 10:50 Obstetrics and Gynecology Conference; J. L. McKelvey and Staff; W-612, U. H.

10:00 - 12:00 Neurology Rounds; A. B. Baker and Staff; Station 50, U. H.

11:30 - Tumor Conference; Doctors Hitchcock, Zimmermann, and Stenstrom; Todd Amphitheater, U. H.

12:15 - Obstetrics and Gynecology Journal Club; Staff Dining Room, U. H.

12:30 - 1:30 Physiology Seminar; Water Movement Across the Renal Tubule; Robert Swanson; 214 Millard Hall.

1:30 - 2:30 Pediatric-Neurological Rounds; R. Jensen, A. B. Baker and Staff; U. H.

1:30 - 3:30 Dermatology Hospital Rounds; H. E. Michelson and Staff; Dermatology-Histopathology Room, M-434, U. H.

4:30 - Public Health Seminar; Reports of the APHA Conference, Buffalo, New York; Staff members; 15 Owre Hall.

4:30 - Pediatric-Medicine Infectious Disease Rounds; Station 33, U. H.

5:00 - 6:00 Physiology-Surgery Conference; Todd Amphitheater, U. H.

5:00 - 6:00 Urology-Roentgenology Conference; C. D. Creevy, O. J. Baggenstoss and Staff; Eustis Amphitheater.

*8:00 p.m. Minnesota Pathological Society Meeting; Newer Methods for Intracardiac Surgery; Morley Cohen; Owre Amphitheater.

Ancker Hospital

8:30 - 10:30 Medical and Surgical Chest Conference; Dr. Gehlen and Staff; Auditorium.

10:00 - 12:00 Surgery Grand Ward Rounds; Begin Floor E4.

11:00 - 12:00 Medicine Resident Rounds.

12:30 - 2:30 Surgery Out-Patient Clinic; Room 8.

2:00 - 3:00 Routine EKG Interpretation; Dr. Sommers and House Staff; Medical Record Library.

2:30 - 3:00 Discussion of Problem Case; Auditorium.

3:00 - 4:00 Surgery Journal Club; Classroom.

3:00 - 4:00 Lectures on Electrocardiography; Ben Sommers; Auditorium.

Monday, October 18 (Cont.)

Minneapolis General Hospital

9:30 - Pediatric Rounds; Richard Raile; Station K.

10:30 - 12:00 Medicine Rounds; Thomas Lowry; Station F.

11:00 - Orthopedic and Fracture Rounds; Drs. John Moe and Arthur Zierold; Station B.

11:00 - Pediatric Seminar; Erling Platou; Classroom, Station M.

12:30 - Surgery Grand Rounds; Dr. Zierold; Station E.

1:30 - 2:30 Tuberculosis Conference; J. A. Myers; Station M.

2:00 - Pediatric Rounds; Stations I and J.

Veterans Administration Hospital

9:30 - Infectious Disease Rounds; Drs. Hall, Zinnemann, and Middlebrook.

1:30 - Cardiac Conference; Drs. Smith, Berman, Hoseth, Simonson, Swerdlow, Shapiro, and J. Brown; Conference Room, Bldg. I.; Rounds immediately following conference.

Tuesday, October 19

Medical School and University Hospitals

9:00 - 9:50 Roentgenology-Pediatric Conference; L. G. Rigler, Irvine McQuarrie and Staffs; Eustis Amphitheater, U. H.

12:30 - 1:20 Pathology Conference; Autopsies; J. R. Dawson and Staff; 104 Jackson Hall.

12:30 - Anatomy Seminar; Correlated Anatomical and Physiological Studies of the Hippocampus; Berry Campbell; 226 Jackson Hall.

4:00 - 5:00 Pediatric Rounds on Wards; Irvine McQuarrie and Staff; U. H.

4:30 - 5:30 Clinical-Medical Pathological Conference; Todd Amphitheater, U. H.

5:00 - 6:00 X-ray Conference; Presentation of Cases from Minneapolis General Hospital; Drs. Lipschultz and Gundersen; Eustis Amphitheater, U. H.

7:00 - 8:00 Anesthesiology Conference; F. H. Van Bergen and Staff; Powell Hall Amphitheater.

Ancker Hospital

8:00 - 10:00 Visiting Staff Rounds.

11:00 - 12:00 Medical X-ray Conference; Auditorium.

