



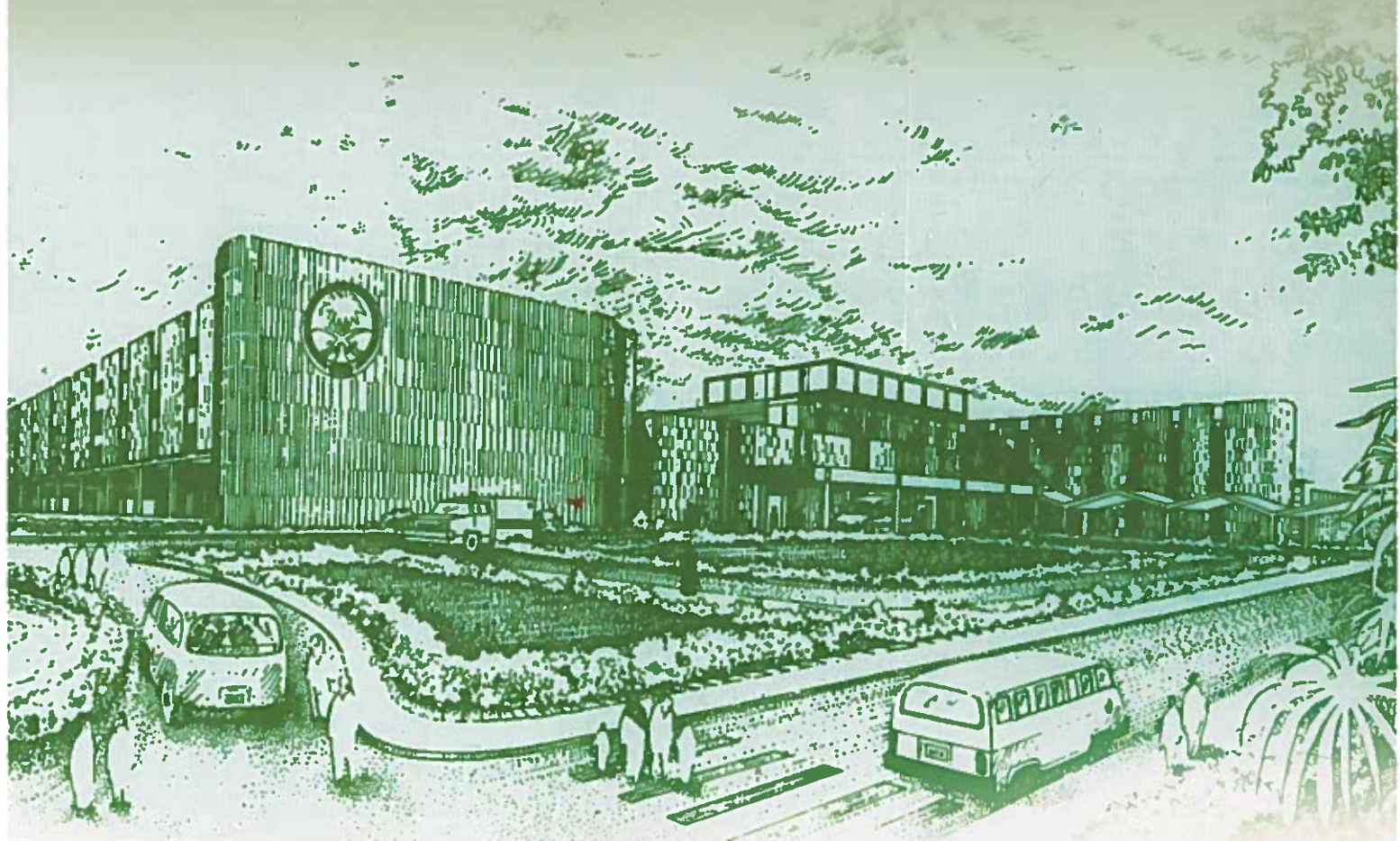
مستشفى الملك فيصل التخصصي ومركز الأبحاث
King Faisal Specialist Hospital & Research Centre
Gen. Org. مؤسسة عامة

Oncology Centre
Research Unit

2008

TUMOR REGISTRY

Annual Report





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Oncology Centre
Research Unit

2008
TUMOR REGISTRY
ANNUAL REPORT

2008 Tumor Registry Annual Report

Annual Report Prepared by the Staff of the Tumor Registry
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June 2010

ACKNOWLEDGEMENTS

The cancer program is a combined effort of the extraordinary team of professionals at the King Faisal Specialist Hospital and Research Centre. It is not possible to enumerate all those involved in providing hope and healing to cancer patients and their families. The Tumor Registry staff greatly appreciates the tireless efforts of all the caring professionals from all disciplines for their dedication, commitment and collaboration to ensure highest standards in community outreach, clinical trials, staff education, patient care improvement, outcome analysis and tumor registry quality.

The clinical expertise and proficiency demonstrated by our team, coupled with an incredible dedication to patient care and service excellence, allows the Oncology Centre to achieve remarkable outcomes and to consistently exceed the needs and expectations of patients and their families.

The information in this report includes cancer incidence, site, extent of disease at diagnosis, treatment, cancer trends, and outcomes to better understand the changing patterns of cancer in the region.

The following departments have assisted throughout the year and without their support this report would not have been possible. The Tumor Registry staff takes pride in acknowledging these departments:

- Department of Pathology and Laboratory Medicine
- Medical Records Services
- Information Technology Affairs
- Department of Pediatric Hematology/Oncology
- Central Data Unit, Dept of Ped Hem/Onc
- Saudi Cancer Registry
- Home Health Care
- Oncology Centre

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INTRODUCTION

We are pleased to present the 2008 Tumor Registry Annual Report of the Oncology Centre at King Faisal Specialist Hospital and Research Centre, Riyadh. During 2008, the Tumor Registry abstracted 2,510 new cancer cases. Two thousand two hundred and ninety three cases were analytic (first diagnosed and/or received all or part of their first course of treatment at KFSH&RC), and 217 were non-analytic (diagnosed elsewhere and received all of their first course of treatment elsewhere), with the highest incidence of leukemia, NHL, and colorectal cancer among males and carcinomas of breast, thyroid, and leukemia among females. The Tumor Registry database now includes over 68,000 cases and most of these cases are reported to the Saudi Cancer Registry (SCR). Our cases constitute about 23% of the total cancer cases reported to SCR by all the hospitals in the Kingdom.

Oncology Centre continues to be the center of excellence for comprehensive cancer treatment, education and training and clinical research. We continue to run a robust clinical trials program and remain a member of Southwest Oncology Group (SWOG), Radiation Therapy Oncology Group (RTOG) and Canadian Blood and Marrow Transplantation Group (CBMTG). KFSH&RC's Oncology Centre has spearheaded the regional research consortiums, notably, Gulf Oncology Regional Group (GORG) and Eastern Mediterranean Blood and Marrow Transplantation (EMBMT) Group.

Our radiation oncology offers most advanced radiation therapy technologies, offering patients highly precise and effective treatment options. It also offers IMRT and has embarked on IGRT, Helical Tomotherapy, Robotic Cyberknife and 4-D CT Simulator. Our Hematopoietic Stem Cell Transplantation program continues to be among the largest in the EMRO region. Our breast cancer program has been designated as Center of Excellence.

Our outreach clinics provide cancer care and the *Cancer Support Group* remains an integral part of the cancer program. Health Education section is currently the facilitators for this group that meets monthly. The Oncology Centre has significantly expanded educational materials and continues to advocate cancer awareness through local and regional events.

As we look to the future of cancer care in the Kingdom of Saudi Arabia, KFSH&RC will continue to expand cancer treatment programs. We will continue to participate in clinical and translational research, investigate new treatment modalities, and provide specialized medical education to optimize cancer care. The number of cancer survivors continues to grow due to effective cancer treatments.

This message would not be complete without thanking the dedicated staff of the Tumor Registry for their hard work throughout the year and for their contributions to this Annual Report. Special thanks are due to the outstanding staff of the Medical Records, a key component of the Registry's continued achievement.

Tumor Registry is the basis for monitoring the quality of care. This report can also be accessed online via Oncology Centre's website at www.kfshrc.edu.sa

Your comments and suggestions are always welcome to improve our future reports and can be sent to chaudhri@kfshrc.edu.sa or ofelia@kfshrc.edu.sa.



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I. KING FAISAL SPECIALIST HOSPITAL & RESEARCH CENTRE TUMOR REGISTRY

The King Faisal Specialist Hospital and Research Centre (KFSH&RC) opened in June 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 care hospital for Oncology and the principal center for cancer therapy in Saudi Arabia.

