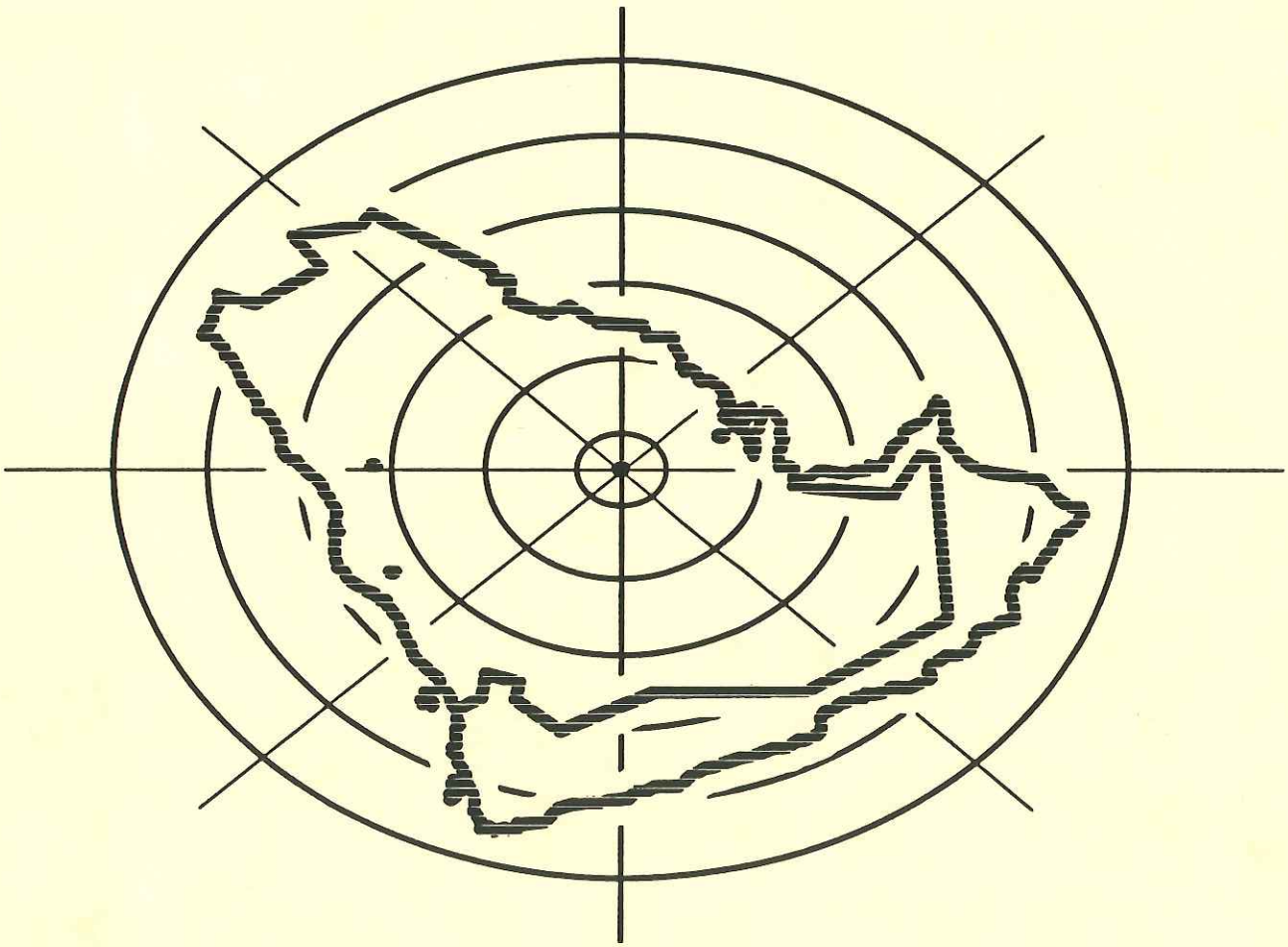
1991
ANNUAL REPORT OF THE TUMOR REGISTRY



KING FAISAL SPECIALIST HOSPITAL & RESEARCH CENTRE
RIYADH, KINGDOM OF SAUDI ARABIA

ACKNOWLEDGEMENTS:

The Cancer Program is a combined effort of many individuals. It is not possible to enumerate all the nurses, technicians, therapists, pharmacists, dentists, physicians and others whose work is primarily on behalf of the patient with cancer. In addition, nearly everyone associated with the hospital comes in contact with the cancer patient from time to time, frequently contributing significantly to their care. The Cancer Program recognizes this hospital-wide involvement in the care of cancer patients. The information in this report is provided to assist all health care professionals to better understand the problems faced in treating patients with cancer.

The following Departments have assisted throughout the year and without their invaluable support this report would not be possible. The Tumor Registry staff acknowledges these Departments:

Department of Pathology & Laboratory Medicine
Computer and Hospital Information Centre
Medical Records Department
Radiation Therapy
ENT Outpatient Clinic

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May 1993

1991 ANNUAL REPORT OF THE TUMOR REGISTRY

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AND RESEARCH CENTRE
Riyadh 11211

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ومركز الأبحاث
الرياض ١١٢١١

INTRODUCTION

The Annual Report of the Tumor Registry for 1991 differs from previous reports as it is felt that King Faisal Specialist Hospital and Research Centre could provide the reader of the annual report with more indepth data than that which have been previously provided. This year's report enables the reader to study in more detail the hospital's experience in three areas of oncology, namely, thyroid cancer, acute myeloid leukemia and acute lymphoid leukemia as presented by three experts.

It is the hope that this additional information will lead to an improvement in the management of cancer patients in the Kingdom and provide stimulus for further research and inter-hospital collaboration. With the decision taken to establish a National Cancer Registry in Saudi Arabia, it is no longer a faint dream that such goals will be accomplished.

Peter Ernst, MD, Dr Med Sci
Director
Tumor Registry & Clinical Research Unit
Department of Oncology

I. KING FAISAL SPECIALIST HOSPITAL & RESEARCH CENTRE CANCER PROGRAM ACTIVITIES

Tumor Registry

The King Faisal Specialist Hospital and Research Centre opened in July 1975 to provide specialized medical treatment to the people of Saudi Arabia and to promote the prevention of disease through research and education. It is a national and international tertiary hospital for Oncology and the principal center for cancer therapy in Saudi Arabia. There are about 500 inpatient beds.

The KFSH&RC Tumor Registry is a data system designed for the collection, management, and analysis of data on patients with the diagnosis of a malignant disease (cancer). The basic source document is the patient's medical record from which pertinent information is abstracted for use in the Registry. The Registry was designed to meet one of the guidelines for an approved American College of Surgeons (ACoS) Cancer Program and the data set contains all ACoS required data items.

The primary responsibility of the Registrar is to assure that complete and accurate data are collected and maintained on all cancer patients diagnosed and/or treated within this institution. Records are reviewed for both inpatients (patients admitted to the Hospital) and outpatients (patients seen in the clinic, emergency room, Polyclinic, Family Health, or other hospital facility). The Cancer Registry Worksheet is the primary document on which the details of each diagnosed cancer patient are recorded. Included are pertinent facts such as demographic information, medical history, diagnostic findings, stage of disease, cancer therapy, and follow-up data. Please refer to Figures 1-A and 1-B for a sample worksheet.

Once the data are collected, the ability and need to utilize them is paramount. One of the major functions of the Tumor Registry is to prepare annual reports which summarize the Registry's cancer experience. In addition, the Registry provides a wide variety of reports at the request of physicians and researchers. The goal of the Tumor Registry of KFSH&RC is to provide the medical staff with data that will enable them to see the results of their diagnostic and therapeutic efforts, and to provide them with information with which to improve the care of the patient with cancer.

Additionally, the Registry serves as a resource for continuing education of physicians and paramedical personnel at clinical conferences, medical society meetings, seminars, and discussion groups. The Tumor Registry can serve as the focus for the interdisciplinary approach to cancer management, including surgery, radiotherapy, chemotherapy, immunotherapy, and hormone therapy. The Registry can provide the hospital staff, both medical and administrative, with statistical and analytic summary reports evaluating the cancer problem in the institution. These reports assist administrators with solving their operational problems and assist physicians with the development of comprehensive cancer care.

The Registry, under the medical supervision of the Tumor Committee, maintains a complete database of all cancer cases diagnosed and/or treated at KFSH&RC. The database is computerized using an IBM 3090 Main Frame Computer. Although the Tumor Registry is not population based, KFSH&RC is the primary referral institution for the Kingdom and therefore represents the majority of oncology patients. Until mid-1981, it was the only facility within the Kingdom able to provide radiation therapy.

The Tumor Registry database now includes more than 22,000 cases diagnosed from June 1975 through December 31, 1991. Approximately 1,800 new cases are being added annually.

FIGURE 1-A

PATIENT NAMEPLATE

KING FAISAL SPECIALIST HOSPITAL AND RESEARCH CENTRE

CANCER REGISTRY WORKSHEET
(CanSur 3.0)

PF 10 TACS – ACCESSION FILE MAINTENANCE

ACCESSION NUMBER (ACSN) : 8 7 0 1 2 3

TUMOR SEQUENCE (SEQ) : 0 0

Malignant/In situ tumors	Benign tumors
00 – One primary only	XX – One primary only
01 – First of two or more	AA – First of two or more
....	....
98 – 98th or later primary	HH – 8th or later primary
99 – Unspecified sequence	II – Unspecified sequence

THIS CANCER ACCESSION YEAR : 8 7

MEDICAL RECORD NO. : 2 1 4 6 5 7

CASE STATUS : 3
0 – Suspense
1 – Incomplete
3 – Completed per Release 3

PATIENT NAME
Last :
First :
Second :
Third :

ADDRESS AT DIAGNOSIS
P.O. Box
Riyadh
City
R Y
Prov.
ZIP Code : –

PF 11 TPAT – PATIENT IDENTIFICATION

SAUDI ID : 0 0 0 0 1 4 2 3 4

BIRTH DATE : 0 1 / 0 1 / 1 9 4 6

AGE AT DX : 0 4 1

SEX : 2
1 – Male (2) Female 9 – Unknown

NATIONALITY : 0 0
(00) Saudi; 01 – Amer, Can, Brit; 02 – Egyptian; 03 – Leb, Syr, Pal; 04 – Yemeni; 05 – Other Arab; 06 – Ind, Pak; 07 – African; 08 – ; 09 – Other

MARITAL STATUS AT DX : 2
1 – Single; 2 – Married; 3 – Separated; 4 – Divorced; 5 – Widowed; 9 – Unknown

RELIGION : 0 1
(01) Muslim; 02 – Christian; 03 – Hindu; 04 – Buddhist; 06 – Other; 99 – Unknown

ALCOHOL USAGE : 3
1 – Current alcohol usage
2 – Past history of alcohol usage
(3) Never used alcohol
9 – Unknown

FAMILY HISTORY OF CANCER : 1
(1) Family history of cancer
2 – No family history of cancer
9 – Unknown

SMOKING/CHEWING HISTORY : 3
1 – Current smoker cig.
2 – Past smoker
(3) Patient never smoked
4 – Ghat
5 – Shamma
6 – Shaha
7 – Combo
8 – Other
9 – Unknown

TOTAL PACK YEARS :

INDUSTRY :

OCCUPATION : Housewife

DATE ADMITTED : (mm/dd/yyyy) 0 1 / 2 0 / 1 9 8 7

DATE DISCHARGED : (mm/dd/yyyy) 0 2 / 1 5 / 1 9 8 7

REPORTING SOURCE : 1
(1) Inpatient; 2 – Clinic/outpatient; 3 – Laboratory; 4 – Physician's office; 5 – Nursing home; 6 – Autopsy; 7 – Death Cert.; 9 – Unknown

HOSPITAL REFERRED FROM : 0 0 0 0 1 0 1
Riyadh Central Hospital

HOSPITAL REFERRED TO :

Form 560-13 (Rev. 3-10)

PF 12 TTXT – MISCELLANEOUS TEXT

PHYSICAL EXAM :

X-RAYS / SCANS :

SCOPES / LAB : ERA (+), PRA (+)

OPERATIVES FINDINGS : 2/14 regional lymph nodes (+)

PATHOLOGY / AUTOPSY : 871570

PF 13 TCAN – CANCER IDENTIFICATION

DATE OF INITIAL DIAGNOSIS : (mm/dd/yyyy) 0 1 / 0 5 / 1 9 8 7

CLASS OF CASE : 2
0 – Dx here, rx elsewhere; 1 – Dx & rx here; (2) Rx here; 3 – Rx elsewhere; 4 – Rx here prior; 5 – Dx at autopsy; 9 – Unknown

PRIMARY SITE – TEXT : Breast, UOQ, right

CODE : 1 7 4 4

HISTOLOGY – TEXT : Infiltrating Ductal Carcinoma Grade III

CODE : 8 5 0 0 / 3

TCAN – Cancer Identification (Continued)

GRADE : 3
1 – Well differentiated (I); 2 – Mod well differentiated (II); (3) Poorly differentiated (III); 4 – Undifferentiated (IV); 5 – T-cell; 6 – B-cell; 7 – Null cell; 9 – Not stated, unknown

LATERALITY : 1
0 – Not paired organ; (1) Right; 2 – Left; 3 – Rt or lt unspecified; 4 – Both, simultaneous; 9 – Unknown laterality

DX CONFIRMATION : 1
(1) Positive histology; 2 – Cytology; 4 – Pos. micro, confirm, NOS; 5 – Laboratory test/marker; 6 – Direct visualization; 7 – Radiography; 8 – Clinical; 9 – Unknown

REGIONAL NODES EXAMINED : 1 4
00 – No nodes examined; 01 – One node examined; (14); 97 – 97 + nodes examined; 98 – Nodes examined, number unknown; 99 – Unknown if nodes examined

REGIONAL NODES POSITIVE : 0 2
00 – No nodes positive; 01 – One node positive; (02); 96 – 96 + nodes positive; 97 – Positive nodes, number unknown; 98 – No nodes examined; 99 – Unknown if any nodes +/-

TUMOR SIZE (cm) 0 3 5
eg., 000 – No mass, 002 – 0.2 cm, 055 – 5.5 cm, 999 – Unknown

RESIDUAL TUMOR : 9
0 – None; 1 – Microscopic; 2 – Macroscopic; (9) Unknown; 6 – No resection, NA

DISTANT METS : 1 : ; 2 : ; 3 :
0 – Bone Mar.; 1 – Peritoneum; 2 – Lung; 3 – Pleura; 4 – Liver; 5 – Bone; 6 – CNS; 7 – Skin; 8 – Lymph node (distant); 9 – Unknown/other

GENERAL SUMMARY STAGE : 3
0 – In situ; 1 – Localized; 2 – Regional, direct extension; (3) Regional, nodes; 4 – Regional, both 2 & 3; 5 – Regional, NOS; 7 – Distant; 9 – Unknown/unstageable

AJCC STAGE :

CLINICAL T ____ • N ____ • M ____ • STAGE GROUP ____ ••

PATHOLOGICAL T 2 A • N 1 A • M 0 • STAGE GROUP ____ ••

OTHER ••• T ____ • N ____ • M ____ • STAGE GROUP ____ ••

•TNM Codes – use alpha codes as appropriate; eg, T2A-2A T2-2, N1B-1B, M0-0, IS-in situ, X-Unknown)

••AJCC Stage Group – use alpha codes as appropriate; eg, 3A-Stage IIIA, 1-Stage I
0 – In situ; 1 – Stage I; 2 – Stage II; 3 – Stage III; 4 – Stage IV; 9 – Unknown

•••Other Basis : S-Surgical, A-Autopsy, R-Retreatment

FIGURE 1-B

PF 14 TRX1 – 1ST COURSE TREATMENT (SURGERY, RADIATION)

SURGERY

REASON: 0

0 = Can-directed surg performed
1 = Not recommended
2 = Contraindicated, other
6 = Reason unknown, no surg
7 = Patient/guardian refused
8 = Recommended, unk if done
9 = unknown

SUMMARY : (Entire 1st course)* 50

AT THIS HOSPITAL : * 50

* Refer to Appendix A in CanSur User Manual for site-specific codes.