4:00 - 5:00 Medical-Pathological Conference; W. F. Mazzitello; Auditorium.

Minneapolis General Hospital

9:30 - Pediatric Rounds; Elizabeth Lowry; Station J.

10:00 - Psychiatry Grand Rounds; R. W. Anderson, Station H.

11:00 - 12:00 Medicine-Surgery Conference; Classroom, Station M.

Tuesday, October 19 (Cont.)

Minneapolis General Hospital (Cont.)

12:30 - 2:30 Dermatology Rounds on Clinic; Carl W. Laymon and Staff.

12:30 - ECG Conference; Boyd Thomes and Staff; 302 Harrington Hall.

1:00 - Tumor Clinic; Drs. Eder, Coe, and Lipschultz; Classroom.

3:30 - Pediatric-Psychiatry Rounds; Jack Wallinga; Station I.

Veterans Administration Hospital

7:30 - Anesthesiology Conference; Surgical Conference Room, Bldg. 43.

8:30 - Hematology Rounds; Drs. Hagen and Wexler.

8:30 - Surgery Journal Club; Conference Room, Bldg. I.

9:30 - Surgery-Pathology Conference; Conference Room, Bldg. I.

10:30 - Surgery-Tumor Conference; D. Ferguson and J. Jorgens.

1:00 - Review of Pathology, Pulmonary Tuberculosis; Conference Room, Bldg. I.

1:30 - Combined Medical-Surgical Chest Conference; Conference Room, Bldg. I.

2:00 - 2:50 Dermatology and Syphilology Conference; H. E. Michelson and Staff; Bldg. III.

4:00 - Thoracic Surgery Problems; Conference Room, Bldg. I.

Wednesday, October 20

Medical School and University Hospitals

8:00 - 9:00 Roentgenology-Surgical-Pathological Conference; Paul Lober and L. G. Rigler; Todd Amphitheater, U. H.

11:00 - 12:00 Pathology-Medicine-Surgery-Pediatrics Conference; Todd Amphitheater, U. H.

12:30 - 1:20 Radio-Isotope Seminar; J. Morris Blair (Physics Department); Betatron Room in Cobalt Underground Section, U. H.

1:00 - 2:00 Dermatology Clinical Seminar; F. W. Lynch; 300 North Clinic.

1:30 - 3:00 Pediatric Allergy Clinic; Albert V. Stoesser and Lloyd Nelson; W-211, U. H.

3:30 - 4:30 Dermatology-Pharmacology Seminar; 3rd Floor Conference Room, Heart Hospital.

4:30 - 5:50 Dermatology-Infectious Disease Seminar; 3rd Floor, Conference Room, Heart Hospital.

Wednesday, October 20 (Cont.)

Medical School and University Hospitals (Cont.)

5:00 - 5:50 Urology-Pathological Conference; C. D. Creevy and Staff; Eustis Amphitheater, U. H.

5:00 - 6:00 Residents' Lecture; Congenital Heart Lesions; Joseph Jorgens; Conference Room; X-ray Department, U. H.

5:30 - 7:30 Dermatology Journal Club and Discussion Group; Hospital Dining Room.

7:30 - 9:30 Dermatology Seminar; Review of Interesting Slides of the Week; Robert W. Goltz; Todd Amphitheater, U. H.

Ancker Hospital

8:30 - 9:30 Clinico-Pathological Conference; J. Noble; Auditorium.

11:00 - 12:00 Medicine Resident Rounds.

3:00 - 5:00 Infectious Disease Rounds; Wesley W. Spink; Auditorium.

Minneapolis General Hospital

9:30 - Pediatric Rounds; Henry Staub; Station I.

10:30 - 12:00 Medicine Rounds; Thomas Lowry and Staff; Station D.

12:00 - Surgery-Physiology Conference; Arthur Zierold and E. B. Brown; Classroom.

1:30 - Pediatric House Staff Seminar; Erling Platou; Station I.

1:30 - Pediatric Rounds; Erling Platou; Classroom, Station I.

Veterans Administration Hospital

8:30 - 10:00 Orthopedic X-ray Conference; E. T. Evans and Staff; Surgical Conference Room, Bldg. 43.

8:30 - 12:00 Neurology Rehabilitation and Case Conference; A. B. Baker.