The mission of the Tumor Registry, a hospital-wide data system, is to describe the burden of cancer in KFSH&RC by collecting complete and high quality cancer data and compiling timely statistics so that data-driven, evidence-based cancer prevention and control programs can be implemented to reduce cancer morbidity and mortality.

The Registry was established to meet one of the requirements for an Approved Cancer Program of the American College of Surgeons (ACoS). The database now includes 64,744 malignant cases seen at KFSH&RC from June 1975 through December 31, 2008, as well as cases seen at the Children's Cancer Centre since its opening in March 1997.

The Registry is primarily staffed with certified tumor registrars who support the database in case ascertainment, abstracting, follow up and statistical analyses. The basic source document is the patient's medical record from which pertinent information is abstracted for use in the Registry. The electronic data system used was the Cansur 3.0 designed by the ACoS, for cases seen from 1975 to 2007. Starting with 2008 cases, the software being used is CNExT, developed by C/NET Solutions which is part of the U.S. Public Health Institute. Information on each diagnosed cancer case is entered and stored in the software.

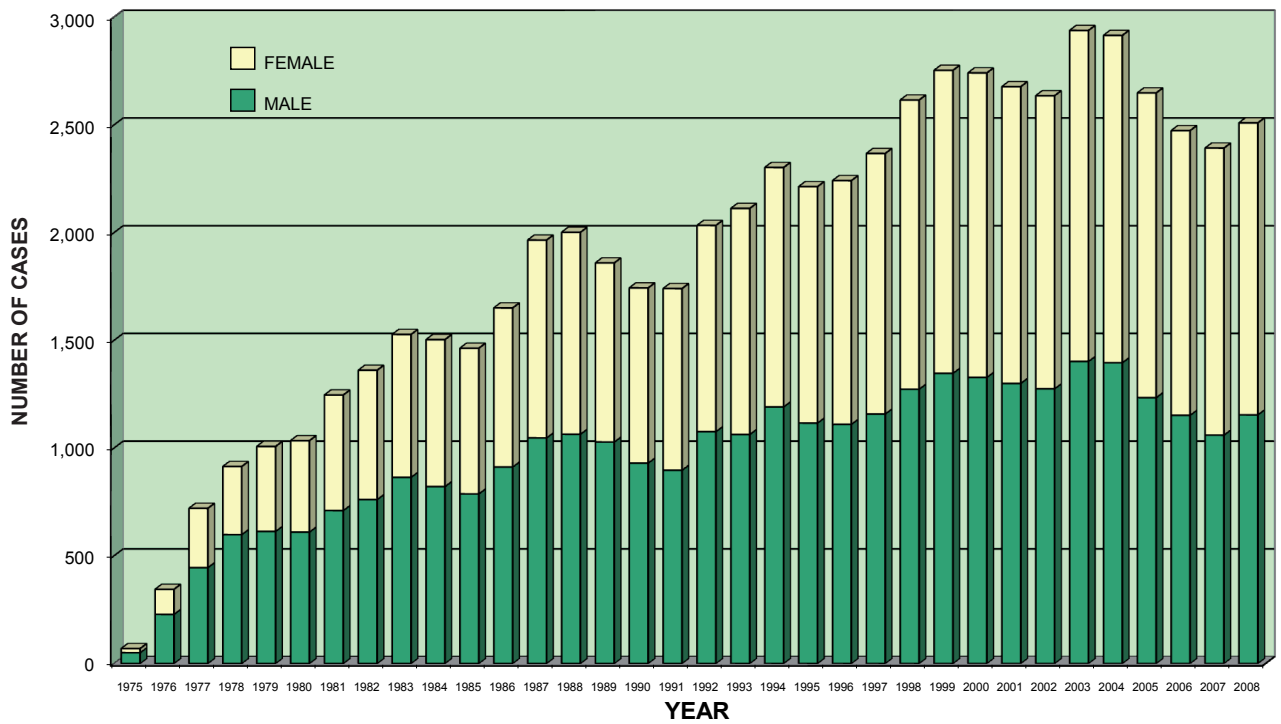
The data maintained in the Tumor Registry provides the statistics for the publication of the KFSH&RC Annual Report which summarizes the hospital's cancer experience. The data also supports a wide variety of reports at the request of physicians, researchers and ancillary personnel. These reports support patient management and outcome, basic and clinical research investigations, educational publications and presentations, and resource utilization. In 2008, the Tumor Registry supported 15 data requests (see Appendix for a listing of requests for Tumor Registry data). It also identified and reported to the Saudi Cancer Registry 2,504 new cases seen in 2008 that were diagnosed on or after 01 January 1994.

II. KFSH&RC CANCER PATIENT POPULATION

A total of 2,510 cases were accessioned in 2008, with 1,155 males and 1,355 females or a male/female ratio of 0.8:1. This represents a 4.9% increase from 2007.

FIGURE 1

DISTRIBUTION OF CASES ACCESSIONED BY YEAR
1975 - 2008 (TOTAL CASES = 64,744)



From the opening of the hospital (mid 1975) until December 2008, 64,744 cancer cases were registered (33,034 males and 31,710 females) with a male/female ratio of 1.04:1. There were 8,581 (13.2%) pediatric cases (0 to 14 years of age) and 56,163 (86.8%) adults (15 years old and above). About the same proportion was noted in 2008, 13.4% (337) for pediatrics and 86.6% (2,173) for adults.

TABLE 1

CASES SEEN AT KFSH&RC (MALE/FEMALE & PEDIATRICS/ADULTS) BY 5-YEAR PERIOD 1975 - 2008

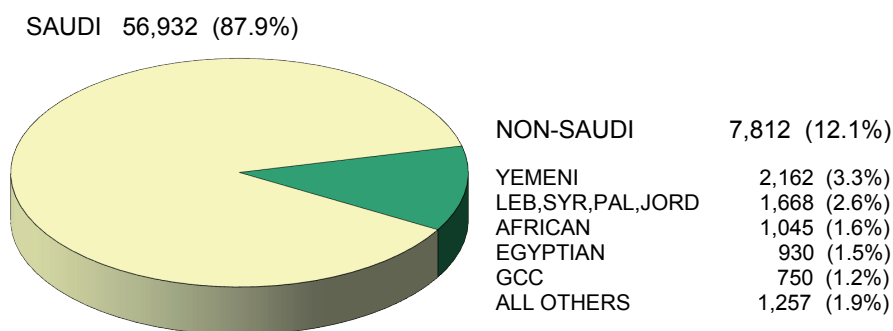
	1975-1976*	1977-1981	1982-1986	1987-1991	1992-1996	1997-2001	2002 - 2006	2007-2008	TOTAL
MALE	280	2,981	4,150	4,971	5,561	6,411	6,464	2,216	33,034
FEMALE	135	1,945	3,359	4,342	5,345	6,747	7,150	2,687	31,710
TOTAL	415	4,926	7,509	9,313	10,906	13,158	13,614	4,903	64,744
M/F RATIO	2.1:1	1.5:1	1.2:1	1.1:1	1.0:1	1.0:1	0.9:1	0.8:1	1.0:1
PEDIATRICS**	55	593	984	1,163	1,396	1,885	1,855	650	8,581
(%)	13.2%	12.0%	13.1%	12.5%	12.8%	14.3%	13.6%	13.3%	13.2%
ADULTS	360	4,333	6,525	8,150	9,510	11,273	11,759	4,253	56,163
(%)	86.8%	88.0%	86.9%	87.5%	87.2%	85.7%	86.4%	86.7%	86.8%
TOTAL	415	4,926	7,509	9,313	10,906	13,158	13,614	4,903	64,744

* First two years of KFSH&RC partial operation.

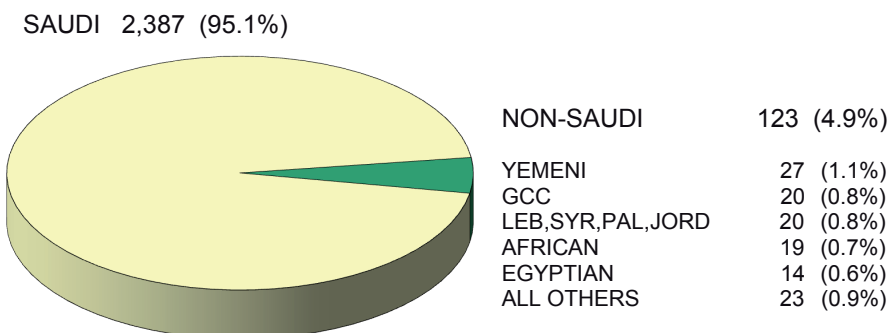
** Pediatrics = 0 to 14 years of age; Adults = 15 years and above.