STARTED : (mm/dd/yyyy) 01 / 21 / 1987

TEXT : Rt. mod rad mastectomy

RADIATION

SUMMARY :

AT THIS HOSPITAL 1

0 = No Radiation therapy
1 = Beam irradiation
2 = Radioactive implants
3 = Radioisotopes
4 = Comb 1 + 2 or 3
5 = Radiation therapy, NOS
7 = Patient/guardian refused
8 = Recommended, unk if done
9 = Unknown

5

STARTED (mm/dd/yyyy) 02 / 16 / 1987

TO BRAIN & CNS : (Lung & leukemia cases only) 9

0 = None to CNS
1 = Radiation therapy
7 = Patient guardian refused
9 = Unknown, not applicable

RADIATION/SURGERY SEQ. 3

0 = Not applicable
2 = Radiation before surgery
3 = Radiation after surgery
4 = Before & after surgery
5 = Intraoperative radiation
6 = Intraoperative plus 2, 3 or 4
9 = Sequence unknown

TEXT : Chest wall and reg. lymph nodes

6000

PF 18 TFU2 – SUB. THERAPY

	Started (mm dd yyyy)	Course	Type	Code	Desc
1					
2					
3					

PF 16 TRX3 – 1st COURSE TREATMENT (CHEMO, HORMONES, BRM, OTHER)

CHEMOTHERAPY

SUMMARY : 3

AT THIS HOSPITAL : 3

0 = No chemotherapy
1 = Chemotherapy, NOS
2 = Chemotherapy, single agent
3 = Chemotherapy, multi-agent combination
7 = Patient/guardian refused
8 = Recommended, unk if done
9 = Unknown

STARTED : (mm/dd/yyyy) 03 / 01 / 1987

TEXT : Adria, Ctx, 5-FU

HORMONE/STEROIDS

SUMMARY : 1

AT THIS HOSPITAL : 1

0 = No hormonal therapy
1 = Hormonal therapy
2 = Endocrine surg/radiation
3 = Hormones + endcr surg/rad
7 = Patient/guardian refused
8 = Recommended, unk if done
9 = Unknown

STARTED : (mm/dd/yyyy) 02 / 01 / 1987

TEXT : Tamoxifen

BIO-RESPONSE MODIFIER (BRM)

SUMMARY : 0

AT THIS HOSPITAL 0

0 = No BRM
1 = BRM
2 = Allo BMT
3 = Auto BMT
7 = Patient/guardian refused
8 = Recommended, unk if done
9 = Unknown

STARTED : (mm/dd/yyyy) / /

TEXT :

OTHER Rx

SUMMARY : 0

AT THIS HOSPITAL : 0

0 = No other ca-directed rx
1 = Other ca-directed rx
2 = Experimental ca rx
3 = Double-blind study
6 = Unproven therapy
7 = Patient/guardian refused
8 = Recommended, unk if done
9 = Unknown

STARTED : (mm/dd/yyyy) / /

TEXT :

PF 17 TFU1 – FOLLOW-UP INFORMATION

LAST CONTACT/DEATH : (mm/dd/yyyy) 03 / 01 / 1987

CAUSE OF DEATH–ICD CODE :

CURRENT VITAL STATUS: 1 = Alive 2 = Dead 1

CURRENT CANCER STATUS: 2

1 = No evidence of cancer
2 = Evidence of cancer
9 = Unknown

QUALITY OF SURVIVAL: 9

0 = Normal
1 = Sym & amb
2 = Amb > 50%
3 = Amb < 50%
4 = Bedridden
8 = NA, dead
9 = Unknown

LETTER FLAGS –

PATIENT: (letter or asterisk, eg., *, A, B, 1)

CONTACT: (eg., 0 = first contact, 3 = third contact)

CURRENTLY FOREIGN RESIDENT:

Y = Yes, foreign resident, leave blank for all others

CONTACT FREQUENCY: months

(eg., 01 = One month, 03 = 3 months, 12 = Annual follow-up)

UNUSUAL CONDITIONS :

PLACE OF DEATH : (State of country + Geocode)

RECURRENCE INFORMATION

DATE : (mm/dd/yyyy) 12 / 22 / 1987

TYPE : 3

0 = No recurrence
1 = Local recurrence
2 = Regional recurrence
3 = Distant recurrence
4 = Never free
9 = Unknown

DISTANT METS : 1: 4 2: 5 3: 8

0 = BM
1 = Peritoneum
2 = Lung
3 = Pleura
4 = Liver
5 = Bone
6 = CNS
7 = Skin
8 = Lymph nods (distant)
9 = Unknown /Other

	FU LETTER FLAGS	CODE	PHYSICIAN NAME
1. ATTENDING PHYSICIAN :		0 1 2 3 4 5	Oncologist
2. OTHER PHYSICIAN :		6 7 8 9 1 2	Rad Oncologist
3. OTHER PHYSICIAN :		3 4 5 6 7 8	Surgeon
4. OTHER PHYSICIAN :			
5. OTHER PHYSICIAN :			
6. OTHER PHYSICIAN :			

LAST SOURCE FU HOSP :

NEXT HOSP FOR FU :

DEATH CERTIFICATE FILE NO :

PF 20 TREM – REMARKS/SPECIAL DATA ITEMS

FREE FORMAT AREA:

REMARKS: Mother had breast cancer

OVERRIDE FIELDS (Y – Bypass edit, leave blank if edit not bypassed)

SITE/HIST :
AGE /SITE/HIST :
SEQNO/SITE/HIST :

SPECIAL FIELDS :

1 : Hepatitis
2 : Bilharzia
3 : Burn Scar
4 : Consanguinity
5 : Predisposing Factors
6 : Pregnancy during dx/tx
7 : Renal Transplant
8 : Immunodeficiency Disorder
9 :
10 :

PF – 21 TADR – PATIENT NAME ADDRESS FILE

MAILING NAME : SAP

SALUTATION :

ADDRESS 1 : Riyadh

ADDRESS 2 :

CITY : Riyadh

PROV. RY ZIP CODE: –

TELEPHONE: (001) 466-1234 EXT:

COMMENT:

PATIENT/GUARDIAN CODE: P – Patient G – Guardian

PF – 22 TCON – CONTACT NAME/ADDRESS FILE MAINTENANCE

CONTACT NUMBER : (0 – First contact, 1 – Second, . . . 9 – Tenth)

MAILING NAME : Riyadh Central Hospital

SALUTATION :

ADDRESS 1 : Riyadh

ADDRESS 2 :

CITY : Riyadh

PROV. RY ZIP CODE: –

TELEPHONE: ( ) – EXT.

COMMENT:

REFER HOSP. MRN : 81548

The data maintained by the Registry are available for use by the medical staff for special studies, audits, and research. During 1991, the Registry participated in 44 special studies utilizing data from the computerized file. The use of Registry data has steadily increased during the past year and its continued use is encouraged. Please refer to Appendix A for a listing of Special Studies requested in 1991.

Tumor Committee

The multidisciplinary Tumor Committee, which meets monthly, is the policy-making body of the Cancer Program at KFSH&RC (see Appendix B for membership listing). During 1991, the Committee provided professional guidance to the Tumor Registry, sought the help of the Admissions and Appointments Office to update patients' addresses, identified and reported hematological cases that were missed by the Registry, and reviewed and updated the Tumor Registry Reportable List.

A. Deficient Patients' Addresses at Time of Diagnosis

The lack of patient's address on some medical record registration forms becomes a problem with abstracting cases and to partly solve it, the Admissions and Appointments Office came up with the "Patient Biodata Update Form" which are filled out when patients are seen at the clinics.

B. Identification of Hematological Cases Missed by the Tumor Registry

57 malignant and 48 non-malignant hematological cases that were not in the Tumor Registry database, but were in the BMT Section's database, were identified and abstracted. Those cases were missed because no histological confirmation was needed to establish the diagnosis, some were patients who were never admitted to the hospital and were only seen as outpatients, and some did not come back for further work-up or follow-up. A list of hematological patients is now requested from the BMT Section on a regular basis to update the Registry's database.

C. Update of Tumor Registry Reportable List

The Reportable List was reviewed and Muco-epidermoid Tumor was moved to the malignant cases because it has been replaced by Muco-epidermoid Carcinoma.

Tumor Board

This educational conference is held as frequently as once weekly for the benefit of the attending staff, house staff, allied health professionals and visiting attending staff from other hospitals. Cases of various types of malignant disease are selected for presentation on the basis of complexity, unusual manifestations of the disease, or interest. Each presentation includes an outline of the medical history, physical findings, clinical course, radiographic studies, and pathological interpretations. Following each presentation, there is an informal discussion of the case and a review of pertinent medical literature. Those attending are encouraged to share personal experience in the management of similar cases.

Tumor Conference (Oncology Grand Rounds)

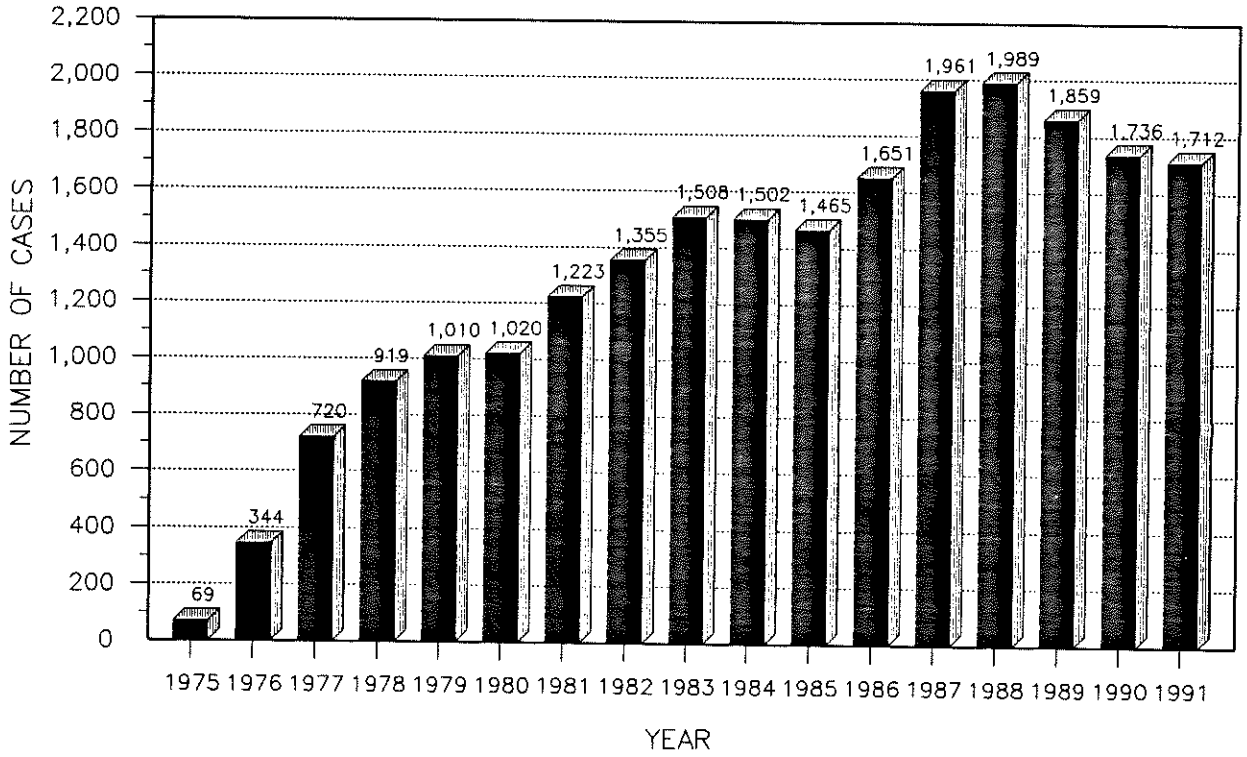
This didactic conference is held weekly and is attended by the Medical staff and allied health professionals. Speakers are drawn from the KFSH&RC Medical and Research staff as well as from visiting guests. Please refer to Appendix C for listing of the topics presented at Tumor Conference in 1991.

II. THE KFSH&RC *CANCER* PATIENT POPULATION

A total of 1,712 cases (1,688 patients) were accessioned in 1991, with 885 males and 827 females or a male/female ratio of 1.1:1. This represents a yearly steady decrease from 1988 which could be attributed to the increasing number of hospitals offering specialized services for the treatment and care of cancer patients. The closing of the KFSH&RC East Wing and some floors during the Gulf crises had also contributed to the drop in patient load.

FIGURE 2

DISTRIBUTION OF CASES ACCESSIONED BY YEAR
1975 – 1991 (TOTAL CASES = 22,043)



From the opening of the hospital (mid 1975) until December 1991, 22,043 cancer cases were registered (12,316 males and 9,727 females) with a male/female ratio of 1.3:1. The total population of Saudi Arabia as of October 1992 also showed a male/female ratio of 1.3:1. There were 19,253 (87.3%) adult cases (over 14 years of age) and 2,790 (12.7%) pediatrics (0 to 14 years of age). Almost the same proportion was noted in 1991.

TABLE 1

TOTAL CASES SEEN AT KFSH (MALE/FEMALE & CHILDREN/ADULTS) BY 5-YEAR PERIOD
1975 - 1991

	1975-1976* No.	%	1977-1981 No.	%	1982-1986 No.	%	1987-1991 No.	%	TOTAL No.	%
MALE	280		2,969		4,127		4,949		12,316	
FEMALE	133		1,923		3,354		4,317		9,727	
M/F RATIO	2.1:1		1.5:1		1.2:1		1.1:1		1.3:1	
CHILDREN**	55	13.3	585	12.0	992	13.3	1,158	12.5	2,790	12.7
ADULTS	358	86.7	4,307	88.0	6,489	86.7	8,099	87.5	19,253	87.3
TOTAL	413	100	4,892	100	7,481	100	9,257	100	22,043	100

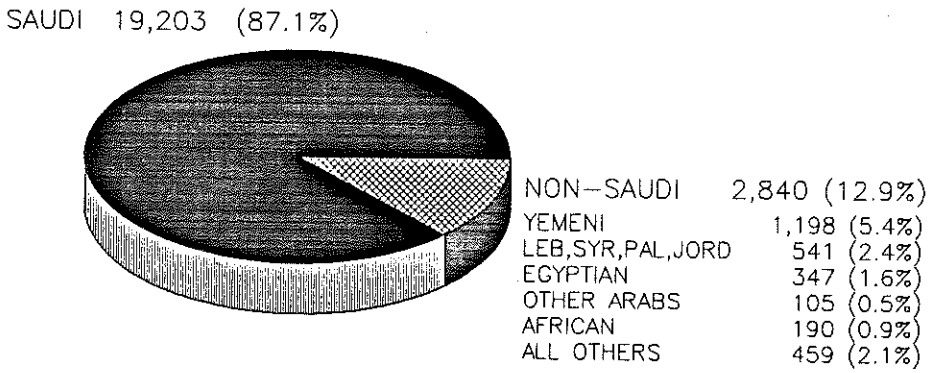
* Two-Year Period
** Children = 0 to 14 years of age; Adults = over 14 years of age.

Saudi nationals totalled 1,541 (90.0%) in 1991 and the non-Saudi, 171 (10.0%). There was a decline in the percentage of non-Saudis from the total (12.9%) during the period 1975 to 1991 with the Yemenis decreasing remarkedly from 5.4% to 1.5%.

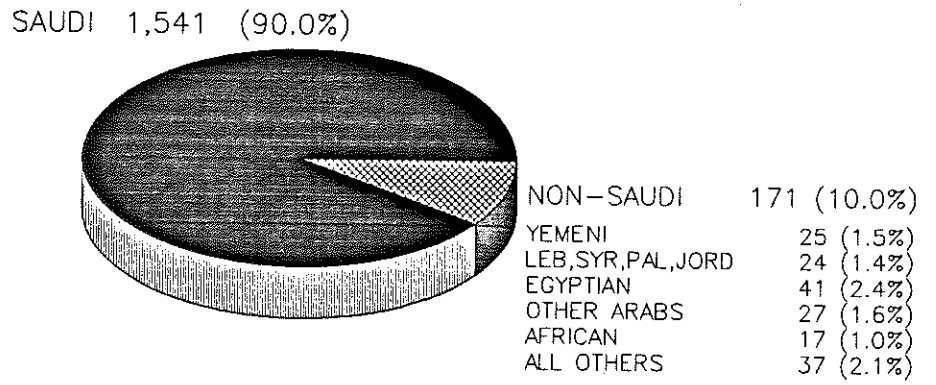
FIGURE 3

DISTRIBUTION OF CASES BY NATIONALITY

1975 – 1991 (TOTAL CASES = 22,043)



1991 (TOTAL CASES = 1,712)

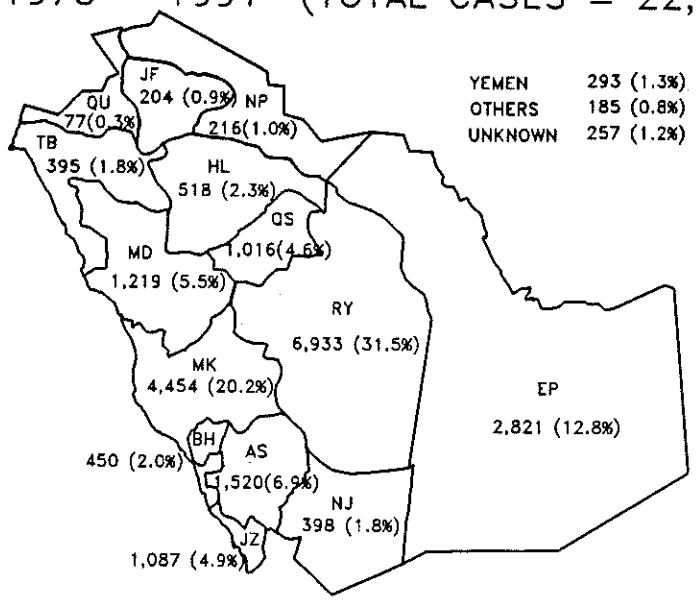


Geographically, the referral pattern is mainly from the Riyadh Region with 25.8% of all cases, followed by the Eastern Province and the Makkah Region with 16.2 % and 15.4%, respectively, in 1991. The same regions had the most number of cases during the 17 years in review, i.e., 31.5% from Riyadh, 20.2% from Makkah and 12.8% from the Eastern Province.