9:00 - Gastro-Intestinal Rounds; Drs. Wilson, Zieve, Ferguson, Brakel, O'Leary, Konig, and Swenson.

12:30 - Medical Journal Club; Doctors' Dining Room.

12:30 - X-ray Conference; J. Jorgens; Conference Room, Bldg. I.

1:30 - 3:00 Metabolic Disease Conference; Drs. Flink and Latts.

3:30 - Urology Pathology Slide Conference; Dr. Gleason; Conference Room, Bldg. I.

7:00 - Lectures in Basic Science of Orthopedics; Conference Room, Bldg. I.

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Thursday and Friday, October 21 and 22

MAYO MEMORIAL DEDICATION EXERCISES

October 21 - 10:00 a.m. to 12:00 noon and 1:30 to 5:00 p.m. — Mayo Memorial Auditorium

October 22 - 9:00 a.m. to 12:00 noon — Mayo Memorial Auditorium

"Medical Education and Research:
Freedom and Progress in Mid-Twentieth Century"

- a series of lectures -

October 21 - 12:00 M. to 1:30 p.m. — Junior Ballroom, Coffman Union
Minnesota Medical Foundation Luncheon and Annual Banquet

October 21 - 6:30 p.m. — Main Ballroom, Coffman Union
Mayo Memorial Dedication Banquet

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Thursday, October 21

Medical School and University Hospitals

9:00 - 11:50 Medicine Ward Rounds; C. J. Watson and Staff; Room 3148; Mayo Memorial.

11:00 - 12:00 Cancer Clinic; K. Stenstrom, A. Kremen, and B. Zimmermann; Todd Amphitheater, U. H.

12:30 - 1:30 Electrocardiography Conference; Ernst Simonson; Staff Room, Cardiac Clinic, Heart Hospital.

12:30 - 1:30 Endocrine Seminar; Parathyroid; E. B. Flink; 271 Lyon Laboratories.

12:30 - Physiological Chemistry Seminar; Structure of Nucleic Acids; August Ruthmann; 214 Millard Hall.

1:30 - 4:00 Cardiology X-ray Conference; Heart Hospital Theatre.

7:30 - 9:30 Physiology 114A Seminar; Hemodynamic Problems; M. B. Visscher and Robert Evans; 271 Lyon Laboratories.

Ancker Hospital

8:30 - 9:30 Medical Grand Rounds; Auditorium; Visiting Staff Rounds immediately following Grand Rounds.

Thursday, October 21 (Cont.)

Ancker Hospital (Cont.)

11:00 - 12:00 Medicine Resident Rounds.

2:00 - 3:00 Routine ECG Interpretation; Ben Sommers; Medical Record Library.

Minneapolis General Hospital

9:30 - Neurology Rounds; Heinz Bruhl; Station I.

9:30 - Pediatric Contagion Rounds; R. B. Raile; Station K.

10:00 - Psychiatry Grand Rounds; R. W. Anderson and Staff; Station H.

11:30 - 12:30 Clinical Pathological Conference; John I. Coe; Classroom.

12:30 - 2:30 Dermatology Rounds and Clinic; Carl W. Laymon and Staff.

1:00 - Fracture X-ray Conference; Drs. Zierold and Moe; Classroom.

1:00 - House Staff Conference; Station I.

Veterans Administration Hospital

8:30 - Hematology Rounds; Drs. Hagen and Williams.

8:30 - Experimental Surgery Laboratory Meeting; Conference Room, Bldg. I.

9:00 - Surgery Grand Rounds; Conference Room, Bldg. I.

9:00 - Surgery Ward Rounds; D. Ferguson and Staff; Ward 11.

11:00 - Surgery-Roentgen Conference; J. Jorgens; Conference Room, Bldg. I.

1:00 - Infectious Disease Conference; Conference Room, Bldg. I. (Rounds immediately following conference.)

Friday, October 22

Medical School and University Hospitals

8:00 - 10:00 Neurology Grand Rounds; A. B. Baker and Staff; Station 50, U. H.

9:00 - 9:50 Medicine Grand Rounds; C. J. Watson and Staff; Todd Amphitheater, U.H.

10:30 - 11:50 Medicine Rounds; C. J. Watson and Staff; Todd Amphitheater, U. H.

10:30 - 1:50 Otolaryngology Case Studies; L. R. Boies and Staff; Out-Patient Department, U. H.