FIGURE 2

DISTRIBUTION OF CASES BY NATIONALITY 1975 - 2008 (TOTAL CASES = 64,744)



2008 (TOTAL CASES = 2,510)



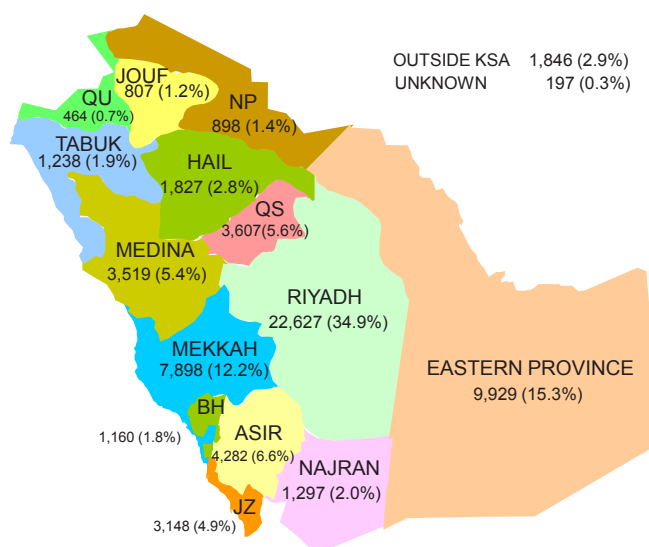
Saudi nationals totaled 2,387 (95.1%) in 2008 and the non-Saudi, 123 (4.9%). During the period 1975 to 2008, the former accounted for 87.9% (56,932) while the latter, 12.1% (7,812).

Geographically, the referral pattern in 2008 was mainly from the Riyadh region with 47.2% of all cases, followed by the Eastern Province and the Asir region with 10.0% and 7.9%, respectively. During the 34 years in review, 34.9% were referred from Riyadh, 15.3% from the Eastern Province and 12.2% from Mekkah.

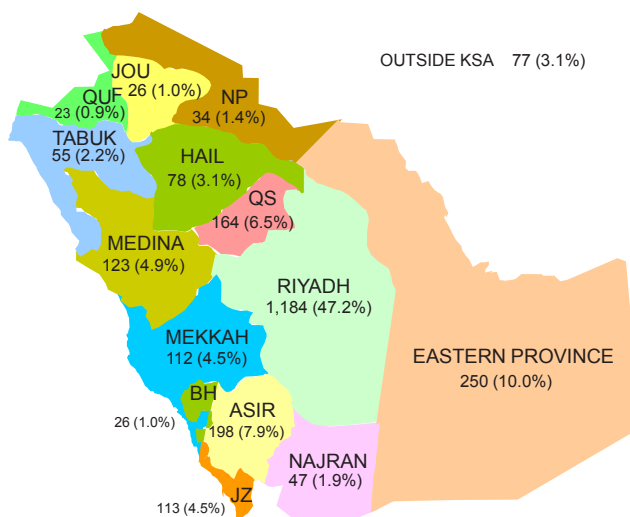
These percentages reflect the KFSH&RC actual experience rather than adjusted to reflect the population of those regions.

FIGURE 3

**DISTRIBUTION OF CASES BY REGION
(Based on Given Address at Time of Diagnosis)
1975 - 2008 (TOTAL CASES = 64,744)**



2008 (TOTAL CASES = 2,510)



BH - AL BAHA NP - NORTHERN PROVINCE QS - QASSIM
JZ - JIZAN QU - QURAYYAT

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.

Acceptance of cases to KFSH&RC is based on eligibility criteria, considering the nature of disease and availability of services.

Breast cancer led the list of total cancer cases seen from 1975 to 2008 with 11.3%, followed by leukemia (8.6%), non-hodgkin's lymphoma (7.8%), thyroid (6.5%) and brain/CNS (4.9%).

FIGURE 4
DISTRIBUTION OF 20 MOST COMMON MALIGNANCIES
1975 - 2008 (TOTAL CASES = 64,744)

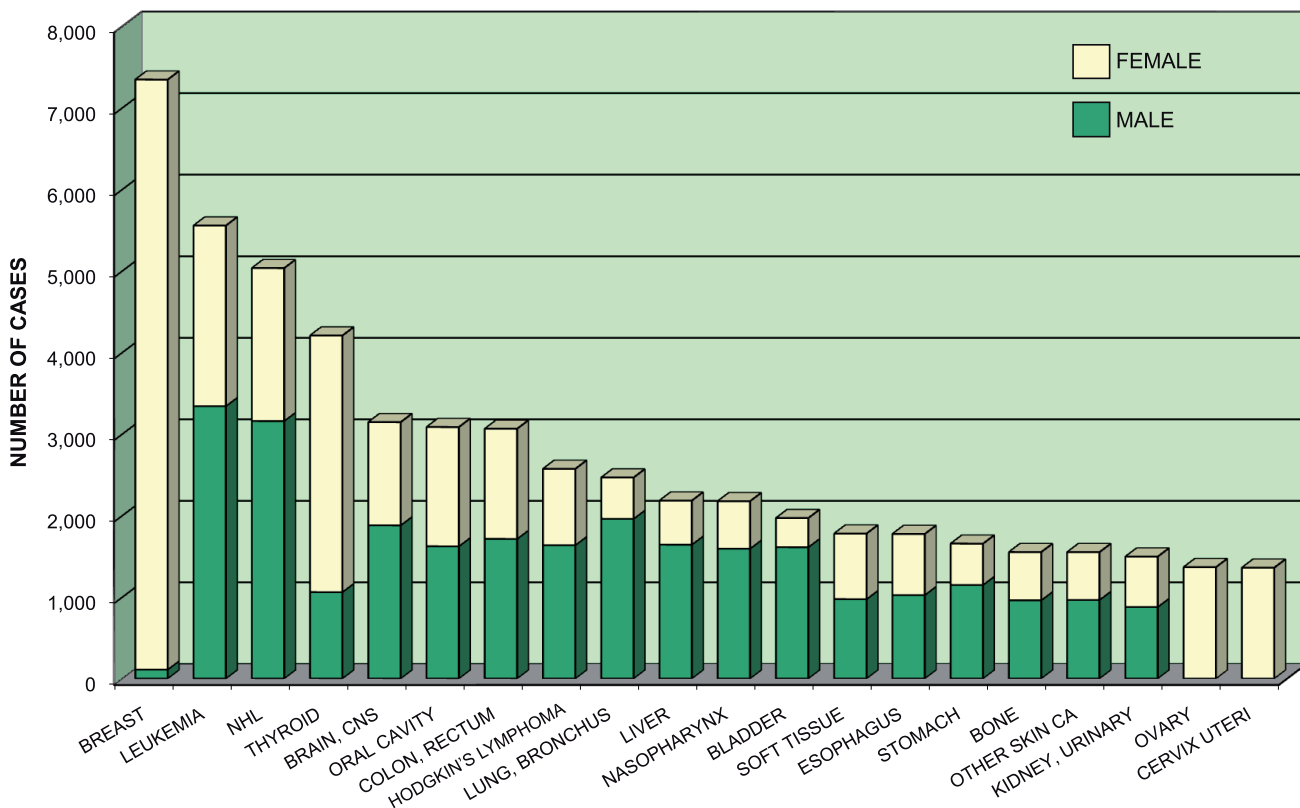
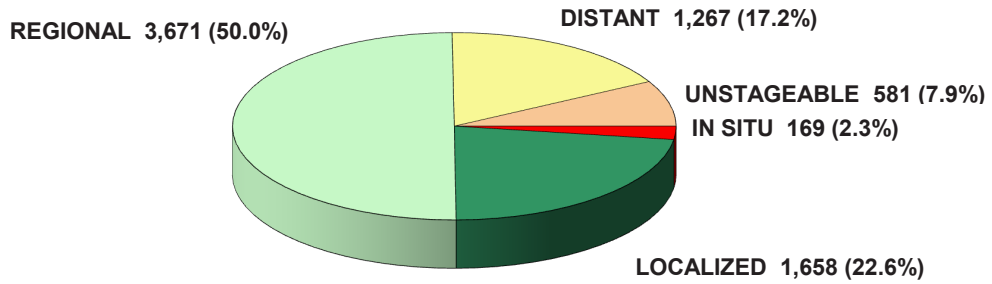
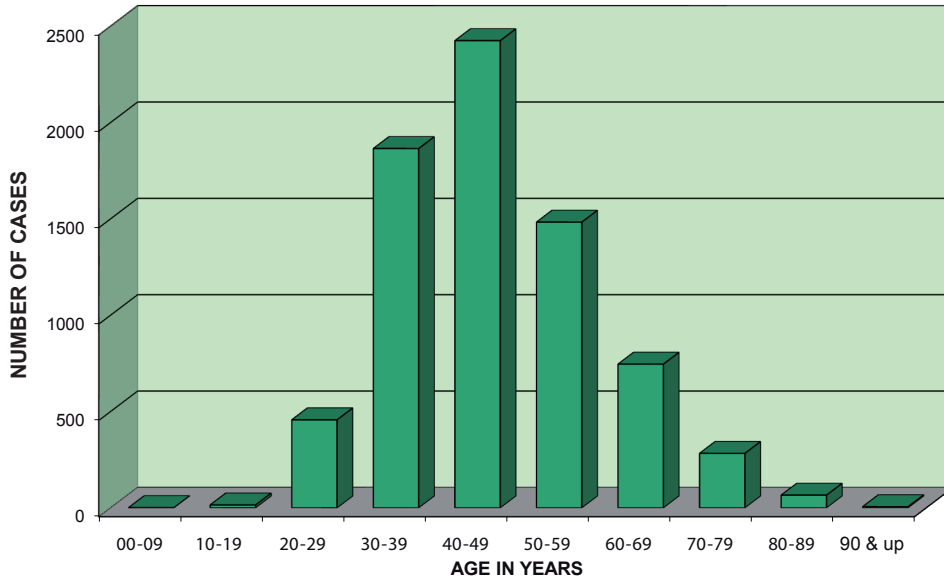