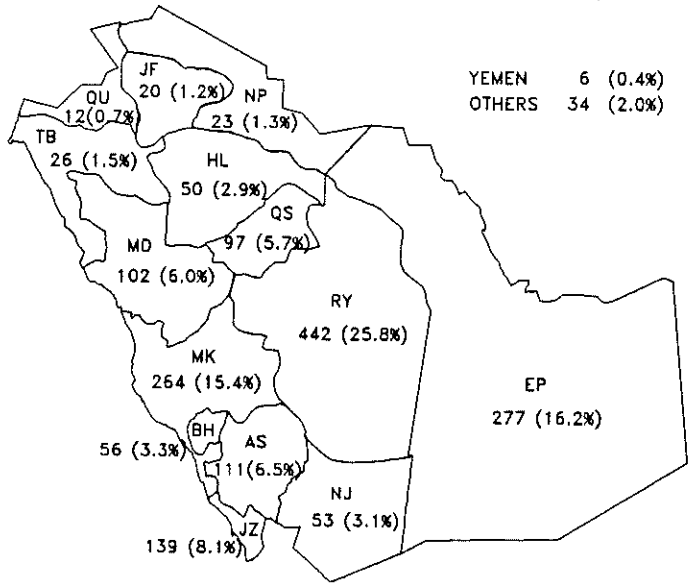
FIGURE 4

DISTRIBUTION OF CASES BY GEOGRAPHIC REGION
(Based on Given Address at the Time of Diagnosis)

1975 – 1991 (TOTAL CASES = 22,043)



1991 (TOTAL CASES = 1,712)



AS – ASIR
BH – AL BAHA
EP – EASTERN PROVINCE
HL – HAIL
JF – AL JAWF
JZ – JIZAN
MD – AL MADINAH
MK – MAKKAH
NJ – NAJRAN
NP – NORTHERN PROVINCE
QS – AL QASSIM
QU – AL QURAYYAT
RY – RIYADH
TB – TABUK

TRENDS IN RELATIVE FREQUENCY OF CANCER AT KFSH&RC

The crude relative frequency is the proportion of a given cancer in relation to all cases in a clinical or pathological series. Although such frequencies are subject to many biases, historically many elevated frequencies have been confirmed when complete cancer registration was introduced.

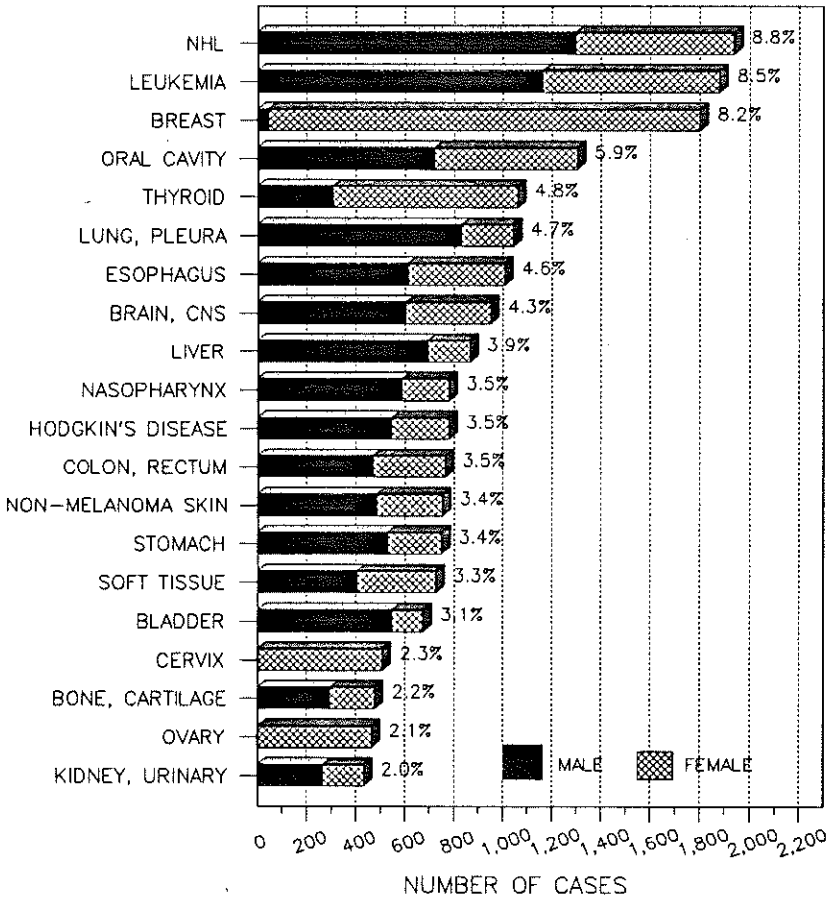
Biases that may have an affect on the relative frequencies of cancer cases at KFSH&RC include:

- possible nonusage of medical services by some of the population so that the hospital population may not reflect the disease state of the community
- resistance to examination by part of the female population
- absence of postmortem examinations/death certificates
- selective referral of certain malignancies because of a speciality service provided
- age distribution of the population

Non-Hodgkin's Lymphoma led the list of total cancer cases seen from 1975 to 1991 with 8.8%, followed by Leukemia (8.5%), Breast (8.2%), Oral Cavity (5.9%) and Thyroid (4.8%).

FIGURE 5

DISTRIBUTION OF 20 MOST COMMON MALIGNANCIES
1975 – 1991 (TOTAL CASES = 22,043)



Cancer among children under the age of 15 accounted for 12.7% of all cases from 1975 to 1991. The five most common childhood malignancies were Leukemia (36.1%), Lymphoma (29.9%), Brain/CNS (20.9%), Soft Tissue (12.2%) and Eye (10.7%).

FIGURE 6

DISTRIBUTION OF 10 MOST COMMON CHILDHOOD MALIGNANCIES
1975 - 1991 (TOTAL CASES = 2,790)

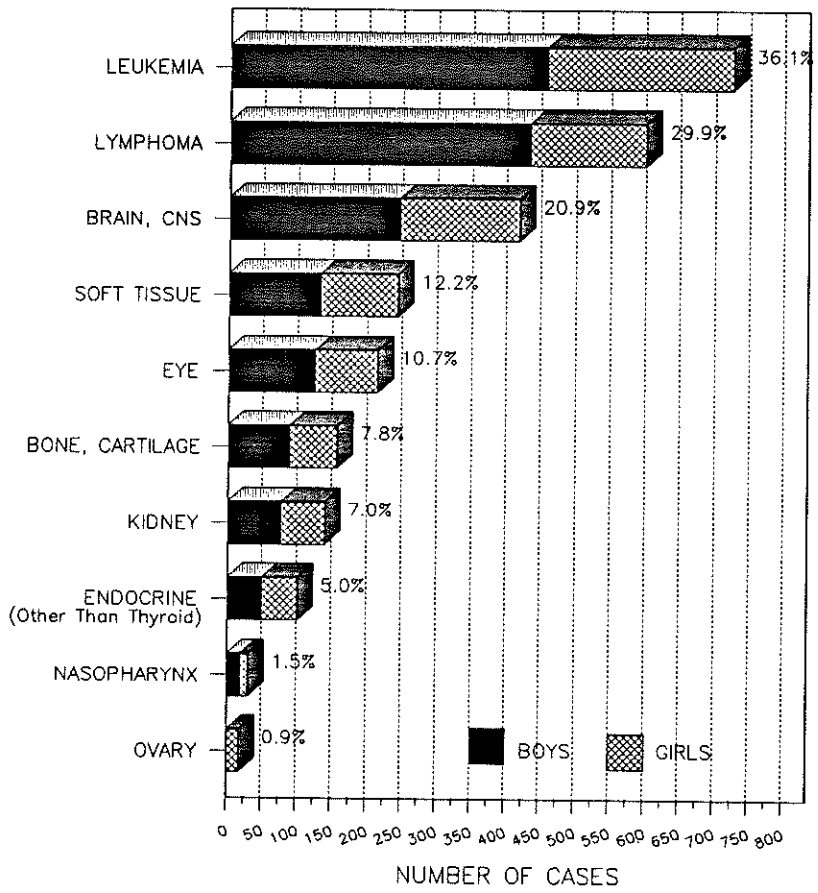


Table 2 shows the number of all malignant cases seen at KFSH&RC from 1975 to 1991 by year and site and Table 3, the 5-year summaries.

TABLE 2

TOTAL CASES SEEN AT KFSH BY YEAR AND SITE*
1975 - 1991

SITE	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	TOTAL
Oral Cavity	1	14	35	80	69	68	58	81	99	84	103	73	99	129	104	101	105	1,303
Nasopharynx	3	11	39	35	38	34	48	45	63	45	45	48	79	63	62	61	61	780
Esophagus	1	15	51	62	69	66	58	62	75	76	56	68	77	66	67	73	66	1,008
Stomach	2	15	32	36	48	38	49	50	66	58	47	64	60	46	51	51	36	749
Colon, Rectum	1	13	22	24	30	38	47	38	41	59	44	51	69	81	61	64	80	763
Liver	7	15	33	44	50	33	41	55	52	65	56	84	75	72	68	52	64	866
Pancreas	1	5	7	11	16	11	21	21	13	20	17	27	19	16	27	12	11	255
Other G.I.	2	6	10	10	11	15	9	10	11	14	17	21	28	22	21	19	13	239
Larynx	1	5	11	11	13	17	23	14	23	19	26	16	24	33	21	26	34	317
Lung, Pleura	3	11	24	34	44	39	51	62	78	77	90	86	84	109	90	76	85	1,043
Multiple Myeloma	0	5	6	11	9	10	7	13	9	12	14	12	24	21	29	13	23	218
Lymphoid Leukemia	4	14	16	38	32	38	51	70	65	48	63	84	90	76	75	55	73	892
Myeloid Leukemia	3	13	22	44	50	39	63	51	42	72	54	72	84	70	72	70	67	888
Other Leukemias	0	1	3	5	9	4	6	5	9	7	4	3	7	7	9	7	12	98
Reticuloendothelium	0	1	0	2	1	1	2	4	3	2	2	7	2	2	2	2	0	33
Bone, Cartilage	1	6	12	25	17	22	22	42	34	42	25	31	37	44	45	36	37	478
Soft Tissue	1	13	30	33	34	27	39	44	35	43	48	54	60	54	64	70	77	726
Skin Melanoma	0	4	4	8	8	6	8	4	11	12	9	8	11	12	6	5	9	125
Non-Melanoma Skin Ca	2	15	25	30	46	37	47	54	54	58	67	70	48	48	56	48	49	754
Breast	3	23	53	47	57	61	101	108	110	151	131	125	173	191	136	165	165	1,800
Uterus, Genital	0	2	10	10	15	11	16	16	36	21	19	28	36	37	33	34	29	353
Cervix	0	10	18	18	23	18	22	25	34	31	41	55	52	50	33	44	35	509
Ovary	2	6	10	10	17	20	21	36	32	26	23	35	43	48	53	46	37	465
Prostate	0	7	5	4	5	11	11	18	26	17	21	16	22	26	27	23	16	255
Testis, Genital	0	4	10	8	13	10	15	12	12	15	13	14	17	18	13	19	15	208
Bladder	4	7	12	23	29	37	36	23	43	36	45	52	78	75	72	58	44	674
Kidney, Urinary	0	9	18	19	18	16	18	31	23	20	25	44	33	57	33	35	34	433
Eye	0	6	11	18	11	22	27	34	25	16	30	22	32	40	24	28	6	352
Brain, CNS	3	24	27	40	31	31	32	78	48	59	50	75	92	94	99	82	87	952
Thyroid	2	8	17	29	33	43	57	50	63	71	63	82	119	111	110	93	109	1,060
Other Endocrine	1	1	3	2	3	9	6	7	15	10	18	9	14	13	2	6	7	126
NHL - Lymph Nodes	4	19	63	73	97	102	120	102	149	123	118	111	118	114	144	123	65	1,645
NHL - Extra-nodal	0	3	8	2	5	8	8	9	19	13	5	30	38	40	21	28	54	291
Hodgkin's Disease	13	19	40	41	35	42	45	43	53	50	49	45	63	56	75	55	55	779
Primary Unknown	3	11	23	20	19	24	28	25	25	23	18	17	32	29	46	35	34	412
All Other Sites	1	3	10	12	5	12	10	13	12	7	9	12	22	19	8	21	18	194
TOTAL	69	344	720	919	1010	1020	1223	1355	1508	1502	1465	1651	1961	1989	1859	1736	1712	22,043

* Includes Multiple Primary Neoplasms.

TABLE 3

TOTAL CASES SEEN AT KFSH BY SITE* AND 5-YEAR PERIOD
1975 - 1991

SITE	1975-1976** No	%	1977-1981 No	%	1982-1986 No	%	1987-1991 No	%	TOTAL No	%
Oral Cavity	15	3.6%	310	6.3%	440	5.9%	538	5.8%	1,303	5.9%
Nasopharynx	14	3.4%	194	4.0%	246	3.3%	326	3.5%	780	3.5%
Esophagus	16	3.9%	306	6.3%	337	4.5%	349	3.8%	1,008	4.6%
Stomach	17	4.1%	203	4.1%	285	3.8%	244	2.6%	749	3.4%
Colon, Rectum	14	3.4%	161	3.3%	233	3.1%	355	3.8%	763	3.5%
Liver	22	5.3%	201	4.1%	312	4.2%	331	3.6%	866	3.9%
Pancreas	6	1.5%	66	1.3%	98	1.3%	85	0.9%	255	1.2%
Other G.I.	8	1.9%	55	1.1%	73	1.0%	103	1.1%	239	1.1%
Larynx	6	1.5%	75	1.5%	98	1.3%	138	1.5%	317	1.4%
Lung, Pleura	14	3.4%	192	3.9%	393	5.3%	444	4.8%	1,043	4.7%
Multiple Myeloma	5	1.2%	43	0.9%	60	0.8%	110	1.2%	218	1.0%
Lymphoid Leukemia	18	4.4%	175	3.6%	330	4.4%	369	4.0%	892	4.0%
Myeloid Leukemia	16	3.9%	218	4.5%	291	3.9%	363	3.9%	888	4.0%
Other Leukemias	1	0.2%	27	0.6%	28	0.4%	42	0.5%	98	0.4%
Reticuloendothelium	1	0.2%	6	0.1%	18	0.2%	8	0.1%	33	0.1%
Bone, Cartilage	7	1.7%	98	2.0%	174	2.3%	199	2.1%	478	2.2%
Soft Tissue	14	3.4%	163	3.3%	224	3.0%	325	3.5%	726	3.3%
Skin Melanoma	4	1.0%	34	0.7%	44	0.6%	43	0.5%	125	0.6%
Non-Melanoma Skin Ca	17	4.1%	185	3.8%	303	4.1%	249	2.7%	754	3.4%
Breast	26	6.3%	319	6.5%	625	8.4%	830	9.0%	1,800	8.2%
Uterus, Genital	2	0.5%	62	1.3%	120	1.6%	169	1.8%	353	1.6%
Cervix	10	2.4%	99	2.0%	186	2.5%	214	2.3%	509	2.3%
Ovary	8	1.9%	78	1.6%	152	2.0%	227	2.5%	465	2.1%
Prostate	7	1.7%	36	0.7%	98	1.3%	114	1.2%	255	1.2%
Testis, Genital	4	1.0%	56	1.1%	66	0.9%	82	0.9%	208	0.9%
Bladder	11	2.7%	137	2.8%	199	2.7%	327	3.5%	674	3.1%
Kidney, Urinary	9	2.2%	89	1.8%	143	1.9%	192	2.1%	433	2.0%
Eye	6	1.5%	89	1.8%	127	1.7%	130	1.4%	352	1.6%
Brain, CNS	27	6.5%	161	3.3%	310	4.1%	454	4.9%	952	4.3%
Thyroid	10	2.4%	179	3.7%	329	4.4%	542	5.9%	1,060	4.8%
Other Endocrine	2	0.5%	23	0.5%	59	0.8%	42	0.5%	126	0.6%
NHL - Lymph Nodes	23	5.6%	455	9.3%	603	8.1%	564	6.1%	1,645	7.5%
NHL - Extra-nodal	3	0.7%	31	0.6%	76	1.0%	181	2.0%	291	1.3%
Hodgkin's Disease	32	7.7%	203	4.1%	240	3.2%	304	3.3%	779	3.5%
Primary Unknown	14	3.4%	114	2.3%	108	1.4%	176	1.9%	412	1.9%
All Other Sites	4	1.0%	49	1.0%	53	0.7%	88	1.0%	194	0.9%
TOTAL	413	100.0%	4,892	100.0%	7,481	100.0%	9,257	100.0%	22,043	100.0%

* Includes Multiple Primary Neoplasms.
** Two-Year Period.

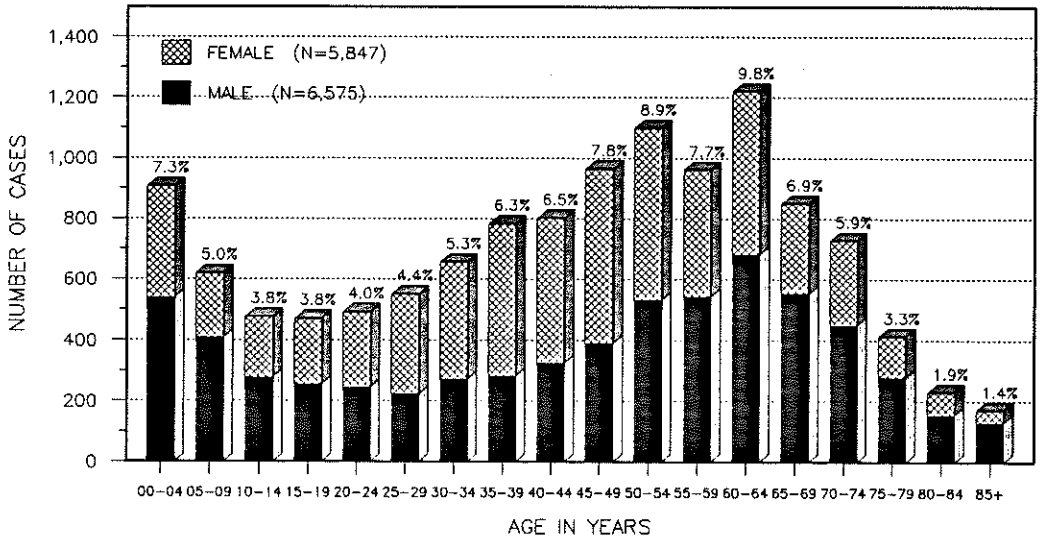
Of the 1,712 cases in 1991, 1,377 (80.4%) were analytic (defined as cases which were first diagnosed and/or received all or part of their first course of treatment at KFSH&RC. The remaining 335 cases (19.6%) were non-analytic (defined as cases diagnosed elsewhere and receiving all of their first course of treatment elsewhere).