11:00 - 12:00 Vascular Rounds; Davitt Felder and Staff Members from the Departments of Medicine, Surgery, Physical Medicine, and Dermatology; Eustis Amphitheater, U. H.

Friday, October 22 (Cont.)

Medical School and University Hospitals (Cont.)

11:45 - 12:50 University of Minnesota Hospitals Medical Staff Meeting; SPECIAL PROGRAM; Mayo Memorial Auditorium.

1:00 - 2:50 Neurosurgery-Roentgenology Conference; W. T. Peyton, Harold O. Peterson and Staff; Todd Amphitheater, U. H.

1:30 - 2:30 Dermatology Grand Rounds; Presentation of Cases from Grouped Hospitals (University, Ancker, General and Veterans) and Private Offices; H. E. Michelson and Staff; Eustis Amphitheater, U. H.

2:30 - 4:00 Dermatology Hospital Rounds; H. E. Michelson and Staff; Begin at Dermatological Histopathology Room, M-434, U. H.

3:00 - 4:00 Neuropathological Conference; F. Tichy; Todd Amphitheater, U. H.

3:30 - 4:30 Dermatology-Physiology Seminar; 3rd Floor Conference Room, Heart Hospital.

4:30 - 5:20 Ophthalmology Ward Rounds; Erling W. Hanson and Staff; E-534, U. H.

5:00 - Urology Seminar and X-ray Conference; Eustis Amphitheater, U. H.

Ancker Hospital

3:00 - 4:00 Meeical-Surgical-Pathological Conference; Auditorium.

4:00 - 5:00 Medical Journal Club; Conference Room, E5.

4:00 - 5:00 X-ray Surgery Conference; Auditorium.

Minneapolis General Hospital

9:30 - Pediatric Rounds; Elizabeth Lowry; Station J.

10:30 - Pediatric Surgical Conference; Tague Chisholm and B. Spencer; Classroom, Station I.

12:00 - Surgery-Pathology Conference; Drs. Zierold and Coe; Classroom.

1:00 - 3:00 Clinical-Medical Conference; Thomas Lowry; Classroom, Station M.

1:30 - Pediatric Contagion Rounds; L. Wannamaker; Station K.

Veterans Administration Hospital

10:30 - 11:20 Medicine Grand Rounds; Conference Room, Bldg. I.

12:30 - Urology X-ray Conference; X-ray Department.

1:00 - Autopsy Conference; E. T. Bell; Conference Room, Bldg. I.

2:00 - Pathology Slide Conference; E. T. Bell; Conference Room, Bldg. I.

Saturday, October 23

Medical School and University Hospitals

7:45 - 8:50 Orthopedic X-ray Conference; W. H. Cole and Staff; M-109, U. H.

9:00 - 10:30 Pediatric Grand Rounds; Eustis Amphitheater, U. H.

9:00 - 11:00 Anesthesiology Seminar; F. H. Van Bergen and Staff; 5162 Mayo Memorial.

9:00 - 11:50 Medicine Ward Rounds; C. J. Watson and Staff; Heart Hospital Amphitheater.

9:15 - 10:00 Surgery-Roentgenology Conference; L. G. Rigler, J. Friedman, Owen H. Wangensteen and Staff; Todd Amphitheater, U. H.

10:00 - 11:30 Surgery Conference; Todd Amphitheater, U. H.

10:00 - 12:50 Obstetrics and Gynecology Grand Rounds; J. L. McKelvey and Staff; Station 44, U. H.

Ancker Hospital

8:30 - 9:30 Surgery Conference; Auditorium.

9:30 - 11:00 Medicine Grand Ward Rounds.

Minneapolis General Hospital

8:00 - Urology Staff Conference; T. H. Sweetser; Main Classroom.

9:00 - Psychiatry Grand Rounds; R. W. Anderson; Station H.

9:30 - Pediatric Rounds on all Stations; R. B. Raile.

11:00 - 12:00 Medical X-ray Conference; O. Lipschultz, Thomas Lowry and Staff; Main Classroom.

Veterans Administration Hospital

8:00 - Proctology Rounds; W. C. Bernstein and Staff; Bldg. III.

8:30 - Medical X-ray Conference; Conference Room, Bldg. I.

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* Indicates special meeting. All other meetings occur regularly each week at the same time on the same day. Meeting place may vary from week to week for some conferences.