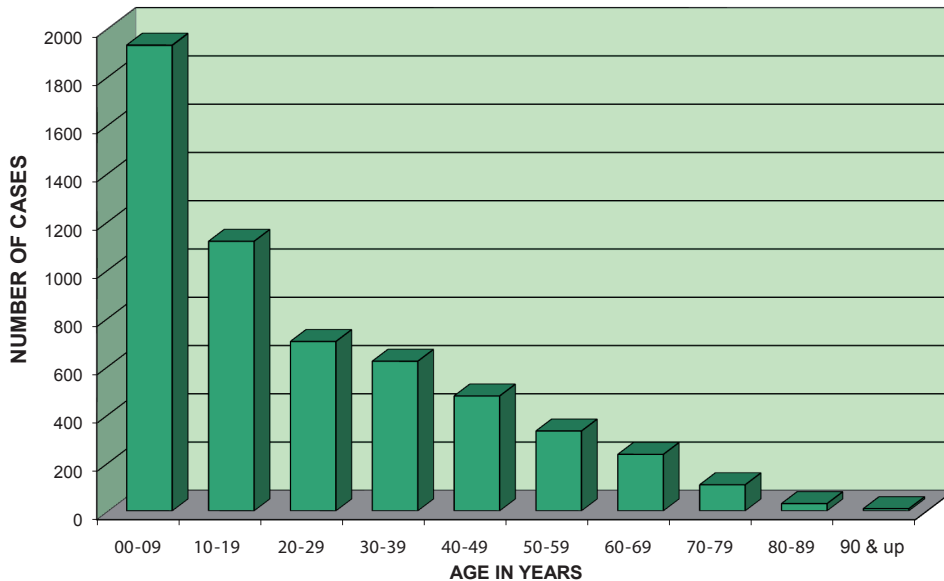
FIGURE 5

DISTRIBUTION OF 5 MOST COMMON MALIGNANCIES BY AGE AT DIAGNOSIS AND SEER SUMMARY STAGE (1975 - 2008)

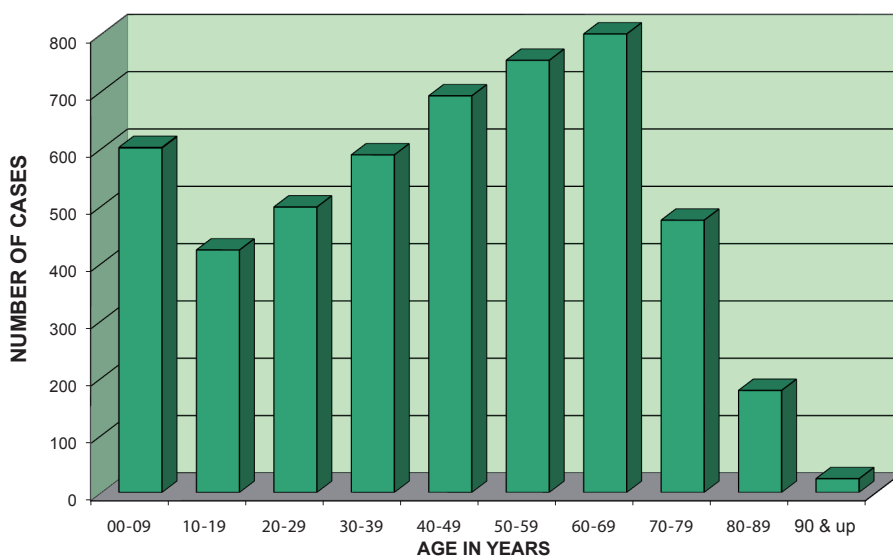
BREAST CANCER CASES



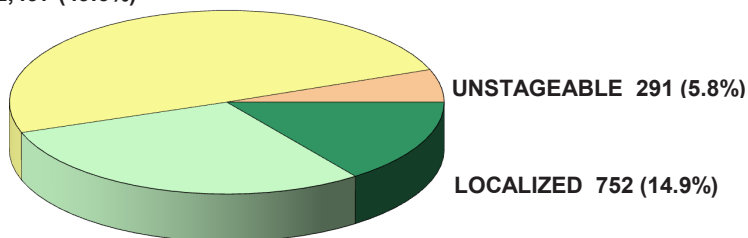
LEUKEMIA CASES



NON-HODGKIN'S LYMPHOMA CASES

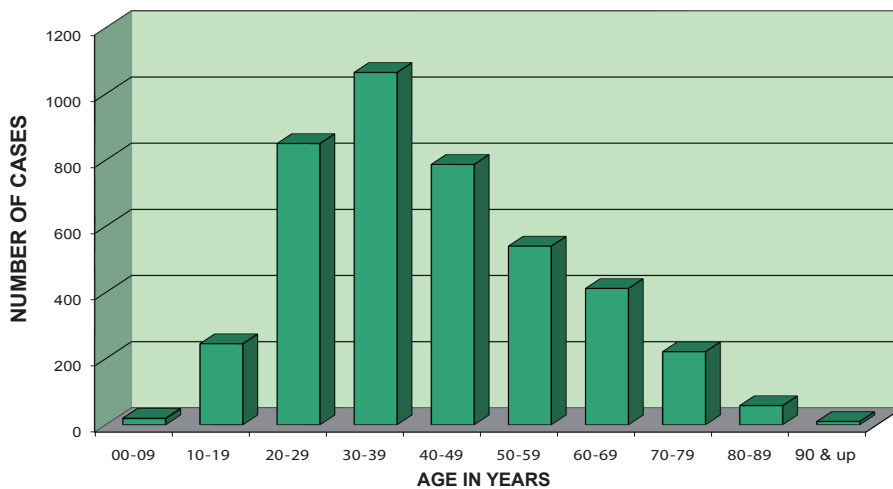


DISTANT 2,497 (49.6%)

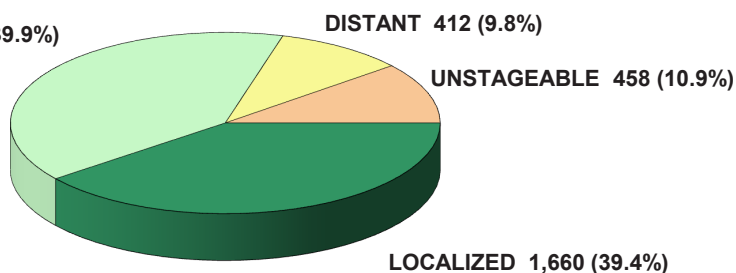


REGIONAL 1,494 (29.7%)

THYROID CANCER CASES



REGIONAL 1,677 (39.9%)