The largest number of analytic cases was noted in the 5th and 6th decades in males and in the 4th and 5th in females. The mean age was 44.5, the median is 48.0 and the mode is 60.1. Childhood malignancies are most common among children three years of age.

FIGURE 7

DISTRIBUTION OF NEWLY DIAGNOSED CASES BY AGE AT DIAGNOSIS

1975 – 1991 (TOTAL CASES = 12,422)



1991 (TOTAL CASES = 1,377)

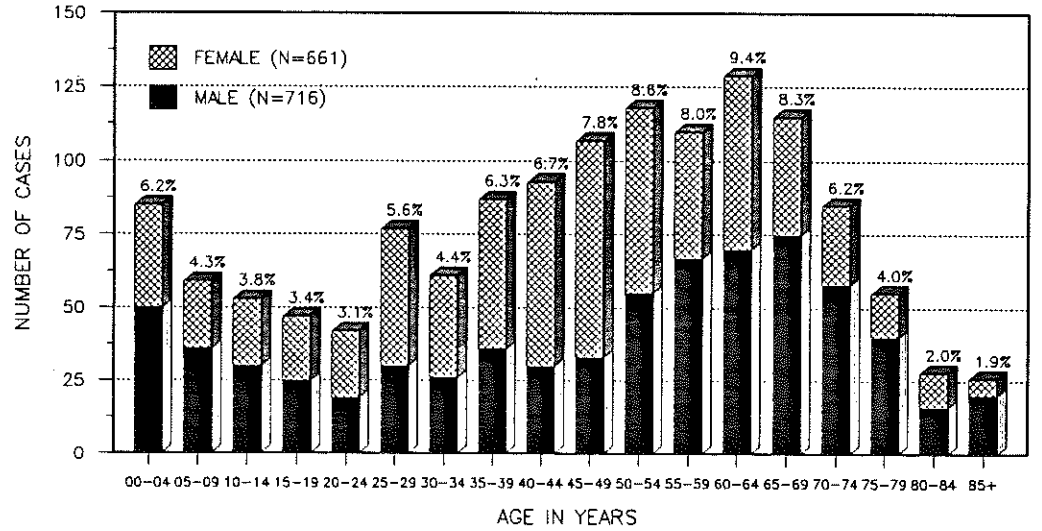


FIGURE 8

DISTRIBUTION OF NEWLY DIAGNOSED CHILDREN BY AGE AT DIAGNOSIS
1975 – 1991 (TOTAL CASES = 2,006)

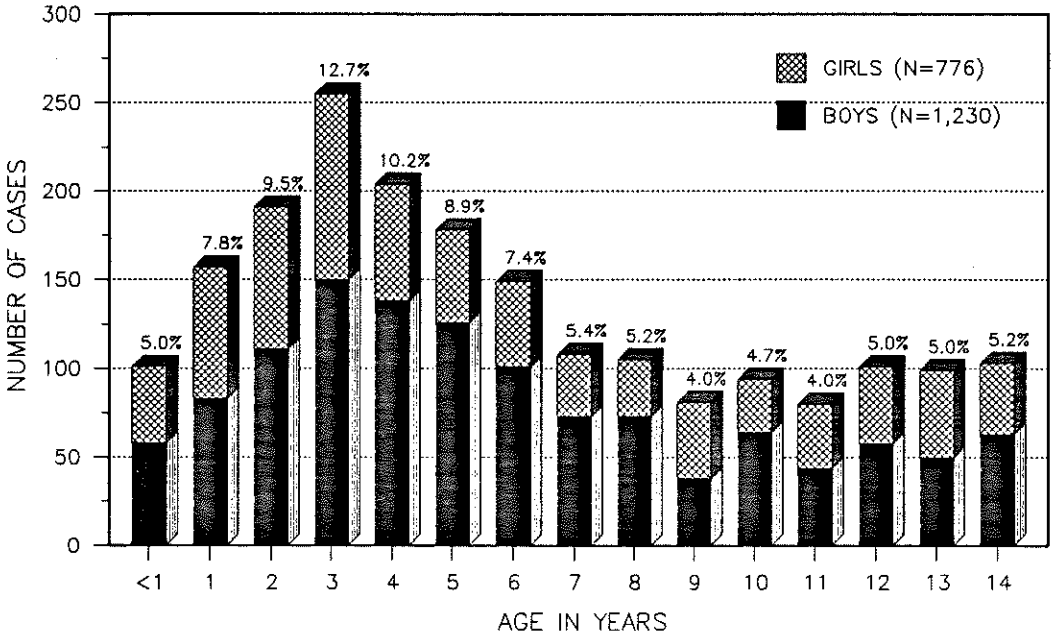


TABLE 4

TOTAL CASES SEEN AT KFSH BY SITE*, SEX, CLASS OF CASE AND SUMMARY STAGE
1991

SITE	TOTAL		SEX		CLASS OF CASE**		ANALYTIC CASES GENERAL SUMMARY STAGE				
	Number	%	Male	Female	Analytic	Non-Anal	In Situ	Localized	Regional	Distant	NA/Unknown
Breast	165	9.6%	7	158	125	40	1	18	84	22	0
Leukemia	152	8.9%	83	69	131	21	0	0	0	131	0
Non-Hodgkin's Lymphoma	119	7.0%	79	40	110	9	0	23	32	54	1
Thyroid	109	6.4%	28	81	94	15	0	31	48	12	3
Oral Cavity	105	6.1%	45	60	90	15	0	22	54	13	1
Brain, CNS	87	5.1%	59	28	79	8	0	45	27	3	4
Lung, Pleura	85	5.0%	63	22	67	18	0	7	21	38	1
Colon, Rectum	80	4.7%	45	35	51	29	0	12	22	16	1
Soft Tissue	77	4.5%	36	41	60	17	0	15	18	25	2
Esophagus	66	3.9%	39	27	53	13	0	18	22	13	0
Liver	64	3.7%	52	12	28	36	0	8	7	13	0
Nasopharynx	61	3.6%	44	17	54	7	1	3	27	23	0
Hodgkin's Disease	55	3.2%	31	24	46	9	0	12	15	19	0
Non-Melanoma Skin Ca	49	2.9%	34	15	32	17	0	12	10	10	0
Bladder	44	2.6%	41	3	34	10	0	13	14	7	0
Ovary	37	2.2%	0	37	33	4	0	7	7	16	3
Bone, Cartilage	37	2.2%	23	14	33	4	0	2	22	8	1
Stomach	36	2.1%	23	13	24	12	0	3	15	6	0
Cervix	35	2.0%	0	35	33	2	2	1	20	10	0
Larynx	34	2.0%	33	1	27	7	1	13	6	7	0
Primary Unknown	34	2.0%	19	15	24	10	0	0	0	8	16
Kidney, Urinary	34	2.0%	21	13	30	4	0	11	6	12	1
Uterus, Genital	29	1.7%	0	29	24	5	0	9	10	4	1
Multiple Myeloma	23	1.3%	14	9	20	3	0	0	0	20	0
All Other Sites	18	1.1%	8	10	14	4	0	0	3	8	3
Prostate	16	0.9%	16	0	11	5	0	0	3	6	2
Testis, Genital	15	0.9%	15	0	13	2	0	7	3	2	1
Other G.I.	13	0.8%	7	6	11	2	0	0	5	6	0
Pancreas	11	0.6%	8	3	9	2	0	2	5	2	0
Skin Melanoma	9	0.5%	6	3	6	3	0	1	1	3	1
Other Endocrine	7	0.4%	2	5	5	2	0	0	1	3	1
Eye	6	0.4%	4	2	6	0	0	2	4	0	0
TOTAL	1,712	100.0%	885	827	1,377	335	5	297	512	520	43

* Includes Multiple Primary Neoplasms.
** Analytic Cases - cases which were first diagnosed and/or received all or part of their first course of treatment at KFSH.
Non-Analytic Cases - cases which were diagnosed elsewhere and received all of their first course of treatment elsewhere.

TABLE 5

NEWLY DIAGNOSED CASES SEEN AT KFSH BY AGE AND SITE*
1991

SITE	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	TOTAL
Oral Cavity	0	0	0	0	0	3	1	5	2	6	10	10	14	15	11	1	6	6	90
Nasopharynx	0	0	3	1	0	1	4	2	3	8	5	10	5	4	2	5	1	0	54
Esophagus	0	0	0	0	0	0	1	1	1	0	6	2	9	12	9	6	2	4	53
Stomach	0	0	0	0	0	0	0	1	1	3	2	5	4	1	2	2	1	2	24
Colon, Rectum	0	0	1	0	1	1	2	4	2	3	14	5	7	5	1	4	1	0	51
Liver	2	0	0	0	0	0	0	3	2	2	5	3	2	3	4	1	0	1	28
Pancreas	0	0	0	0	0	0	0	0	0	3	0	0	2	1	2	0	1	0	9
Other G.I.	0	0	0	0	0	0	0	0	1	1	0	2	4	2	1	0	0	0	11
Larynx	0	0	0	0	0	1	0	0	0	2	6	4	3	4	3	3	0	1	27
Lung, Pleura	0	0	1	1	0	0	0	0	4	7	7	14	9	9	9	3	2	1	67
Multiple Myeloma	0	0	0	0	0	0	1	2	1	0	3	1	2	3	4	3	0	0	20
Lymphoid Leukemia	20	9	8	9	1	4	1	2	1	2	0	2	4	0	1	2	0	0	66
Myeloid Leukemia	3	7	5	4	4	6	5	4	2	4	2	0	6	0	0	0	1	0	53
Other Leukemias	2	0	0	2	1	2	0	2	0	0	0	1	0	1	0	1	0	0	12
Bone, Cartilage	1	3	4	11	2	4	0	2	2	2	1	0	0	0	0	1	0	0	33
Soft Tissue	14	5	6	2	4	4	1	3	3	2	1	4	4	1	2	2	1	1	60
Skin Melanoma	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	2	0	0	6
Non-Melanoma Skin Ca	0	0	0	0	1	0	2	1	4	4	2	3	1	5	5	3	0	1	32
Breast	0	0	0	0	0	7	12	22	22	24	17	6	8	4	1	1	0	1	125
Uterus, Genital	0	0	0	0	1	0	5	0	4	3	2	0	0	4	4	1	0	0	24
Cervix	0	0	0	0	0	3	1	0	4	6	5	4	5	1	2	0	2	0	33
Ovary	1	0	0	1	1	2	1	0	7	7	1	3	5	1	2	0	1	0	33
Prostate	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	3	0	0	11
Testis, Genital	1	0	0	0	0	2	4	2	0	0	1	1	1	0	1	0	0	0	13
Bladder	0	0	0	0	0	0	1	2	2	3	0	3	7	8	2	2	1	3	34
Kidney, Urinary	9	1	0	0	0	2	1	1	3	2	4	3	2	0	0	0	1	1	30
Eye	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Brain, CNS	11	19	12	3	6	4	3	5	0	3	5	2	1	2	0	2	1	0	79
Thyroid	0	0	2	3	10	17	7	11	11	4	5	5	3	6	5	1	3	1	94
Other Endocrine	3	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
NHL - Lymph Nodes	4	2	3	4	4	4	2	2	3	2	6	5	4	7	3	2	1	3	61
NHL - Extra-nodal	7	3	1	2	0	4	3	3	1	1	4	7	5	4	3	1	0	0	49
Hodgkin's Disease	3	7	7	3	5	4	2	4	3	1	1	2	1	2	1	0	0	0	46
Primary Unknown	0	0	0	0	0	0	1	0	2	0	3	0	8	5	2	1	2	0	24
All Other Sites	0	0	0	0	1	2	0	3	2	2	0	0	1	0	1	2	0	0	14
TOTAL	85	59	53	47	42	77	61	87	93	107	118	110	129	115	85	55	28	26	1,377

* Includes Multiple Primary Neoplasms.

TABLE 6

NEWLY DIAGNOSED MALE CASES SEEN AT KFSH BY AGE AND SITE*
1991

SITE	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	TOTAL
Oral Cavity	0	0	0	0	0	1	1	2	0	1	4	5	5	8	6	1	1	3	38
Nasopharynx	0	0	1	0	0	1	3	1	3	5	4	6	3	2	2	5	1	0	37
Esophagus	0	0	0	0	0	0	1	0	0	0	2	2	4	8	6	5	2	3	33
Stomach	0	0	0	0	0	0	0	0	1	1	0	4	1	1	2	2	1	2	15
Colon, Rectum	0	0	1	0	0	1	0	1	2	2	11	3	5	4	1	2	1	0	34
Liver	2	0	0	0	0	0	0	2	2	1	3	3	2	3	4	1	0	1	24
Pancreas	0	0	0	0	0	0	0	0	0	2	0	0	1	1	2	0	1	0	7
Other G.I.	0	0	0	0	0	0	0	0	0	0	0	1	3	2	0	0	0	0	6
Larynx	0	0	0	0	0	1	0	0	0	2	6	4	3	3	3	3	0	1	26
Lung, Pleura	0	0	0	0	0	0	0	0	2	5	4	12	8	8	7	2	1	1	50
Multiple Myeloma	0	0	0	0	0	0	1	1	0	0	2	0	1	3	4	1	0	0	13
Lymphoid Leukemia	10	6	5	5	1	3	1	1	1	1	0	2	3	0	1	1	0	0	41
Myeloid Leukemia	1	3	3	2	1	3	2	2	2	1	1	0	4	0	0	0	1	0	26
Other Leukemias	0	0	0	1	1	1	0	2	0	0	0	1	0	0	0	0	0	0	6
Bone, Cartilage	1	3	3	8	2	1	0	1	2	0	1	0	0	0	0	0	0	0	22
Soft Tissue	8	3	2	0	0	1	1	3	1	1	1	3	1	1	1	1	0	0	28
Skin Melanoma	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	4
Non-Melanoma Skin Ca	0	0	0	0	0	0	2	0	4	1	1	2	1	5	3	1	0	1	21
Breast	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	1	4
Uterus, Genital	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cervix	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ovary	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prostate	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	3	0	0	11
Testis, Genital	1	0	0	0	0	2	4	2	0	0	1	1	1	0	1	0	0	0	13
Bladder	0	0	0	0	0	0	1	2	2	3	0	2	6	7	2	2	1	3	31
Kidney, Urinary	7	0	0	0	0	0	1	1	1	2	2	3	1	0	0	0	1	1	20
Eye	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Brain, CNS	5	11	10	3	6	2	2	3	0	2	2	2	1	2	0	2	1	0	54
Thyroid	0	0	0	0	2	6	3	3	1	0	0	1	1	2	4	1	2	0	26
Other Endocrine	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
NHL - Lymph Nodes	3	1	1	2	3	1	1	2	2	2	4	3	2	5	3	2	1	3	41
NHL- Extra-nodal	5	2	1	2	0	3	2	0	0	0	4	5	5	1	2	1	0	0	33
Hodgkin's Disease	2	6	3	2	3	1	0	4	2	1	0	0	0	2	0	0	0	0	26
Primary Unknown	0	0	0	0	0	1	0	0	0	0	2	0	4	3	1	1	1	0	13
All Other Sites	0	0	0	0	0	1	0	3	1	0	0	0	1	0	0	1	0	0	7
TOTAL	50	36	30	25	19	30	26	36	30	33	55	67	70	75	58	40	16	20	716

* Includes Multiple Primary Neoplasms.

TABLE 7

NEWLY DIAGNOSED FEMALE CASES SEEN AT KFSH BY AGE AND SITE*
1991

SITE	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	TOTAL
Oral Cavity	0	0	0	0	0	2	0	3	2	5	6	5	9	7	5	0	5	3	52
Nasopharynx	0	0	2	1	0	0	1	1	0	3	1	4	2	2	0	0	0	0	17
Esophagus	0	0	0	0	0	0	0	1	1	0	4	0	5	4	3	1	0	1	20
Stomach	0	0	0	0	0	0	0	1	0	2	2	1	3	0	0	0	0	0	9
Colon, Rectum	0	0	0	0	1	0	2	3	0	1	3	2	2	1	0	2	0	0	17
Liver	0	0	0	0	0	0	0	1	0	1	2	0	0	0	0	0	0	0	4
Pancreas	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
Other G.I.	0	0	0	0	0	0	0	0	1	1	0	1	1	0	1	0	0	0	5
Larynx	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Lung, Pleura	0	0	1	1	0	0	0	0	2	2	3	2	1	1	2	1	1	0	17
Multiple Myeloma	0	0	0	0	0	0	0	1	1	0	1	1	1	0	0	2	0	0	7
Lymphoid Leukemia	10	3	3	4	0	1	0	1	0	1	0	0	1	0	0	1	0	0	25
Myeloid Leukemia	2	4	2	2	3	3	3	2	0	3	1	0	2	0	0	0	0	0	27
Other Leukemias	2	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1	0	0	6
Bone, Cartilage	0	0	1	3	0	3	0	1	0	2	0	0	0	0	0	1	0	0	11
Soft Tissue	6	2	4	2	4	2	1	0	2	1	0	1	3	0	1	1	1	1	32
Skin Melanoma	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	2
Non-Melanoma Skin Ca	0	0	0	0	1	0	0	1	0	3	1	1	0	0	2	2	0	0	11
Breast	0	0	0	0	0	7	12	22	21	24	17	6	7	4	0	1	0	0	121
Uterus, Genital	0	0	0	0	1	0	5	0	4	3	2	0	0	4	4	1	0	0	24
Cervix	0	0	0	0	0	3	1	0	4	6	5	4	5	1	2	0	2	0	33
Ovary	1	0	0	1	1	2	1	0	7	7	1	3	5	1	2	0	1	0	33
Prostate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Testis, Genital	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bladder	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	3
Kidney, Urinary	2	1	0	0	0	2	0	0	2	0	2	0	1	0	0	0	0	0	10
Eye	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Brain, CNS	6	8	2	0	0	2	1	2	0	1	3	0	0	0	0	0	0	0	25
Thyroid	0	0	2	3	8	11	4	8	10	4	5	4	2	4	1	0	1	1	68
Other Endocrine	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
NHL - Lymph Nodes	1	1	2	2	1	3	1	0	1	0	2	2	2	2	0	0	0	0	20
NHL - Extra-nodal	2	1	0	0	0	1	1	3	1	1	0	2	0	3	1	0	0	0	16
Hodgkin's Disease	1	1	4	1	2	3	2	0	1	0	1	2	1	0	1	0	0	0	20
Primary Unknown	0	0	0	0	0	0	0	0	2	0	1	0	4	2	1	0	1	0	11
All Other Sites	0	0	0	0	1	1	0	0	1	2	0	0	0	0	1	1	0	0	7
TOTAL	35	23	23	22	23	47	35	51	63	74	63	43	59	40	27	15	12	6	661

* Includes Multiple Primary Neoplasms.