BRAIN, CNS CANCER CASES

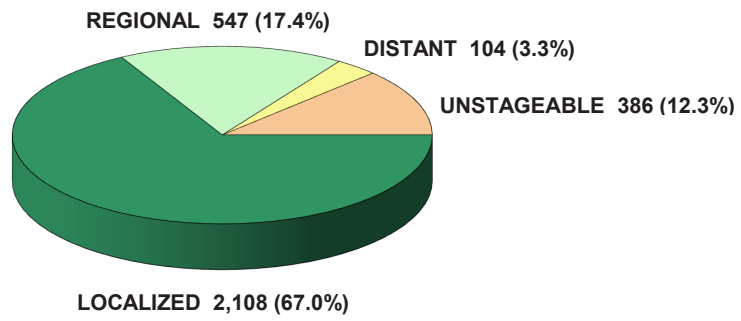
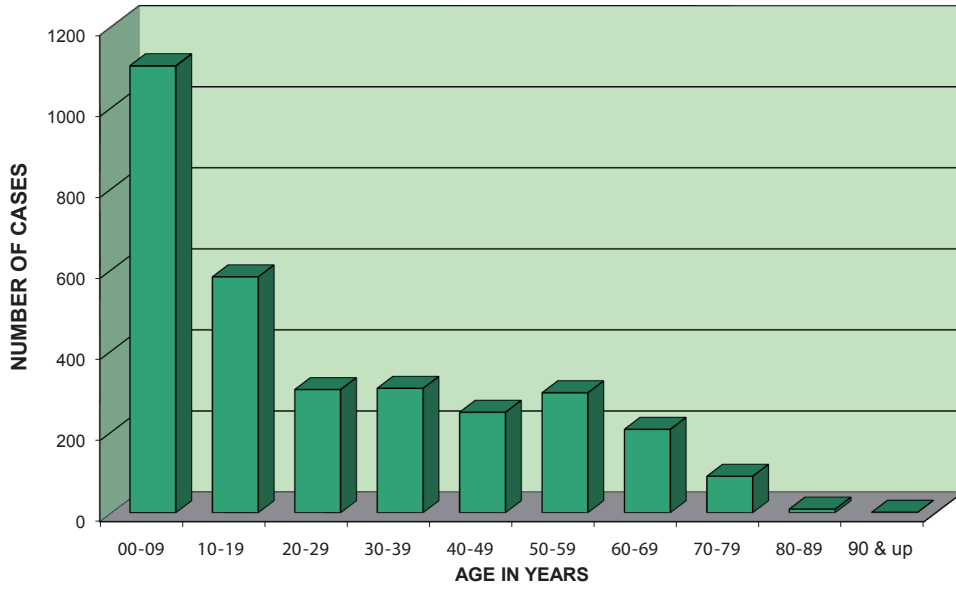


TABLE 2

**TEN MOST COMMON MALIGNANCIES BY AGE GROUP AT DIAGNOSIS
1975 - 2008**

SITE	AGE GROUP	No	%
BREAST	00 - 14	2	0.0%
	15 - 39	2,335	31.8%
	40 - 60	4,084	55.6%
	>60	925	12.6%

SITE	AGE GROUP	No	%
ORAL CAVITY	00 - 14	34	1.1%
	15 - 39	427	13.9%
	40 - 60	1,306	42.3%
	>60	1,318	42.7%

SITE	AGE GROUP	No	%
LEUKEMIA	00 - 14	2,470	44.4%
	15 - 39	1,898	34.2%
	40 - 60	871	15.7%
	>60	317	5.7%

SITE	AGE GROUP	No	%
COLON, RECTUM	00 - 14	9	0.3%
	15 - 39	572	18.7%
	40 - 60	1,456	47.5%
	>60	1,027	33.5%

SITE	AGE GROUP	No	%
NON-HODGKIN'S	00 - 14	791	15.7%
LYMPHOMA	15 - 39	1,320	26.2%
	40 - 60	1,624	32.3%
	>60	1,299	25.8%

SITE	AGE GROUP	No	%
HODGKIN'S	00 - 14	791	30.8%
LYMPHOMA	15 - 39	1,321	51.3%
	40 - 60	342	13.3%
	>60	119	4.6%

SITE	AGE GROUP	No	%
THYROID	00 - 14	90	2.1%
	15 - 39	2,089	49.7%
	40 - 60	1,411	33.5%
	>60	617	14.7%

SITE	AGE GROUP	No	%
LUNG	00 - 14	8	0.3%
	15 - 39	148	6.0%
	40 - 60	1,100	44.6%
	>60	1,210	49.1%

SITE	AGE GROUP	No	%
BRAIN, CNS	00 - 14	1,468	46.7%
	15 - 39	827	26.3%
	40 - 60	581	18.5%
	>60	269	8.5%

SITE	AGE GROUP	No	%
LIVER	00 - 14	60	2.8%
	15 - 39	123	5.6%
	40 - 60	963	44.1%
	>60	1,037	47.5%

Cancer among pediatrics (under the age of 15) accounted for 13.2% of all cases from 1975 to 2008. The five most common pediatric malignancies were leukemia (28.8%), lymphoma (18.4%) [NHL 9.2% and HL 9.2%], brain/CNS (17.1%), bone (6.8%) and soft tissue (6.8%).

FIGURE 6

**DISTRIBUTION OF 10 MOST COMMON PEDIATRIC MALIGNANCIES
1975 - 2008 (TOTAL CASES = 8,581)**

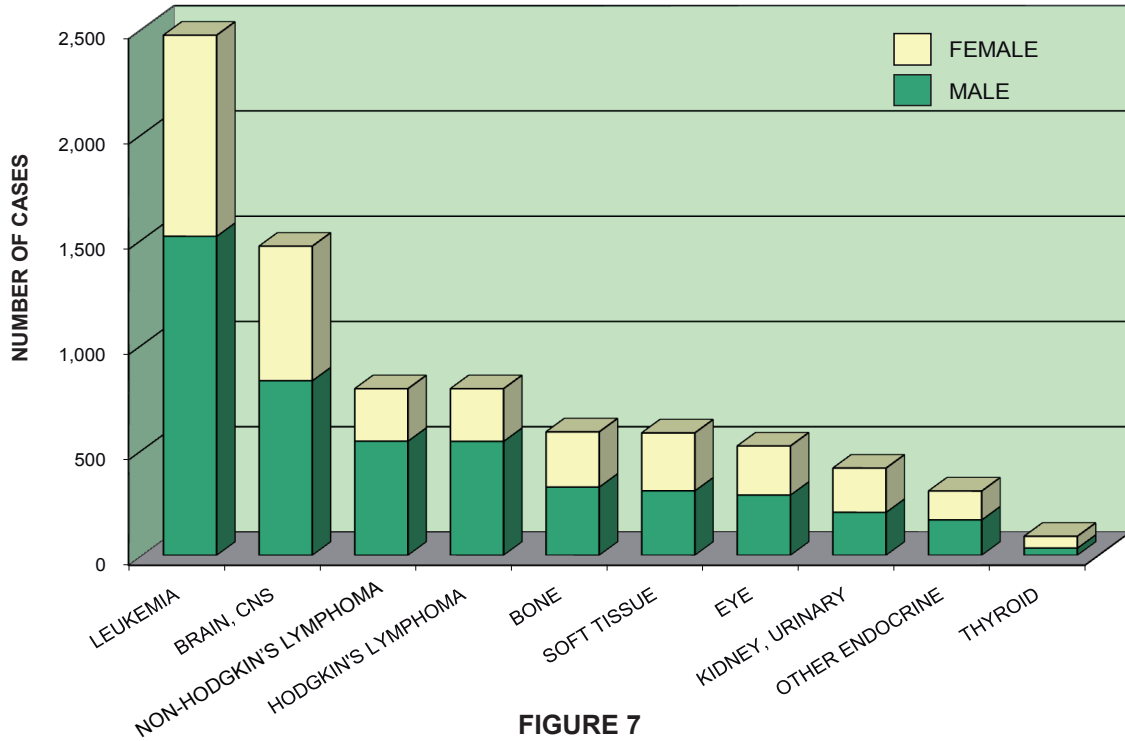


FIGURE 7

**DISTRIBUTION OF 10 MOST COMMON PEDIATRIC MALIGNANCIES BY HISTOLOGY
1975 - 2008 (TOTAL CASES = 8,581)**

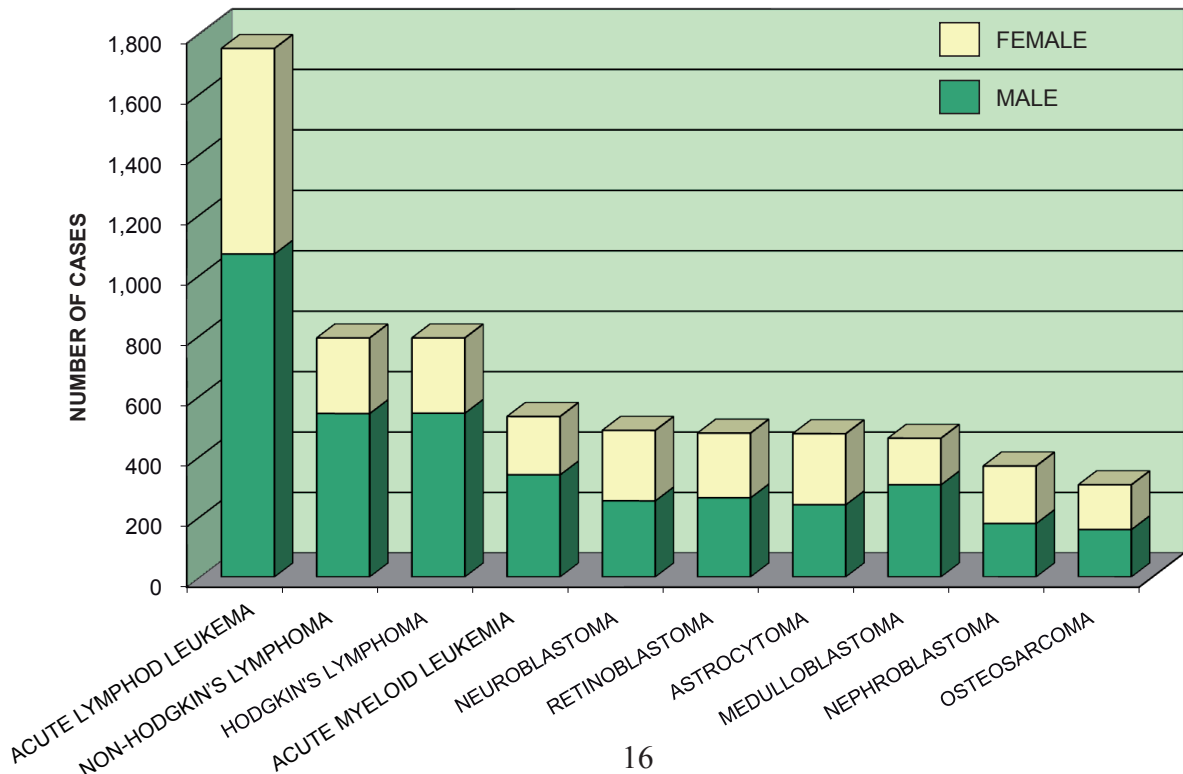


TABLE 3

CASES SEEN AT KF5H&RC BY SITE AND YEAR
1975 - 2008

SITE GROUP	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Oral Cavity	1	14	33	79	69	71	58	80	100	76	104	76	96	129	104	103	103	112	98	97	121	106
Nasopharynx	3	11	38	34	37	35	48	46	65	46	44	49	80	65	62	62	60	53	59	58	62	86
Esophagus	1	15	51	62	67	67	57	62	77	78	56	69	76	66	68	72	66	69	47	50	50	52
Stomach	2	15	32	35	50	37	50	51	64	60	49	64	61	47	52	53	36	48	42	68	61	57
Small Intestine	0	0	4	0	2	2	2	1	0	5	3	5	5	1	6	4	1	5	4	4	6	6
Colon	1	10	10	12	12	16	20	19	16	24	13	24	35	35	30	25	39	33	25	33	37	34
Rectum & Rectosigmoid	0	3	11	8	16	21	24	16	20	26	26	20	31	43	26	31	35	48	46	52	48	54
Anus, Anal Canal, Anorectum	0	0	1	4	3	1	7	4	7	9	6	7	4	4	5	8	6	7	12	10	10	6
Liver	7	15	33	44	49	33	41	54	53	64	57	84	78	71	68	55	66	76	82	103	102	103
Gallbladder	0	2	3	4	2	2	4	6	4	4	6	7	14	9	5	9	9	13	19	21	21	11
Bile Ducts	1	1	0	7	2	4	1	2	3	4	3	6	6	6	2	4	2	2	7	2	3	9
Pancreas	1	5	7	11	15	14	20	22	14	20	16	28	20	16	27	12	13	27	21	22	25	21
Retroperitoneum, Peritoneum	0	0	2	1	2	1	0	0	2	1	0	1	0	1	1	1	0	2	1	0	1	0
Other Digestive	0	0	0	2	2	5	4	1	1	0	3	1	4	3	6	2	2	2	4	0	3	0
Nasal Cavity, Sinus, Ear	1	3	9	7	5	7	9	10	10	5	7	5	16	14	7	13	12	8	9	11	10	9
Larynx	1	5	12	12	12	14	20	13	23	22	25	16	23	33	21	26	34	27	31	35	37	36
Lung, Bronchus	3	11	23	34	45	40	56	63	74	74	87	84	83	106	90	74	85	79	85	89	87	84
Pleura	0	0	0	0	1	0	0	1	1	0	0	1	0	1	2	2	0	3	4	3	4	2
Other Respiratory & Thoracic	0	1	1	1	1	1	3	1	1	0	4	0	6	1	1	2	7	3	7	8	4	4
Leukemia	7	28	40	87	90	83	121	125	117	127	121	159	185	157	155	132	158	145	192	169	209	166
Myeloma	1	5	6	11	9	11	8	13	13	12	19	13	29	22	33	15	28	26	25	40	30	21
Other Hematopoietic	0	1	0	1	2	2	2	2	3	1	2	2	5	4	3	2	0	1	0	2	2	2
Bone	0	6	13	25	20	20	22	42	31	40	19	31	35	44	41	37	40	52	54	56	56	56
Soft Tissue	1	16	29	29	31	23	29	40	32	36	38	47	48	49	59	59	61	47	50	72	81	54
Melanoma Of Skin	0	4	4	8	6	6	7	4	11	12	7	8	11	12	6	5	9	15	9	7	7	9
Kaposi Sarcoma	0	4	1	1	0	4	2	2	5	4	5	9	5	9	5	4	5	14	2	3	6	11
Other Skin Cancer	2	13	26	32	41	35	48	54	51	52	62	60	43	43	53	41	47	47	51	61	44	56
Breast	3	24	53	46	57	65	101	111	111	153	131	127	174	194	137	168	169	188	251	241	232	280
Other Uteri	0	10	18	18	25	18	26	25	33	33	41	55	51	50	33	44	35	52	50	52	49	48
Cervix Uteri	0	1	2	5	6	4	8	8	11	14	10	10	16	21	21	18	13	27	20	26	22	19
Corpus Uteri	2	6	10	10	17	21	20	35	31	27	24	34	41	47	53	46	36	44	55	50	54	56
Ovary	0	0	5	2	0	1	2	0	2	2	3	1	2	1	2	3	3	2	0	5	5	2
Vagina	0	0	0	0	0	0	2	1	2	2	5	1	2	2	2	4	5	2	1	5	5	2
Vulva	0	0	0	1	1	0	2	1	3	5	5	4	5	1	4	4	5	4	4	5	5	2
Other Female Genital	0	0	1	4	6	7	5	7	19	5	4	13	19	14	10	9	13	12	12	19	7	11
Prostate	0	0	5	4	5	10	11	18	28	19	19	17	22	27	27	24	16	41	27	45	37	49
Testis	0	0	3	8	10	11	15	11	7	12	14	14	17	17	9	14	14	21	25	21	14	14
Penis	0	0	1	0	1	0	2	2	3	4	0	0	0	2	2	5	2	0	1	3	0	1
Other Male Genital	0	0	0	0	2	0	1	0	0	0	3	0	3	0	2	0	0	0	0	1	1	0
Bladder	4	7	12	24	29	39	37	23	41	35	46	51	79	74	73	60	44	65	88	72	60	56
Kidney & Renal Pelvis	0	9	18	18	18	15	18	30	23	20	24	41	31	58	31	35	33	52	51	65	48	47
Ureter	0	0	0	0	0	0	0	0	0	1	1	1	3	1	1	0	1	1	1	1	1	1
Other Urinary	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1	0	1	1	1	0	0	0
Eye	0	6	11	19	12	24	29	34	25	17	30	24	35	44	26	30	9	15	39	27	15	22
Brain	3	23	27	40	26	30	31	76	53	57	49	70	88	91	97	81	84	110	88	113	128	127
Other Nervous System	0	0	0	0	0	1	0	1	1	1	0	1	0	1	1	0	0	2	0	3	0	2
Thyroid	2	8	17	28	33	44	57	51	66	71	63	82	119	112	110	94	110	141	135	158	134	162
Other Endocrine	1	1	3	3	2	9	10	8	14	12	17	10	11	13	2	7	10	14	15	15	14	14
Hodgkin's Lymphoma	13	19	40	41	36	42	47	42	54	50	49	45	65	57	76	56	57	75	73	78	88	76
Non-Hodgkin's Lymphoma	4	23	73	75	104	112	128	116	172	139	124	142	157	153	165	154	123	150	154	160	158	157
Unknown Or Ill-defined	3	11	23	24	20	27	34	30	33	26	25	25	37	32	42	39	40	51	42	62	36	41
TOTAL	70	345	721	915	1,008	1,035	1,247	1,362	1,528	1,504	1,464	1,651	1,966	2,002	1,860	1,744	1,741	2,034	2,113	2,303	2,214	2,242