The relative frequencies of primary cancers seen at KFSH&RC are very different from the Western world. Common tumors of the West (lung, colon, and prostate) are much less frequent here, although breast cancer is the most common malignancy among women seen at KFSH&RC (affecting mostly women less than the age of 50) as it is in the Western countries (affecting mostly women more than the age of 50). The following 1991 analytic cases exhibit significant differences in trends from those of the West:

Leukemia - Leukemia constitutes the most common malignant neoplasm seen at KFSH&RC, 9.5% of all cases, as compared to about 3% of all neoplasms diagnosed in the U.S.A. It is also the most common malignancy in children under the age of 15. The male/female ratio is 1.3:1.

Non-Hodgkin's Lymphoma - The most striking feature is the unusually high crude relative frequency of non-Hodgkin's lymphoma which is the most common type of malignancy seen in males and the fifth most common in females, accounting for 8.0% of all cases. The male/female ratio is 2.1:1. NHL is the second most common malignancy in children under the age of 15. In the U.S.A., NHL accounts for only about 3% of all cancer.

Thyroid - 3.6% of all male malignancies in the KFSH&RC Registry are thyroid tumors. However, they represent 10.3% of female malignant neoplasms, second to breast cancer. The male/female ratio is 0.4:1. Thyroid cancer accounts for only 1.1% of all cases in the U.S.A. and 1.6% of female malignancies.

Oral Cavity - A high crude relative frequency rate was also noted in cancer of the oral cavity. In Western countries, oral cancer accounts for no more than 3% of all cancers, whereas at KFSH&RC it represents 6.5% of the cases. The male/female ratio is 0.7:1.

Brain/CNS - Primary malignant neoplasm of the brain and CNS accounts for 5.7% of all malignancies and ranks third among the most common childhood malignancies. The male/female ratio is 2.2:1. This is comparatively higher than in the West with only 1.5% of all cases.

Lung - Frequency of lung cancer is much lower than in Western countries, most likely reflecting the much lower levels of smoking and industrial pollution. In the U.S.A., primary lung cancer represents about 15% of all cancer cases (19% in males, and 11% in females).

At KFSH&RC, 4.9% of the diagnoses are lung cancer, although in males it is the fourth most common tumor, constituting 7.0% of male malignancies and 2.6% in females. The male/female ratio is 2.9:1. This, however, may not reflect a realistic picture since many patients do not meet the eligibility criteria for admission to the KFSH&RC.

Soft Tissue - KFSH&RC cases show a higher rate of soft tissue malignancies than the U.S.A., with 4.4% against the latter's 0.5% of all cases. The male/female ratio is 0.9:1.

Nasopharynx - A higher crude relative frequency rate is seen in nasopharyngeal cancer. It constitutes less than 1% of the pathologically diagnosed cancers in most centers in Europe and America, but is 3.9% of the cases at KFSH&RC. The male/female ratio is 2.2:1.

Esophagus - The incidence of esophageal carcinoma is comparatively more frequent at KFSH&RC than in Western countries. In the U.S.A. it constitutes 1% of all cancers, compared to 3.8% at KFSH&RC. The male/female ratio is 1.6:1.

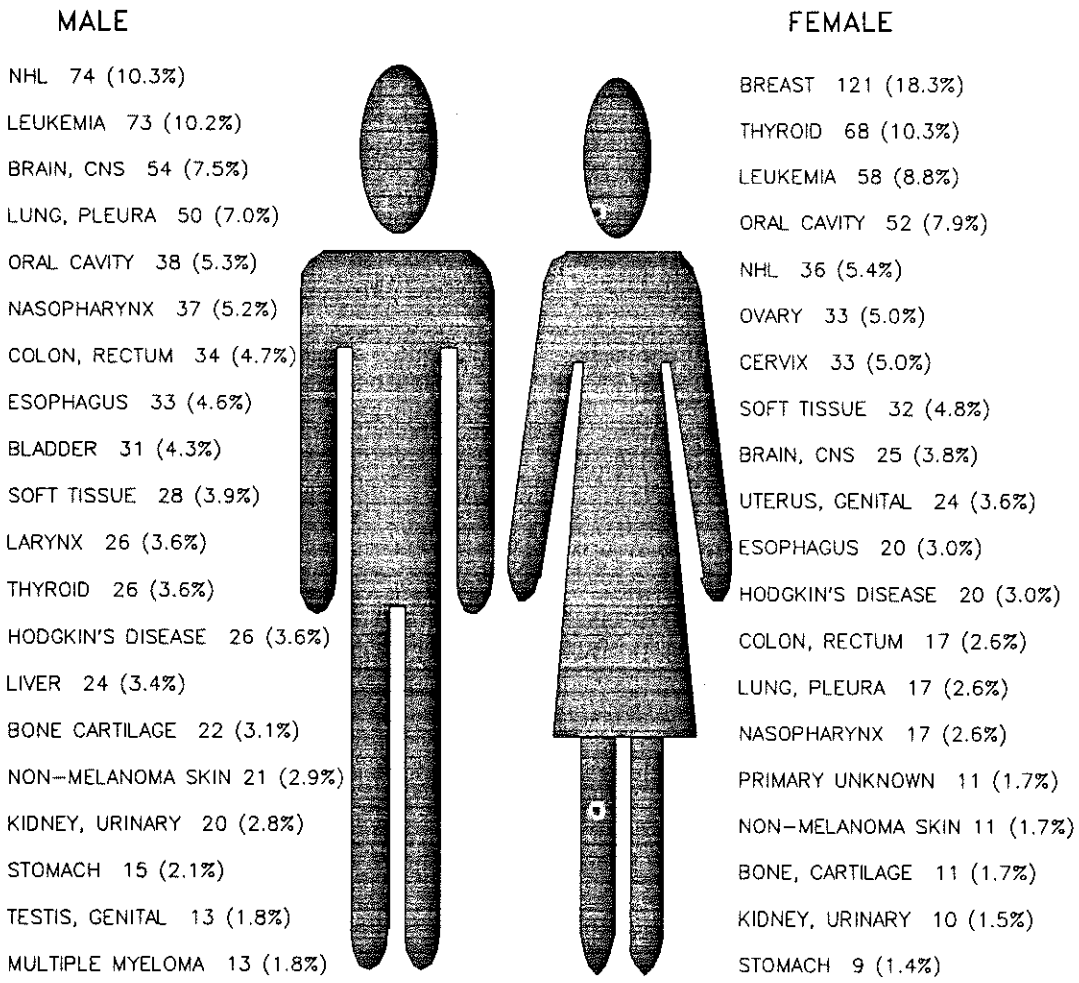
Liver - Although the relative frequency of liver cancer at the KFSH&RC (2.0%) is almost the same as that of the West, there is a very significant difference in the male/female ratio. KFSH&RC has 6.0:1 and the West, 1.1:1.

Colo-Rectal - Markedly less common than in the West, for which dietary factors (particularly lower animal fat intake) may play a role, this disease represents only 3.7% of all tumors. In America it constitutes 14% of newly diagnosed cancer cases. The male/female ratio at KFSH&RC is 2.0:1.

Prostate - The observed rate of prostatic cancer in men is much lower than in the West, where it is one of the most common male cancers (constituting 22% of the malignancies). This is in contrast to the KFSH&RC experience, where prostatic cancer makes up only 0.8% of the male cancer. This is probably due to the population age difference. Prostate cancer is a disease chiefly of old men and the population of Saudi Arabia is in general very young.

FIGURE 9

DISTRIBUTION OF 20 MOST COMMON NEWLY DIAGNOSED MALIGNANCIES
1991



Please refer to Table 8, the Primary Site Table, for the listing of histologies according to site.

TABLE 8

PRIMARY SITE TABLE
(INCLUDES MULTIPLE PRIMARIES)
1991

SITE (ICD-O CODE) HISTOLOGY	TOTAL CASES	MALES	FEMALES
ALL SITES ALL HISTOLOGIES	**1,712**	**885**	**827**
LIP (140)	**7**	**2**	**5**
Squamous Cell Carinoma			
TONGUE (141)	**26**	**8**	**18**
Squamous Cell Carinoma	22	5	17
Verrucous Carcinoma, NOS	2	1	1
Non-Hodgkin's Lymphoma	2	2	0
MAJOR SALIVARY GLANDS (142)	**5**	**2**	**3**
Mucoepidermoid Carcinoma	2	1	1
Acinar Cell Carcinoma	2	0	2
Adenocarcinoma, NOS	1	1	0
GUM (143)	**22**	**10**	**12**
Squamous Cell Carcinoma	19	10	9
Verrucous Carcinoma, NOS	2	0	2
Adenoid Cystic Carcinoma	1	0	1
FLOOR OF MOUTH (144)	**5**	**2**	**3**
Squamous Cell Carcinoma	4	1	3
Mucoepidermoid Carcinoma	1	1	0
OTHER PARTS OF MOUTH (145)	**24**	**14**	**10**
Squamous Cell Carcinoma	19	11	8
Adenoid Cystic Carcinoma	2	1	1
Verrucous Carcinoma	2	2	0
Mucoepidermoid Carcinoma	1	0	1
OROPHARYNX (146)	**7**	**4**	**3**
Non-Hodgkin's Lymphoma	5	2	3
Squamous Cell Carcinoma	1	1	0
Undifferentiated Carcinoma	1	1	0
NASOPHARYNX (147)	**63**	**46**	**17**
Squamous Cell Carcinoma	40	28	12
Undifferentiated Carcinoma	11	7	4
Carcinoma, NOS	5	4	1
Lymphoepithelial Carcinoma	2	2	0
Plasmacytoma	2	2	0
Non-Hodgkin's Lymphoma	2	2	0
Squamous Cell Carcinoma In Situ	1	1	0
HYPOPHARYNX (148)	**16**	**6**	**10**
Squamous Cell Carcinoma			
ESOPHAGUS (150)	**66**	**39**	**27**
Squamous Cell Carcinoma	57	32	25
Adenocarcinoma, NOS	4	3	1
Carcinoma, NOS	2	2	0
Adenosquamous Carcinoma	1	0	1
Adenoid Cystic Carcinoma	1	1	0
Carcinosarcoma	1	1	0

Primary Site Table con't

SITE (ICD-O CODE) HISTOLOGY	TOTAL CASES	MALES	FEMALES
STOMACH (151)	**49**	**29**	**20**
Adenocarcinoma, NOS	21	17	4
Non-Hodgkin's Lymphoma	13	6	7
Squamous Cell Carcinoma	6	3	3
Signet Ring Cell Carcinoma	4	2	2
Papillary Adenocarcinoma	3	1	2
Mucinous Adenocarcinoma	2	0	2
SMALL INTESTINE (152)	**8**	**5**	**3**
Non-Hodgkin's Lymphoma	7	4	3
Adenocarcinoma, NOS	1	1	0
COLON (153)	**43**	**24**	**19**
Adenocarcinoma, NOS	29	17	12
Mucinous Adenocarcinoma	4	1	3
Non-Hodgkin's Lymphoma	4	3	1
Mucin-Producing Adenocarcinoma	3	0	3
Papillary Adenocarcinoma	1	1	0
Adenocarcinoma in Adenomatous Polyp	1	1	0
Mucinous Cystadenoma, Borderline	1	1	0
RECTUM/RECTOSIGMOID JUNCTION/ANUS (154)	**41**	**24**	**17**
Adenocarcinoma, NOS	30	17	13
Mucinous Adenocarcinoma	6	3	3
Squamous Cell Carcinoma	4	4	0
Undifferentiated Carcinoma	1	0	1
LIVER/INTRAHEPATIC BILE DUCTS (155)	**65**	**53**	**12**
Hepatocellular Carcinoma	58	48	10
Hepatoblastoma	2	2	0
Cholangiocarcinoma	1	0	1
Adenocarcinoma, NOS	1	0	1
Vipoma	1	1	0
Carcinoma, NOS	1	1	0
Non-Hodgkin's Lymphoma	1	1	0
GALLBLADDER/EXTRAHEPATIC BILE DUCTS (156)	**11**	**5**	**6**
Adenocarcinoma, NOS	9	4	5
Papillary Adenocarcinoma	1	1	0
Adenosquamous Carcinoma	1	0	1
PANCREAS (157)	**11**	**8**	**3**
Adenocarcinoma, NOS	8	6	2
Mucinous Adenocarcinoma	1	1	0
Islet Cell Carcinoma	1	1	0
Infiltrating Duct Carcinoma	1	0	1
OTHER G.I. SITES (159)	**1**	**1**	**0**
Signet Ring Cell Carcinoma	1	1	0
NASAL CAVITY/ACCESSORY SINUS (160)	**15**	**12**	**3**
Non-Hodgkin's Lymphoma	5	4	1
Squamous Cell Carcinoma	3	2	1
Adenoid Cystic Carcinoma	2	1	1
Plasmacytoma	1	1	0
Fibrosarcoma	1	1	0
Esthesioneuroblastoma	1	1	0
Malignant Neurilemmoma	1	1	0
Malignant Epithelioid Hemangioendothelioma	1	1	0

Primary Site Table con't

SITE (ICD-O CODE) HISTOLOGY	TOTAL CASES	MALES	FEMALES
LARYNX (161)	**34**	**33**	**1**
Squamous Cell Carcinoma	33	32	1
Squamous Cell Carcinoma In Situ	1	1	0
TRACHEA/BRONCHUS/LUNG (162)	**86**	**64**	**22**
Adenocarcinoma	26	19	7
Squamous Cell Carcinoma	20	15	5
Small Cell Carcinoma	14	11	3
Carcinoma, NOS	9	6	3
Large Cell Carcinoma	3	2	1
Bronchio-Alveolar Adenocarcinoma	3	0	3
Oat Cell Carcinoma	2	2	0
Adenosquamous Carcinoma	2	2	0
Undifferentiated Carcinoma	2	2	0
Malignant Neoplasm	2	2	0
Mucinous Adenocarcinoma	1	1	0
Non-Hodgkin's Lymphoma	1	1	0
Carcinoid Tumor	1	1	0
THYMUS/HEART (164)	**10**	**4**	**6**
Embryonal Rhabdomyosarcoma	2	0	2
Malignant Thymoma	1	0	1
Squamous Cell Carcinoma	1	1	0
Ganglioneuroblastoma	1	0	1
Malignant Neurilemmoma	1	0	1
Alveolar Soft Part Sarcoma	1	1	0
Endodermal Sinus Tumor	1	0	1
Non-Hodgkin's Lymphoma	1	1	0
Choriocarcinoma	1	1	0
MULTIPLE MYELOMA (169)	**23**	**14**	**9**
Plasma Cell Myeloma			
BONE MARROW (169)	**152**	**83**	**69**
Acute Lymphoid Leukemia	61	37	24
Acute Myeloid Leukemia	38	20	18
Chronic Myeloid Leukemia	21	9	12
Chronic Lymphoid Leukemia	12	10	2
Acute Myelomonocytic Leukemia	6	1	5
Acute Leukemia, NOS	6	4	2
Acute Monocytic Leukemia	3	1	2
Hairy Cell Leukemia	2	1	1
Acute Promyelocytic Leukemia	1	0	1
Chronic Myelomonocytic Leukemia	1	0	1
Leukemia, NOS	1	0	1
BONE & CARTILAGE (170)	**40**	**26**	**14**
Ewing's Sarcoma	16	11	5
Osteosarcoma, NOS	13	8	5
Chondroblastic Osteosarcoma	3	1	2
Non-Hodgkin's Lymphoma	3	3	0
Chondrosarcoma	2	1	1
Juxtacortical Osteosarcoma	1	1	0
Fibroblastic Osteosarcoma	1	1	0
Plasmacytoma	1	0	1

Primary Site Table con't

SITE (ICD-O CODE) HISTOLOGY	TOTAL CASES	MALES	FEMALES
CONNECTIVE/SUBCUTANEOUS/SOFT TISSUE (171)	**67**	**31**	**36**
Malignant Fibrous Histiocytoma	8	3	5
Embryonal Rhabdomyosarcoma	7	5	2
Spindle Cell Sarcoma	6	1	5
Neuroblastoma	6	3	3
Malignant Neurilemmoma	4	2	2
Sarcoma, NOS	4	1	3
Rhabdomyosarcoma, NOS	3	1	2
Synovial Sarcoma	5	3	2
Fibrosarcoma	3	2	1
Peripheral Neuroectodermal Tumor	3	2	1
Liposarcoma	3	1	2
Myxoid Liposarcoma	2	1	1
Leiomyosarcoma	2	0	2
Ewing's Sarcoma	2	1	1
Alveolar Rhabdomyosarcoma	1	0	1
Pleomorphic Liposarcoma	1	0	1
Round Cell Liposarcoma	1	1	0
Neurofibrosarcoma	1	1	0
Giant Cell Sarcoma	1	1	0
Malignant Hemangioendothelioma	1	1	0
Clear Cell Sarcoma of Tendon	1	0	1
Myxoid Chondrosarcoma	1	1	0
Neoplasm, Malignant	1	0	1
SKIN (MELANOMA) (172)	**9**	**6**	**3**
Malignant Melanoma	8	6	2
Spindle Cell Melanoma	1	0	1
SKIN (NON-MELANOMA) (173)	**49**	**34**	**15**
Squamous Cell Carcinoma	24	17	7
Basal Cell Carcinoma	13	8	5
Kaposi's Sarcoma	5	4	1
Basosquamous Carcinoma	1	1	0
Sebaceous Adenocarcinoma	1	0	1
Dermatofibrosarcoma	1	1	0
Large Cell Carcinoma	1	1	0
Adenoid Cystic Carcinoma	1	0	1
Mycosis Fungoides	1	1	0
Malignant Fibrous Histiocytoma	1	1	0
BREAST, FEMALE (174)	**158**	**0**	**158**
Infiltrating Duct Carcinoma	133	0	133
Lobular Carcinoma, NOS	5	0	5
Paget's Disease & Infilt. Duct Carcinoma	3	0	3
Comedocarcinoma	3	0	3
Carcinoma, NOS	3	0	3
Paget's Disease & Intraductal Carcinoma	2	0	2
Cystosarcoma Phyllodes	2	0	2
Medullary Carcinoma	2	0	2
Infiltrating & Lobular Carcinoma	2	0	2
Intracystic Carcinoma	1	0	1
Adenocarcinoma, NOS	1	0	1
Solid Carcinoma, NOS	1	0	1
BREAST, MALE (175)	**7**	**7**	**0**
Infiltrating Duct Carcinoma			

Primary Site Table con't

SITE (ICD-O CODE) HISTOLOGY	TOTAL CASES	MALES	FEMALES
UTERUS (179.9)	**1**	**0**	**1**
Carcinoma, NOS			
CERVIX UTERI (180)	**35**	**0**	**35**
Squamous Cell Carcinoma	30	0	30
Adenocarcinoma, NOS	2	0	2
Carcinoma, NOS	1	0	1
Carcinoma In Situ, NOS	2	0	2
PLACENTA (181)	**10**	**0**	**10**
Choriocarcinoma			
CORPUS UTERI (182)	**12**	**0**	**12**
Adenocarcinoma	7	0	7
Leiomyosarcoma	2	0	2
Papillary Adenocarcinoma	1	0	1
Endometrial Stromal Sarcoma	1	0	1
Carcinoma, NOS	1	0	1
OVARY (183)	**38**	**0**	**38**
Papillary Serous Cystadenocarcinoma	12	0	12
Papillary Adenocarcinoma	4	0	4
Carcinoma, NOS	3	0	3
Serous Cystadenocarcinoma	2	0	2
Serous Cystadenoma, Borderline Malignancy	2	0	2
Endometrioid Carcinoma	2	0	2
Dysgerminoma	2	0	2
Mucinous Adenocarcinoma	2	0	2
Malignant Teratoma, NOS	2	0	2
Mucinous Cystadenocarcinoma	1	0	1
Mucinous Cystadenoma, Borderline Malignancy	1	0	1
Papillary Carcinoma, NOS	1	0	1
Clear Cell Adenocarcinoma	1	0	1
Adenocarcinoma, NOS	1	0	1
Mixed Germ Cell Tumor	1	0	1
Non-Hodgkin's Lymphoma	1	0	1
OTHER FEMALE GENITAL ORGANS (184)	**6**	**0**	**6**
Squamous Cell Carcinoma			
PROSTATE (185)	**16**	**16**	**0**
Adenocarcinoma, NOS			
TESTIS (186)	**16**	**16**	**0**
Seminoma, NOS	6	6	0
Mixed Germ Cell Tumor	4	4	0
Non-Hodgkin's Lymphoma	3	3	0
Spermatocytic Seminoma	1	1	0
Endodermal Sinus Tumor	1	1	0
Embryonal Carcinoma, NOS	1	1	0
OTHER MALE GENITAL ORGANS (187)	**2**	**2**	**0**
Squamous Cell Carcinoma			
URINARY BLADDER (188)	**44**	**41**	**3**
Papillary Transitional Carcinoma	15	14	1
Transitional Cell Carcinoma	14	13	1
Squamous Cell Carcinoma	10	9	1
Adenocarcinoma, NOS	2	2	0
Carcinoma, NOS	2	2	0
Mucinous Adenocarcinoma	1	1	0

Primary Site Table con't

SITE (ICD-O CODE) HISTOLOGY	TOTAL CASES	MALES	FEMALES
KIDNEY (189)	**34**	**21**	**13**
Renal Cell Carcinoma	14	7	7
Nephroblastoma	8	5	3
Papillary Transitional Carcinoma	3	1	2
Squamous Cell Carcinoma	3	2	1
Carcinoma, NOS	3	3	0
Clear Cell Sarcoma	2	2	0
Malignant Neoplasm	1	1	0
EYE (190)	**9**	**6**	**3**
Retinoblastoma	4	3	1
Embryonal Rhabdomyosarcoma	3	2	1
Squamous Cell Carcinoma	1	1	0
Malignant Melanoma	1	0	1
BRAIN (191)	**75**	**52**	**23**
Astrocytoma	28	18	10
Medulloblastoma, NOS	18	15	3
Glioblastoma, NOS	14	8	6
Malignant Glioma	3	2	1
Ependymoma, NOS	3	2	1
Primitive Neuroectodermal Tumor	3	2	1
Desmoplastic Medulloblastoma	2	2	0
Pleomorphic Xanthoastrocytoma	1	1	0
Giant Cell Glioblastoma	1	1	0
Glioblastoma w/ Sarcomatous Component	1	1	0
Malignant Neoplasm	1	0	1
OTHER NERVOUS SYSTEM (192)	**12**	**7**	**5**
Astrocytoma, NOS	4	2	2
Chordoma	4	4	0
Ependymoma, NOS	2	0	2
Pilocytic Astrocytoma	1	0	1
Malignant Glioma	1	1	0
THYROID (193)	**110**	**29**	**81**
Papillary Carcinoma, NOS	85	23	62
Papillary & Follicular Adenocarcinoma	10	0	10
Carcinoma, Anaplastic Type	5	0	5
Follicular Adenocarcinoma	3	1	2
Medullary Carcinoma	2	2	0
Oxyphilic Adenocarcinoma	2	0	2
Papillary Squamous Cell Carcinoma	2	2	0
Non-Hodgkin's Lymphoma	1	1	0
OTHER ENDOCRINE GLANDS (194)	**7**	**2**	**5**
Neuroblastoma	5	2	3
Adrenal Cortical Carcinoma	1	0	1
Pineoblastoma	1	0	1
ILL-DEFINED SITES (195)	**11**	**4**	**7**
Non-Hodgkin's Lymphoma	5	3	2
Neuroblastoma	1	0	1
Endodermal Sinus Tumor	1	0	1
Squamous Cell Carcinoma	1	1	0
Adenocarcinoma, NOS	1	0	1
Carcinoma, NOS	1	0	1
Malignant Neoplasm	1	0	1

Primary Site Table con't

SITE (ICD-O CODE) HISTOLOGY	TOTAL CASES	MALES	FEMALES
LYMPH NODES, NON-HODGKIN'S LYMPHOMA (196)	**65**	**43**	**22**
(Excluding Extra-Nodal Lymphomas)			
Large Cell Lymphoma	35	22	13
Lymphoblastic Lymphoma	5	4	1
Malignant Lymphona, NOS	5	3	2
Burkitt's Lymphoma	4	4	0
Immunoblastic Lymphoma	3	3	0
Small Lymphocytic Lymphoma	3	2	1
Small Cleaved Cell Lymphoma	3	3	0
Mixed Small Cleaved & Large Cell Lymphoma	3	1	2
Lymphocytic Lymphoma	1	0	1
Small Cell Non-Cleaved Lymphoma	1	0	1
T-Cell Lymphoma, NOS	1	0	1
Non-Hodgkin's Lymphoma, NOS	1	1	0
LYMPH NODES, HODGKIN'S DISEASE (196)	**55**	**31**	**24**
Nodular Sclerosis	38	21	17
Mixed Cellularity	9	4	5
Hodgkin's Disease, NOS	5	5	0
Lymphocytic Predominance	2	1	1
Lymphocytic Depletion	1	0	1
PRIMARY UNKNOWN (199)	**34**	**19**	**15**
Adenocarcinoma, NOS	23	12	11
Carcinoma, NOS	4	3	1
Squamous Cell Carcinoma	3	2	1
Mucinous Adenocarcinoma	2	1	1
Granular Cell Carcinoma	1	0	1
Malignant Neoplasm	1	1	0

STAGE OF DISEASE AT DIAGNOSIS

Stage in any malignant process may be defined as the particular step, phase, or extent in a tumor's development which is one of the predictors for outcome and treatment selection. The microscopic appearance, extent, and biological behavior of a tumor as well as host factors play a part in prognosis and are therefore important in staging.

The SEER (Surveillance, Epidemiology, and End Results) Summary Staging Guide was utilized for all stageable cases. This system summarizes the disease categories into four general staging groups (i.e. in situ, localized, regional, and distant). Stage categories are based on a combination of clinical observations and operative-pathological evaluation.

Summary Staging Definitions:

IN SITU: Intraepithelial, noninvasive, noninfiltrating

LOCALIZED: Within organ

a. Invasive cancer confined to the organ of origin
b. Intraluminal extension where specified

REGIONAL: Beyond the organ of origin

a. By direct extension to adjacent organs/tissues
b. To regional lymph nodes
c. Both (a) and (b)

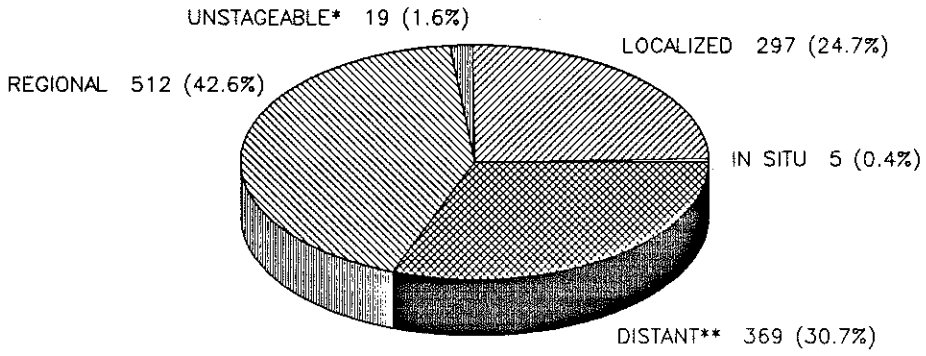
DISTANT: Direct extension or metastasis

a. Direct continuity to organs other than above
b. Discontinuous metastasis
c. To distant lymph nodes

Systemic diseases, i.e., leukemia and multiple myeloma and cases of unknown primary were disregarded in graphically illustrating the stages for all analytic cases seen at KFSH&RC in 1991. The 19 cases unstageable at diagnosis were those patients who refused further diagnostic workup or further workup is not possible due to the patients'state of health, like those terminal cases or those with co-morbid conditions.

FIGURE 10

DISTRIBUTION OF NEWLY DIAGNOSED CASES BY STAGE AT DIAGNOSIS – 1991 (TOTAL CASES = 1,202)

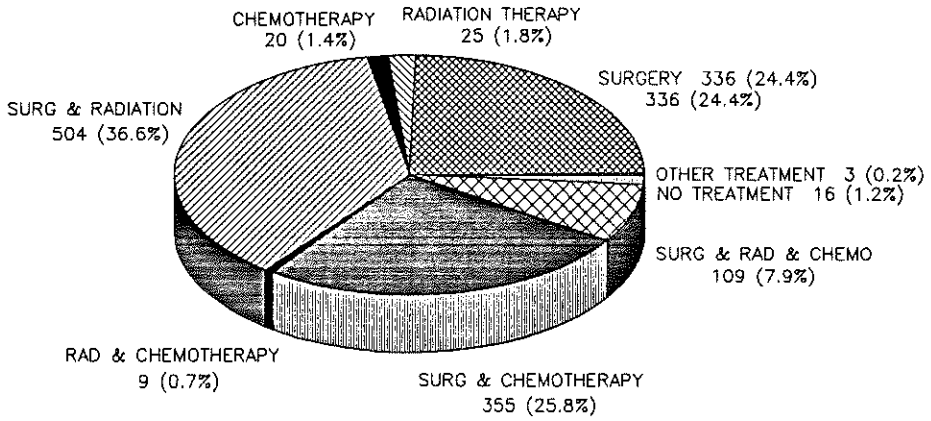


* EXCLUDES UNKNOWN PRIMARIES (24 CASES)

** EXCLUDES LEUKEMIA AND MULTIPLE MYELOMA (151 CASES)

FIGURE 11

DISTRIBUTION OF NEWLY DIAGNOSED CASES BY FIRST COURSE OF TREATMENT (SINGLY OR IN COMBINATION) 1991 (TOTAL CASES = 1,377)



A STUDY OF 875 CASES OF THYROID CANCER OBSERVED OVER A 15-YEAR PERIOD

M. Ahmed, B. Al-Saihati, W. Greer, A. Al-Nuaim, S. Bakheet, A.M. Abdulkareem, S. Ingemansson, S. El-Akkad, M. Akhtar, M.A. Ali, & N.R. Farid

Thyroid Cancer (TC) is a common malignancy encountered at KFSH&RC. Of 19,885 different malignant tumors seen during 1975-1989, there were 875 cases (4.4%) of TC. Of 1,374 endocrine tumors seen during the same period, 6.7% were thyroid neoplasms. TC represented 7.5% (618 cases) of all neoplasms in the females, second only to breast cancer.

All types of TC were seen, with papillary thyroid carcinoma (PC) being the commonest (79%) (Table A, Figure B). Aplastic, medullary, follicular (FC), malignant lymphoma and Hurtle cell cancer accounted for 5.4%, 5.3% 4.3%, 3.7% and 0.9%, respectively. The overall frequency of PC was similar in each of the 3rd, 4th and 5th decades (Figure A). The relative frequency (RF) of different types of TC was highest for PC with a ratio of 18:1 between PC and FC, which could be the highest ever reported.

There was a clearly progressive increase in the number of malignant thyroid tumors referred between 1975 and 1989 (Table B). Although this increase was evident for both sexes, it was more apparent for the females (Figure C). There was also a distinct increase ($p<0.01$) in the RF of PC from 76% (1975-1980) to 85% (1986-1989) (Table B) with a decrease in FC from 9% to 2.5% over the same time period.