TABLE 3 (Cont'd)

CASES SEEN AT KF&H&RC BY SITE AND YEAR
1975 - 2008

SITE GROUP	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	TOTAL
Oral Cavity	111	87	108	117	97	86	116	98	121	91	120	103	3,085
Nasopharynx	90	108	102	83	119	72	100	96	81	77	68	77	2,176
Esophagus	51	62	34	52	37	42	43	37	41	36	30	31	1,774
Stomach	45	42	54	53	40	50	60	68	57	58	47	47	1,655
Small Intestine	4	7	7	9	5	3	5	9	6	4	5	5	131
Colon	34	57	48	73	72	92	104	76	80	93	88	78	1,398
Rectum & Rectosigmoid	62	59	94	75	77	106	98	113	112	93	91	81	1,666
Anus, Anal Canal, Anorectum	6	7	4	7	7	8	14	5	5	3	5	5	192
Liver	96	84	89	85	91	72	70	59	37	65	41	56	2,183
Gallbladder	11	12	15	13	11	12	15	14	8	7	11	10	302
Bile Ducts	7	10	9	8	9	10	7	4	8	6	11	6	172
Pancreas	24	34	18	38	26	31	30	34	27	40	24	30	733
Retroperitoneum, Peritoneum	0	1	2	2	1	1	1	4	2	1	2	3	37
Other Digestive	0	0	0	0	2	0	3	4	2	1	0	4	60
Nasal Cavity, Sinus, Ear	4	8	14	10	9	11	10	9	13	11	12	7	305
Larynx	31	30	35	32	33	26	47	41	36	26	31	30	876
Lung, Bronchus	88	106	108	91	80	91	86	93	84	63	58	62	2,466
Pleura	1	1	2	3	8	1	4	3	3	1	3	2	54
Other Respiratory & Thoracic	8	8	8	2	1	5	2	4	3	3	1	3	103
Leukemia	228	234	258	257	239	256	254	219	191	223	198	226	5,556
Myeloma	14	23	16	28	20	19	20	23	23	22	31	18	647
Other Hematopoietic	1	2	3	1	0	1	2	0	1	0	1	14	72
Bone	63	71	62	75	81	73	61	67	69	66	52	71	1,552
Soft Tissue	67	74	87	69	73	59	78	79	71	53	82	56	1,779
Melanoma Of Skin	5	5	6	5	5	6	5	8	5	8	5	8	240
Kaposi Sarcoma	6	8	8	4	7	9	9	6	8	9	7	7	191
Other Skin Cancer	52	35	58	52	62	38	52	48	55	66	30	41	1,551
Breast	291	334	341	383	362	377	410	430	377	326	347	352	7,346
Cervix Uteri	46	62	57	42	68	53	55	47	46	37	39	41	1,360
Corpus Uteri	26	29	33	33	35	46	59	62	48	59	66	63	841
Ovary	60	63	53	59	54	49	61	54	46	56	45	48	1,367
Vagina	2	1	2	1	0	1	1	2	1	0	0	0	54
Vulva	1	0	1	1	2	2	1	3	2	2	0	4	71
Other Female Genital	8	6	6	5	5	10	13	12	12	15	8	4	306
Prostate	43	44	63	47	49	47	58	58	75	46	38	54	1,080
Testis	17	16	19	20	18	28	19	20	17	11	15	26	506
Penis	3	0	0	2	0	1	1	0	2	0	0	0	39
Other Male Genital	0	0	0	0	1	2	1	2	1	2	0	0	24
Bladder	65	85	91	80	81	72	93	101	88	64	67	63	1,969
Kidney & Renal Pelvis	49	58	70	57	72	64	54	70	61	66	67	82	1,455
Ureter	0	3	1	1	3	2	2	1	2	0	1	0	30
Other Urinary	0	0	2	1	0	0	0	1	2	0	0	0	11
Eye	30	17	24	26	17	16	20	18	15	20	11	19	726
Brain	131	159	143	143	145	141	158	165	126	125	90	91	3,109
Other Nervous System	2	3	2	6	5	0	2	2	0	0	0	0	36
Thyroid	161	192	210	186	189	169	215	214	212	203	213	246	4,207
Other Endocrine	20	12	15	23	14	17	36	26	26	23	17	28	462
Hodgkin's Lymphoma	76	98	116	131	121	121	132	143	126	101	116	113	2,573
Non-Hodgkin's Lymphoma	193	208	207	204	175	185	206	215	183	167	178	170	5,034
Unknown Or Ill-defined	35	50	49	45	49	53	46	49	32	27	19	25	1,182
TOTAL	2,368	2,616	2,754	2,742	2,678	2,636	2,939	2,916	2,649	2,474	2,393	2,510	64,744