TABLE A

HISTOLOGICAL CLASSIFICATION OF 928 CASES OF THYROID TUMORS (1985-1989)

HISTOLOGICAL TYPE	NUMBER	%
Benign Tumors (Adenomas)	53	5.7
Follicular Adenomas	(39)	(73.6)
Hurtle Cell Adenomas	(14)	(26.4)
Malignant Tumors	875	94.3
Papillary Carcinoma	(694)	(79.3)
Follicular Carcinoma	(38)	(4.3)
Medullary Carcinoma	(46)	(5.3)
Anaplastic Carcinoma	(47)	(5.4)
Hurtle Cell Carcinoma	(8)	(0.9)
Lymphoma	(32)	(3.7)
Unclassified	(10)	(1.1)
Grand Total	928	100.0

TABLE B

TRENDS IN RELATIVE FREQUENCY OF THYROID CANCER

HISTOLOGICAL TYPE	1975-1980		1981-1985		1986-1989	
	NO.	%	NO.	%	NO.	%
Papillary	93	76.2	234	76.7	367	85.3
Follicular	11	9.0	16	5.2	11	2.5
Anaplastic	11	9.0	16	5.2	20	4.6
Medullary	4	3.3	25	8.2	17	3.9
Lymphoma	3	2.5	14	4.6	15	3.5
Grand Total	122	100.0	305	100.0	430	100.0

FIGURE A

AGE AND SEX DISTRIBUTION OF PAPILLARY THYROID CARCINOMA (1975–1989)

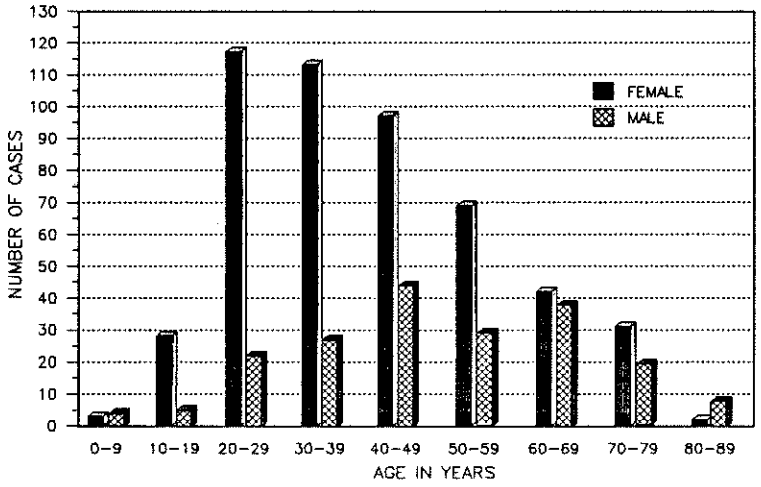


FIGURE B

SEX DISTRIBUTION OF THYROID CANCERS BY HISTOLOGICAL TYPE (1975–1989)

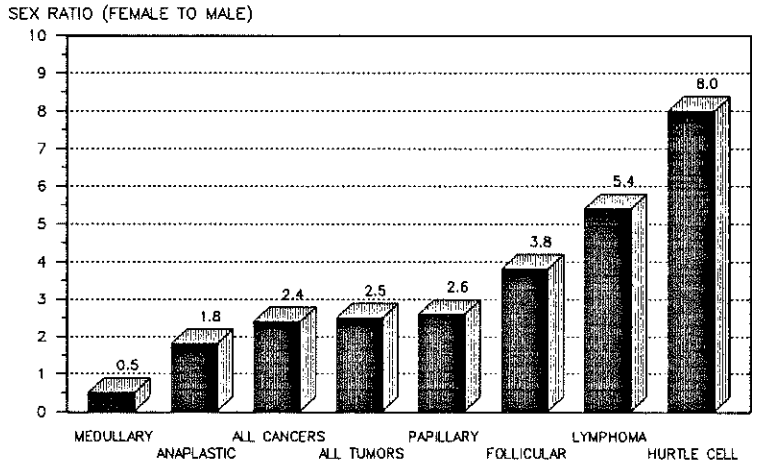
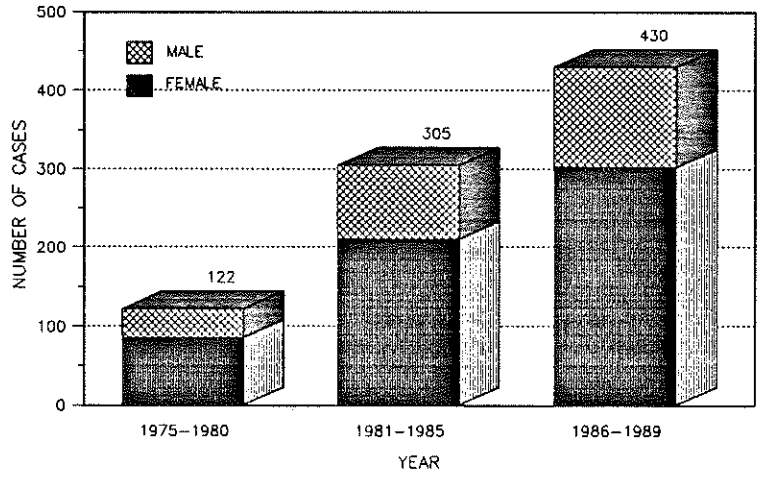


FIGURE C

TREND IN OCCURENCE OF MALIGNANT THYROID TUMORS BY SEX (1975–1989)



ACUTE LYMPHOBLASTIC LEUKAEMIA (ALL) IN ADULTS AT KING FAISAL SPECIALIST HOSPITAL & RESEARCH CENTRE, 1985-1991

Hugh Clink, TD, KSG, MB, BS, MRCPath, FRCPath

A total of 444 cases of ALL were registered over a seven year period at the King Faisal Specialist Hospital & Research Centre between 1985 and 1991. Of these 178 (40%) were adults aged 12 and over. The male/female ratio is 1.5 to 1 and the mean age is 18 years. Thus, 107 were males and 71 were females (Figure A).The average annual number of patients being registered has not tended to change a great deal, being around 25 (Figure B). The majority of patients were Saudi Arabian (84.8%), the remainder coming from Lebanon, Syria, Palestine and Jordan (6.2%), Yemen (5%), India/Pakistan (2%), other Arab origin (1.1%) and Africa (1%).

The referral pattern largely reflects the population density and medical care provision in the country. Hence, the largest number is referred from the Central Region (36.4%) followed by Mecca (19.1%, and the Eastern Province at (16.8%) (Table A). Eighty one percent of the patients were diagnosed elsewhere but treated at the King Faisal Specialist Hospital & Research Centre. Nine percent were diagnosed and treated elsewhere and 10% diagnosed and treated here (Figure C).

TABLE A

DISTRIBUTION Of ADULT ALL CASES BY REGION
1985-1991 (N = 178)

REGION	TOTAL	PCT	REGION	TOTAL	PCT
ASIR	15	8.4	MAKKAH	34	19.1
AL BAHA	4	2.2	NAJRAN	5	2.8
EASTERN PROVINCE	30	16.8	NORTHERN PROVINCE	0	0.0
HAIL	3	1.7	AL QASSIM	6	3.4
AL JAWF	0	0.0	AL QURAYYAT	1	0.6
JIZAN	8	4.5	RIYADH	47	26.4
AL MEDINA	20	11.2	TABUK	0	0.0
OTHERS	5	2.8			

Of the adult cases, one hundred and sixty two out of one hundred and seventy eight (91%) of the cases were considered to be analytic which is defined as those cases first diagnosed at the King Faisal Specialist Hospital & Research Centre or who received all or part of their first course treatment at the institution. Sixteen patients were non-analytic (9%), since they were diagnosed and treated elsewhere. Seventy four (41.6%) remain alive and 104 (58.4%) are known to have died. The 74 living patients include thirteen foreign residents and five non-analytic cases. Eighteen patients have been lost to follow-up and therefore the number known to be alive is 38 at their last contact.

The French-American-British Cooperative Group (FAB) classification showed at 53.4% were L1, 18.5% L2, and 7.9% L3, which is about 2.5 times the expected percentage in other series where the figure is around 3% (Table B). However, 20.2% of the patients were not so classified (Figure D). The median survival for the 162 analytic cases (4) is approximately 1.6 years, and 30% of patients survive beyond four years (Figure E).

The exact figures for the distribution of disease in Saudi Arabia are not available, but should be in future with the advent of a nationwide cancer registry. At the Tumour Registry at the King Faisal Specialist Hospital & Research Centre between 1975 and 1991 acute lymphoblastic leukaemia rated fourteenth in incidence at 3.4%. In 1991 specifically it was eighth at 4.1% and of these it was the sixth commonest registered disease in males and the twelfth in females. There is a preponderance of male patients during the study period.

TABLE B

DISTRIBUTION BY FAB CLASSIFICATION

FAB CLASS	MORPHOLOGY	TOTAL	PERCENT
L1	Small homogeneous cells, with inconspicuous nuclei and scant neoplasm	95	53.4%
L2	Large heterogenous lymphocytes, with indented nuclei and prominent nucleoi	33	18.5%
L3	Large homogeneous cells; cells characteristic of Burkitt's lymphoma prominent; vacuolated cytoplasm and nucleoli	14	7.9%
LX	Not classified	36	20.2%

In adjacent countries, Kuwait probably has the most developed cancer registry. In 1981 the incidence overall of ALL was 4.4 and 4.3 per 100,000 population. However, in Kuwaitis alone the incidences are 0.7 and 1.1 respectively which compares with elsewhere in the world where the expected incidence is probably between 1 and 2 per 100,000 population, and the higher apparent incidence may be reflecting the extraneous expatriot, mixed population, although this is difficult to ascertain.

During this study period 38 patients received a bone marrow transplant procedure and of these 15 (40%) remain alive with a range of four months to seven years. The treatment and diagnostic procedures have improved considerably since 1975 as have the results of treatment of patients with acute lymphoblastic leukaemia. Between 1975 and 1987 there were 187 patients registered of whom 28 remained alive at January 1987.

A group of patients, however, has been studied from 1987 to 1991, all of whom had the same treatment protocol. Analyzable patients number 86 and once again the majority of patients were referred from the Central Region with rather fewer from the Eastern Province, probably reflecting the greater capabilities of that Region.

There is no indication that the presenting features, the distribution of the FAB cytological classification or cytogenetic abnormalities, when available, are different from the behaviour of the disease in the West. It is probable, however, that the time of referral may be later although this would be difficult to ascertain.

Out of the 86 patients analyzable 34 remain alive (30%). The median survival is 1.67 years, but the probability of three years survival is 30%. Eighteen of these patients have received a bone marrow transplant procedure and are alive. Non compliance and loss to follow up remain a problem area.

CONCLUSIONS

During the study period 1985-1991, the number of patients over 12 years old, registered with Acute Lymphoblastic Leukaemia has not changed a great deal from about 25 per annum. However, more patients who have been treated outside the King Faisal Specialist Hospital & Research Centre have been referred for bone marrow transplantation and this pattern is likely to continue in the future. The population of the Kingdom of Saudi Arabia is growing rapidly and therefore the number of patients in general must be expected to increase.

The facilities are undoubtedly excellent for those patients lucky enough to be referred. The hospital is constantly being upgraded and reviewed with a view to improving the efficiency, but it is quite clear that other centres must be developed possibly not for transplantation, but certainly for induction and consolidation chemotherapy, preferably using a Kingdom-wide common strategy which would enable an indepth study of the disease to be made and produce valuable information.

FIGURE A
DISTRIBUTION OF ADULT ALL CASES BY AGE AT DIAGNOSIS
1985 – 1991 (N=178)

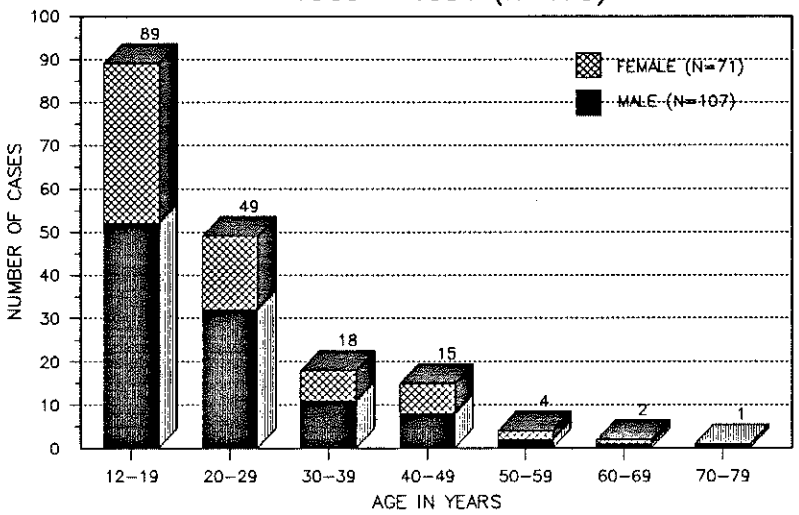


FIGURE B
DISTRIBUTION OF ADULT ALL CASES BY YEAR OF ADMISSION
1985 – 1991 (N=178)

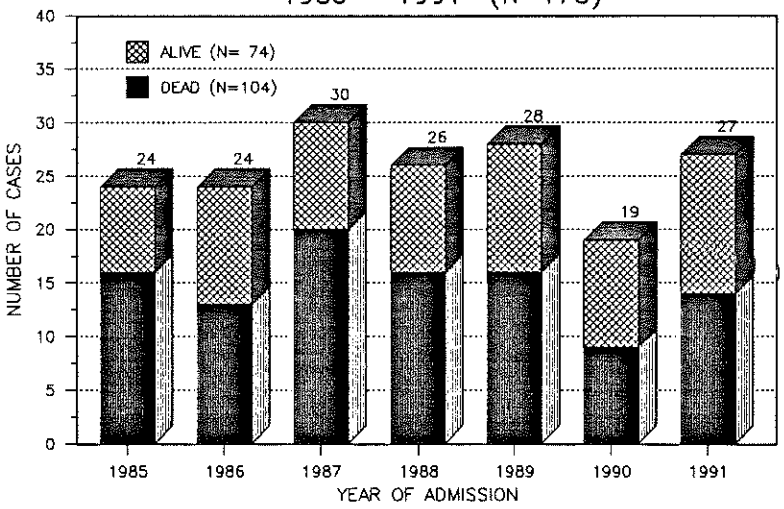


FIGURE C

DISTRIBUTION OF ADULT ALL CASES BY CLASS OF CASE
1985 – 1991 (N = 178)

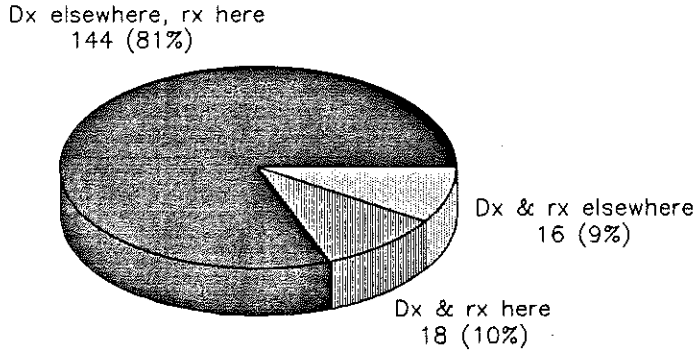


FIGURE D

DISTRIBUTION OF ADULT ALL CASES BY FAB CLASSIFICATION
1985 – 1991 (N = 178)

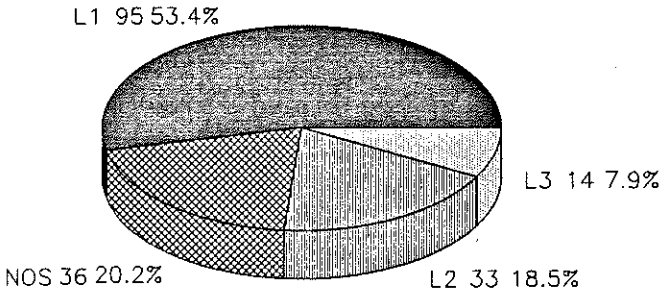
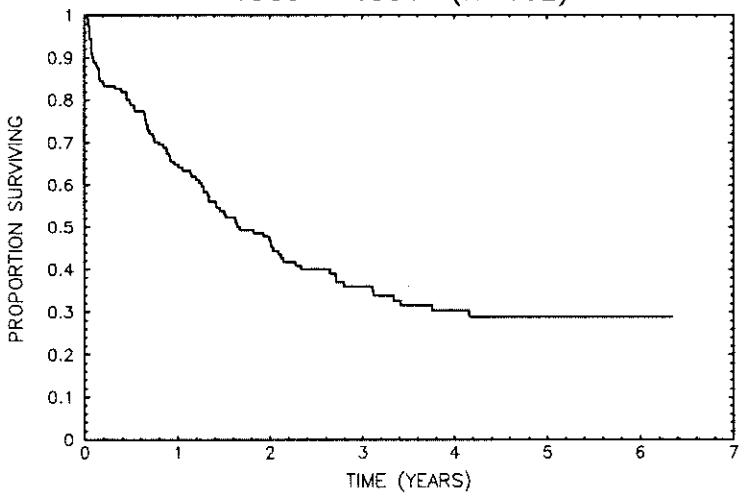


FIGURE E

SURVIVAL FOR ADULT ALL NEWLY DIAGNOSED CASES
1985 – 1991 (N=162)



ACUTE MYELOID LEUKAEMIA (AML) IN ADULTS AT KING FAISAL SPECIALIST HOSPITAL & RESEARCH CENTRE, 1985-1991

David Spence, BSc(Hons), MB, ChB, FRCP(Ed.), FRCPath

A total of 322 AML cases were registered at KFSH&RC between 1985 and 1991, including new patients, and those already treated. Adult patients aged 12 and over were 78% of the total (251) of which 224 were first diagnosed and/or received their first course of treatment at KFSH&RC. The male/female ratio was 1.14 (Figure A). Most patients were Saudi Arabian (89.2%). The regional referral pattern was similar to that for other malignancies (Table A) with 31.4% being from Central Region, but most patients were referred from the other population centers throughout the Kingdom. A gradual increase in annual registrations has occurred over the study period, from 30 in 1985 to 36 in 1991, which included the Gulf War period (Figure B). Most patients (81.3%) were diagnosed elsewhere, but treated completely at KFSH&RC. Eight percent were first diagnosed at KFSH&RC, and 10.7% were both diagnosed and initially treated elsewhere.

Eighty five adult patients remain alive (33.9%). Of these, 45 out of 67 Saudi cases evaluated in the last 15 months are known to be alive. Of the remainder, two were terminal at last follow up, and are presumed dead; 16 were alive with disease, and 4 alive without disease at loss to follow up. The overall survival is presented in Figure C; 22% of the patients survive beyond five years.

In the absence of national or regional population census data in Saudi Arabia, it has not been possible to accurately determine the incidence of any particular disease. The leukaemias overall (acute and chronic), in all age groups, between 1975 and 1990 were the commonest malignant disorders presenting to KFSH&RC (7.8% of the total), with AML and its variants comprising 27.5% of leukaemias[1]. In neighbouring Kuwait, the age standardized incidence of AML amongst Kuwaiti nationals is 1.6 per 100,000/year for males and 1.3 per 100,000 per year for females. The corresponding data for England and Wales are 1.7 and 1.3, for New York, USA, 2.4 and 1.9 and for Israeli Jews 1.9 and 1.5[2].

AML is predominantly a disease of the later years of life, the U.K. annual incidence per 100,000 being 0.64 (male), and 0.43 (female) in the 15-24 age group, but 8.02 (male) and 6.78 (female) in the 65-74 age group[3]. The incidence rises exponentially after age 55. It follows that the actual incidence in countries such as the U.K. and U.S. where the median age of the population is high (approximately 37 years), will be higher than in Saudi Arabia, where the median age is less (approximately 15 years).

The population of the Kingdom of Saudi Arabia is estimated to be 14 million. It is likely that the number of new cases of AML in adults per year lies between 150-200.

The laboratory and clinical features at diagnosis have been studied for a separate cohort of 196 patients aged 12 and over presenting between 1981 and 1987[4]. The following features were notable:

1. Patients from Asir had significantly more splenomegaly and lower haemoglobin at presentation. This is likely to be related to the occurrence of malarial infection in that region, with frequent splenomegaly among the population.
2. The morphologic subtype M4 FAB classification according to the study by Bennett[5] was common (60%). This has been confirmed in a study of diagnostic concordance[6] from KFSH&RC. In the cohort presenting between 1985-1991, the FAB subtypes were; M1 9.2%, M2 17.1%, M3 11.2%, M4 43.4%, M5 12.4%, M6 0.8% and unclassified 6.0% (Table B).
3. Chromosome abnormalities were similar in type and frequency to those from elsewhere, but the translocation t (8;21) was found among the M4 sub-group, as well as the M2 sub-group with which it is associated in the West.
4. The clinical features at diagnosis could not be demonstrated to be more severe than amongst patients presenting in the West using a clinical scoring system.
5. Seven of the women were pregnant (11% of those in the childbearing years). One first trimester pregnancy ended in miscarriage, three in second or third trimester out of six resulted in successful delivery.

6. Out of 196 patients, 15 are still alive - 7 after allogeneic BMT, 5 after autologous BMT and only 3 without BMT.

With the expected rapid population growth, and the increase in the proportion of the population over the age of 50 due to health care improvements, the number of cases of AML in the Kingdom of Saudi Arabia may be expected to dramatically increase in the relatively near future. King Faisal Specialist Hospital & Research Centre remains the main centre for treatment, and facilities in the hospital are constantly being upgraded, however, it is unlikely that a single centre will be able to cope with demand, and it will be necessary for other centres to be developed, preferably in other cities, as a matter of urgency.

TABLE A

PERCENT FREQUENCY BY REGIONS

REGION	Adult AML 1985-1991 (251 cases)	All Reportable Cases 1990 (1,905 cases)	All Reportable Cases 1975-1990 (21,945 cases)
Central	31.4%	30.5%	32.4%
Western	28.7%	24.5%	25.9%
Southern	20.7%	19.0%	15.0%
Eastern	12.4%	14.8%	12.6%
Northern	5.2%	7.9%	6.1%
Other	1.6%	3.3%	8.0%

TABLE B

DISTRIBUTION BY FAB CLASSIFICATION

FAB CLASS	SUBTYPE	TOTAL	PERCENT
M1	Acute undifferentiated	23	9.2%
M2	AML with differentiation	43	17.1%
M3	Acute promyelocytic	28	11.2%
M4	Acute myelomonocytic	109	43.4%
M5	Acute monocytic	31	12.4%
M6	Acute erythroleukemia	2	0.8%
M7	Acute megakaryocytic	0	0.0%
MX	Not classified	15	6.0%

References

1. Annual Report of The Tumour Registry (1990), King Faisal Specialist Hospital & Research, Centre, Riyadh, Kingdom of Saudi Arabia.
2. Muir C, Waterhouse J, Mack T et al (Eds) (1987). Cancer Incidence in Five Continents, vol. V, Lyon IARC
3. Cartwright R A, Alexander F E, McKinney P A et al (1990). Leukaemia and Lymphoma. An Atlas of Distribution within Areas of England and Wales 1984-88. London: Leukaemia Research Fund.
4. Spence D G, Devol E, Clink H M et al (in preparation). Adult Acute Myeloid leukemia in Saudi Arabia: Presenting Features and Outcome.
5. Bennett J M, Catovsky D, Daniel M T, et al (1976). Proposals for the classification of the acute leukaemias: French-American-British Cooperative Group: British Journal of Haematology: 33 : 451-458.
6. Spence D G, Roberts G T, Devol E, et al (1988). Acute Myeloid Leukaemia in Saudi Arabia : Morphologic Classification using FAB Subgroup : Annals Saudi Medicine 8 : 179-184.

FIGURE A
DISTRIBUTION OF ADULT AML CASES BY AGE AT DIAGNOSIS
1985 – 1991 (N=251)

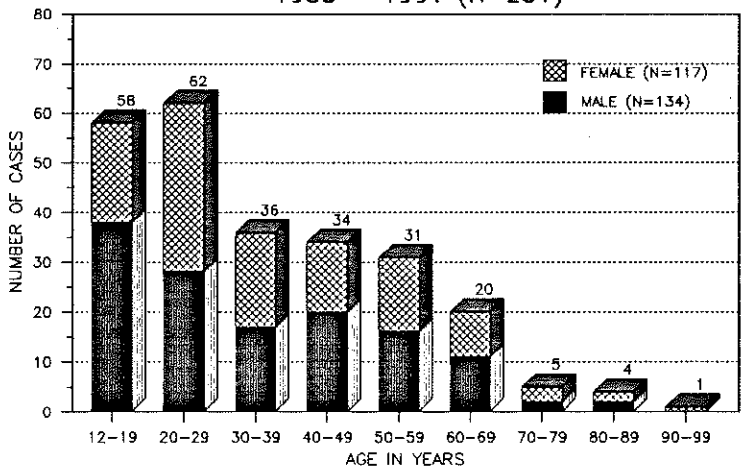


FIGURE B
DISTRIBUTION OF ADULT AML CASES BY YEAR OF ADMISSION
1985 – 1991 (N=251)

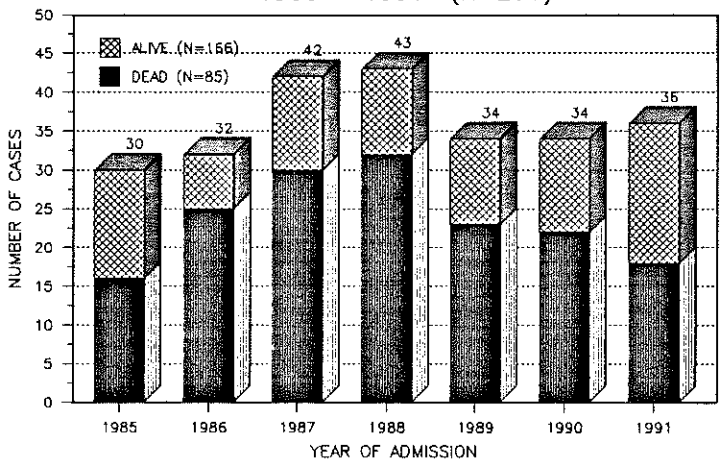
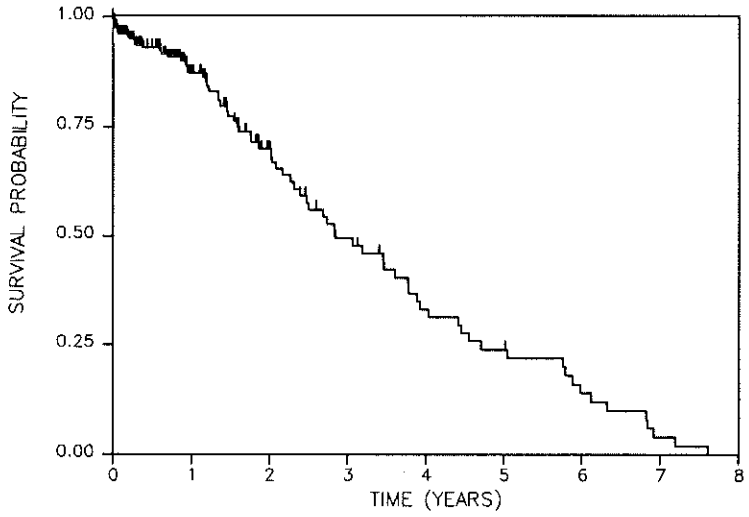


FIGURE C
SURVIVAL FOR ADULT AML NEWLY DIAGNOSED CASES
1985 – 1991 (N=224)



APPENDIX A

1991 SPECIAL STUDY REQUESTS FROM TUMOR REGISTRY DATA

*Publication **KFSH Presentation ***Outside KFSH Presentation

January	
Thyroid Cases By Histology & Treatment (1975-1989)*	Dr. S. El Akkad
Breast Cancer Patients Who Are Dead (MR Numbers)	Dr. A. Ezzat
February	
Hurtle Cell Carcinoma, All Details (1975-1989)**	Dr. M. Fouda
Thyroid Cases By Histology, Sex & Age (1975-1989)**	Dr. M. Fouda
March	
Thyroid Follicular Carcinoma (MR Numbers) (1975-1989)	Dr. B. Al Saihati
Update on Osteogenic Sarcoma (1989-1991)	Dr. R. Wierzbicki
AML Patients 12 Years and Over	Dr. H. Clink
April	
AML Patients 12 Years and Below (1988-1991)	Dr. D. Spence
Seminoma Cases (1975-1991)	Dr. A. Bedikian
May	
Patients with Multiple Primaries (1975-1991)**	Dr. A. Bedikian
Thyroid Cancer Cases (July 1989-1991)	Dr. S. Bakheet
Acute Leukemia, Pediatrics vs Adults, last 20 cases	Ms. J. Al Dihan
NHL, Pediatrics vs Adults, last 20 cases	Ms. J. Al Dihan
Neuroblastoma, last 20 cases	Ms. J. Al Dihan
Osteogenic Sarcoma, last 20 cases	Ms. J. Al Dihan
Testicular Carcinoma, last 20 cases	Ms. J. Al Dihan
Mucous AdenoCa & Signet Ring Cell Ca of Colon & Rectum (1975-1991)	Dr. A. Bedikian
June	
Dr. Bedikian's Patients Receiving Chemo (1990-1991)	Dr. A. Bedikian
Patients Who Had Radiation Therapy & Are Dead	Ms. H. Dobson
July	
Number of Gyn Cancer Cases vs Total Female ($\geq$20 yrs) vs Total Cancer Cases (1975-1989)	Dr. El Senoussi
Soft Tissue, Ewing's, Osteogenic Sarcoma & Rhabdomyosarcoma (1980-1991) (MR Numbers)**	Dr. R. Wierzbicki
Hepatoma Cases (1989-1991) (MR Numbers)	Dr. R. Wierzbicki
Head and Neck Cancer Cases (1989-1991) (MR Numbers)	Dr. R. Wierzbicki
August	
Pineal Body Tumors (1975-1991) (MR Numbers)	Dr. S. El Akkad
Bone Sarcoma Cases, especially H&N (1980-1991)**	Dr. Z. Mahasin
Thyroid Cancer Cases (July 1989-1990) (MR Numbers)***	Dr. I. Al Ahmadi
Medulloblastoma Cases (1980-1991) (MR Numbers)	Dr. R. Wierzbicki
Synovial Cell Sarcoma Cases By Treatment(1980-1990)**	Dr. R. Asirvatham
Ewing's Sarcoma Cases With Surgery (1980-1990)**	Dr. R. Asirvatham

September	
Nasopharyngeal Cancer Cases By Sex, Age & Geographic Region (last 15 years)**	Dr. M. Arafah
Breast Cancer Cases By Age, Sex & Stage (1975-1990)***	Dr. A.Abdulkareem
Thyroid Cancer Cases By Age, Sex, Geographic Region & Histology (1975-1990)**	Dr. H. Al Hindi
Head and Neck Rhabdomyosarcoma Cases (1975-1991)**	Dr. M. Abuzeid
October	
Breast Cancer Patients Who Were Pregnant at Time of Diagnosis or Treatment (1980-1990)***	Dr. A. Ezzat
Hodgkin's Disease & NHL, Pediatrics vs Adults By Age, Sex, Stage, with Rad Therapy, Chemo or Both***	Dr. S. El Akkad
Breast Cancer Cases with Adjuvant FAC, CMF, Tamoxifen and Those with Inflammatory Disease (1975-1990)***	Dr. A. Ezzat
Desmoid and Aggressive Fibromatosis (1979-1990)**	Dr. El Senoussi
November	
Sarcoma Cases (1990-1991) (MR Numbers)**	Ms. V. Saleh
Oral Cancer Cases By Site, Age, Sex, Histology and Stage at Diagnosis*	Dr. W. Allard
ALL Pediatric Cases (1989-1991)	Dr. A. Martins
AML Pediatric Cases (1989-1991)	Dr. A. Martins
Sarcoma of the Cervix, Vagina & Vulva (1976-1991)*	Dr. Y. Bakri
December	
Sarcoma Cases Referred to Pain Clinic (1989-1991)**	Dr. A. El Warith
Cystosarcoma Phyllodes Breast Cases (1975-1991)**	Dr. A. Ezzat

APPENDIX B

1991 Tumor Committee Members

S. El Akkad, M.D., Radiation Oncology
W. Allard, D.M.D., Dentistry
M. A. Ali, M.D., Pathology **
J. Atwood, C.T.R., Tumor Registry
Y. Bakri, M.D., Obsterics/Gynecology
H. Al Daig, CHIC
P. Ernst, M.D., Medical Hematology*
M. Hannan, Ph.D., B&MR Research Centre
P. McArthur, M.D., Surgery
L. NouNou, Social Services
A. Padmos, M.D., Oncology
R. Pavillard, M.D., Quality Assurance
S. Al Sedairy, Ph.D., B&MR Research Centre
J.O. Sieck, M.D., Medicine
O. B. Te, C.T.R., Tumor Registry

* Tumor Committee Chairman
** Deputy Chairman

APPENDIX C

1991 SUMMARY OF TUMOR CONFERENCE TOPICS

28 Apr	Recent Developments on Chemotherapy of Colon Cancer	Dr. A. Bedikian
05 May	Beta Thalassemia - Current Trends and Future Prospects	Dr. A. Martins
02 June	Pediatric Hodgkin's Disease, Involved Field Radiotherapy vs Involved Radiotherapy & Chemotherapy	Dr. S. El-Badawy
16 June	Neo-Adjuvant Chemotherapy & Radiation Therapy for Invasive Bladder Cancer	Dr. S. El-Badawy
	Sequential Half-Body Irradiation As Systemic Treatment of NHL Stage 3 & 4	Dr. s. El-Badawy
30 June	Hodgkin's Disease & Second Malignancy	Dr. A Bedikian
21 July	Study on Pharmacokinetics & Cellular Membrane Transport of Anthracyclines	Dr. M. Dalmark
04 Aug	Campath Monoclonal Antibodies and BMT	Dr. D. Spence
18 Aug	Minimal Residual Disease	Dr. A. Martins
25 Aug	Carbon Monoxide Diffusing Capacity Is A Poor Predictor of Clinically Significant Bleomycin Lung	Dr. P. Dady
01 Sept	Cancer Trends in United Arab Emirates	Dr. I. Ezzat
15 Sept	Immunosuppresion Mediated Through Human Immunoglobulins	Dr. P. Ernst
22 Sept	Trilateral Retinoblastoma	Dr. K. Sackey
29 Sept	Standardization of Workup & Treatment of Carcinoma of the Larynx	Dr. P. McArthur
20 Oct	Central Nervous System - Leukemia	Drs. Clink, Musa, Al Fi'ar
27 Oct	ABMT in ANLL & Neuroblastoma	Dr. H. El-Solh
03 Nov	Pain Relief In Advanced Cancer	Dr. D. Doyle
17 Nov	Update on Treatment of Childhood ALL	Dr. A. Martins
24 Nov	Standardization of Treatment for Brain Tumors	Drs. Kanaan, Cristophersen, Wierzbicki
01 Dec	Hodgkin's Disease - Stage III, MD Anderson Experience	Dr. L. Fuller
15 Dec	Standardization of Breast Cancer Management	Drs. Abdulkareem, El-Senoussi, Ezzat
29 Dec	Cervix Cancer - Part I	Dr. M. El-Senoussi

Tumor Conference Moderator: Dr. Antonio Martins

V. GLOSSARY OF TERMS

Accessioned: Patients are entered into the Tumor Registry by the year in which they were first seen at KFSH&RC for each primary cancer.

Age of Patient: Recorded in completed years at the time of diagnosis for analytic cases. For nonanalytic cases, it is reported at age first entered into the Tumor Registry.

Analytic Cases: Cases which were first diagnosed and/or received all or part of their first course of treatment at KFSH&RC.

Non-Analytic Cases: Cases diagnosed elsewhere and received all of their first course of treatment elsewhere.

Case: A diagnosis or finished abstract.

Patient: An individual who has cancer. A patient who has more than one primary will be reported as multiple cases.

Stage of Disease: Determined at the time of the first course of treatment.

SEER Summary Staging Guide:

In Situ: Tumor meets all microscopic criteria for malignancy except invasion.

Local: Tumor is confined to organ of origin.

Regional: Tumor has spread by direct extension to immediately adjacent organs and/or lymph nodes and appears to have spread no further.

Distant: Tumor has spread beyond immediately adjacent organs or tissues by direct extension and/or has either developed secondary or metastatic tumors, metastasized to distant lymph nodes or has been determined to be systemic in origin.

Unknown: Tumor is said to be unknown when the stage cannot be determined by the medical record or a medical authority.

American Joint Committee on Cancer - TNM Staging: A classification scheme based on the premise that cancers of similar histology or site of origin share similar patterns of growth and extension:

T+N+M = Stage
(T) tumor size
(N) regional node involvement
(M) distant metastases

First Course of Treatment: The initial tumor-directed treatment or series of treatments, usually initiated within four months after diagnosis.

Crude Relative Frequency: The proportion of a given cancer in relation to all cases in a clinical or pathological series.