TABLE 4

CASES SEEN AT KFSH&RC BY SITE AND 5-YEAR PERIOD

1975 - 2008

SITE GROUP	1975-1976*		1977-1981		1982-1986		1987-1991		1992-1996		1997-2001		2002-2006		2007-2008		TOTAL	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
Oral Cavity	15	3.6%	310	6.3%	436	5.8%	535	5.7%	534	4.9%	520	4.0%	512	3.8%	223	4.5%	3,085	4.8%
Nasopharynx	14	3.4%	192	3.9%	250	3.3%	329	3.5%	318	2.9%	502	3.8%	426	3.1%	145	3.0%	2,176	3.4%
Esophagus	16	3.9%	304	6.2%	342	4.6%	348	3.7%	268	2.5%	236	1.8%	199	1.5%	61	1.2%	1,774	2.7%
Stomach	17	4.1%	204	4.1%	288	3.8%	249	2.7%	276	2.5%	234	1.8%	293	2.2%	94	1.9%	1,655	2.6%
Small Intestine	0	0.0%	10	0.2%	14	0.2%	13	0.1%	25	0.2%	32	0.2%	27	0.2%	10	0.2%	131	0.2%
Colon	11	2.7%	70	1.4%	96	1.3%	164	1.8%	162	1.5%	284	2.2%	445	3.3%	166	3.4%	1,398	2.2%
Rectum & Rectosigmoid	3	0.7%	80	1.6%	108	1.4%	166	1.8%	248	2.3%	367	2.8%	522	3.8%	172	3.5%	1,666	2.6%
Anus, Anal Canal, Anorectum	0	0.0%	16	0.3%	33	0.4%	27	0.3%	40	0.4%	31	0.2%	35	0.3%	10	0.2%	192	0.3%
Liver	22	5.3%	200	4.1%	312	4.2%	338	3.6%	466	4.3%	445	3.4%	303	2.2%	97	2.0%	2,183	3.4%
Gallbladder	2	0.5%	15	0.3%	27	0.4%	46	0.5%	73	0.7%	62	0.5%	56	0.4%	21	0.4%	302	0.5%
Bile Ducts	2	0.5%	9	0.2%	18	0.2%	20	0.2%	28	0.3%	43	0.3%	35	0.3%	17	0.3%	172	0.3%
Pancreas	6	1.4%	67	1.4%	100	1.3%	88	0.9%	116	1.1%	140	1.1%	162	1.2%	54	1.1%	733	1.1%
Retropertoneum, Peritoneum	0	0.0%	6	0.1%	4	0.1%	3	0.0%	4	0.0%	6	0.1%	9	0.1%	5	0.1%	37	0.1%
Other Digestive	0	0.0%	13	0.3%	6	0.1%	16	0.2%	9	0.1%	2	0.0%	2	0.0%	4	0.1%	60	0.1%
Nasal Cavity, Sinus, Ear	4	1.0%	37	0.8%	37	0.5%	62	0.7%	47	0.4%	45	0.3%	54	0.4%	19	0.4%	305	0.5%
Larynx	6	1.4%	70	1.4%	99	1.3%	137	1.5%	166	1.5%	161	1.2%	176	1.3%	61	1.2%	876	1.4%
Lung, Bronchus	14	3.4%	198	4.0%	382	5.1%	438	4.7%	424	3.9%	473	3.6%	417	3.1%	120	2.4%	2,466	3.8%
Pleura	0	0.0%	1	0.0%	3	0.0%	5	0.1%	13	0.1%	15	0.1%	12	0.1%	5	0.1%	54	0.1%
Other Respiratory & Thoracic	0	0.0%	6	0.1%	6	0.1%	17	0.2%	26	0.2%	27	0.2%	17	0.1%	4	0.1%	103	0.2%
Leukemia	35	8.4%	421	8.5%	649	8.6%	787	8.5%	881	8.1%	1216	9.2%	1143	8.4%	424	8.6%	5,556	8.6%
Myeloma	6	1.4%	45	0.9%	70	0.9%	127	1.4%	142	1.3%	101	0.8%	107	0.8%	49	1.0%	647	1.0%
Other Hematopoietic	1	0.2%	7	0.1%	17	0.2%	14	0.2%	7	0.1%	7	0.1%	4	0.0%	15	0.3%	72	0.1%
Bone	7	1.7%	100	2.0%	163	2.2%	197	2.1%	274	2.5%	352	2.7%	336	2.5%	123	2.5%	1,552	2.4%
Soft Tissue	17	4.1%	141	2.9%	193	2.6%	216	3.0%	304	2.8%	370	2.8%	348	2.5%	138	2.8%	1,779	2.7%
Melanoma Of Skin	4	1.0%	33	0.7%	42	0.6%	43	0.5%	47	0.4%	26	0.2%	32	0.2%	13	0.3%	240	0.4%
Kaposi Sarcoma	1	0.2%	13	0.3%	25	0.3%	28	0.3%	36	0.3%	33	0.3%	41	0.3%	14	0.3%	191	0.3%
Other Skin Cancer	15	3.6%	182	3.7%	279	3.7%	227	2.4%	259	2.4%	259	2.0%	259	1.9%	71	1.4%	1,551	2.4%
Breast	27	6.5%	322	6.5%	633	8.4%	842	9.0%	1192	10.9%	1711	13.0%	1920	14.1%	699	14.3%	7,346	11.3%
Cervix Uteri	11	2.7%	105	2.1%	187	2.5%	213	2.3%	251	2.3%	275	2.1%	238	1.7%	80	1.6%	1,360	2.1%
Corpus Uteri	1	0.2%	25	0.5%	53	0.7%	89	1.0%	114	1.1%	156	1.2%	274	2.0%	129	2.6%	841	1.3%
Ovary	8	1.9%	78	1.6%	151	2.0%	223	2.4%	259	2.4%	289	2.2%	266	2.0%	93	1.9%	1,367	2.1%
Vagina	0	0.0%	10	0.2%	8	0.1%	13	0.1%	14	0.1%	6	0.1%	5	0.0%	0	0.0%	54	0.1%
Vulva	0	0.0%	4	0.1%	16	0.2%	11	0.1%	17	0.2%	17	0.2%	7	0.1%	8	0.1%	71	0.1%
Other Female Genital	1	0.2%	27	0.5%	48	0.6%	65	0.7%	61	0.6%	30	0.2%	62	0.5%	12	0.2%	306	0.5%
Prostate	7	1.7%	35	0.7%	101	1.3%	116	1.2%	199	1.8%	246	1.9%	284	2.1%	92	1.9%	1,080	1.7%
Testis	3	0.7%	53	1.1%	58	0.8%	71	0.8%	95	0.9%	90	0.7%	95	0.7%	41	0.8%	506	0.8%
Penis	1	0.2%	4	0.1%	9	0.1%	11	0.1%	5	0.1%	5	0.0%	4	0.0%	0	0.0%	39	0.1%
Other Male Genital	0	0.0%	3	0.1%	4	0.1%	5	0.1%	2	0.0%	2	0.0%	8	0.1%	0	0.0%	24	0.0%
Bladder	11	2.7%	141	2.9%	196	2.6%	330	3.5%	341	3.1%	402	3.1%	418	3.1%	130	2.7%	1,969	3.0%
Kidney & Renal Pelvis	9	2.2%	87	1.8%	138	1.8%	188	2.0%	263	2.4%	306	2.3%	315	2.3%	149	3.0%	1,455	2.2%
Ureter	0	0.0%	0	0.0%	2	0.0%	6	0.1%	5	0.1%	9	0.1%	7	0.1%	1	0.0%	30	0.1%
Other Urinary	0	0.0%	0	0.0%	2	0.0%	2	0.0%	1	0.0%	3	0.0%	3	0.0%	0	0.0%	11	0.0%
Eye	6	1.4%	95	1.9%	130	1.7%	144	1.5%	118	1.1%	114	0.9%	89	0.7%	30	0.6%	726	1.1%
Brain	26	6.3%	154	3.1%	305	4.1%	441	4.7%	566	5.2%	721	5.5%	715	5.3%	181	3.7%	3,109	4.8%
Other Nervous System	1	0.2%	1	0.0%	3	0.0%	2	0.0%	7	0.1%	18	0.1%	4	0.0%	0	0.0%	36	0.1%
Thyroid	10	2.4%	179	3.6%	333	4.4%	545	5.9%	730	6.7%	938	7.1%	1013	7.4%	459	9.4%	4,207	6.5%
Other Endocrine	2	0.5%	27	0.5%	61	0.8%	43	0.5%	72	0.7%	84	0.6%	128	0.9%	45	0.9%	462	0.7%
Hodgkin's Lymphoma	32	7.7%	206	4.2%	240	3.2%	311	3.3%	390	3.6%	542	4.1%	623	4.6%	229	4.7%	2,573	4.0%
Non-Hodgkin's Lymphoma	27	6.5%	492	10.0%	693	9.2%	752	8.1%	779	7.1%	987	7.5%	956	7.0%	348	7.1%	5,034	7.8%
Unknown Or Ill-defined	14	3.4%	128	2.6%	139	1.9%	190	2.0%	232	2.1%	228	1.7%	207	1.5%	44	0.9%	1,182	1.8%
TOTAL	415	100.0%	4,926	100.0%	7,509	100.0%	9,313	100.0%	10,906	100.0%	13,158	100.0%	13,614	100.0%	4,903	100.0%	64,744	100.0%

* First Two Years of KFSH&RC Partial Operation.

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The largest number of cases in 2008 was noted in the 5th and 6th decades of life in males and in the 3rd and 4th in females. The mean age was 42.7, the median was 44.8 and the mode was at 46. Pediatric malignancies were most common among children at three years of age.

FIGURE 8

**DISTRIBUTION OF CASES BY AGE AT DIAGNOSIS
2008 (TOTAL CASES = 2,510)**

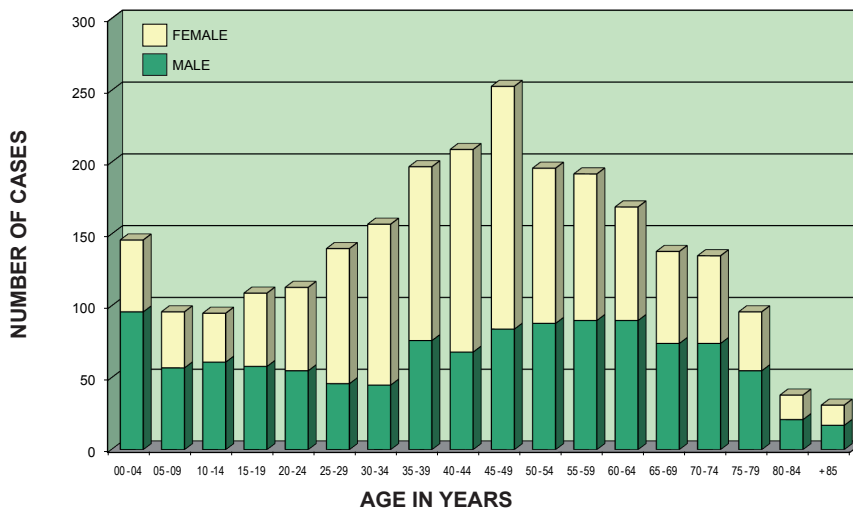
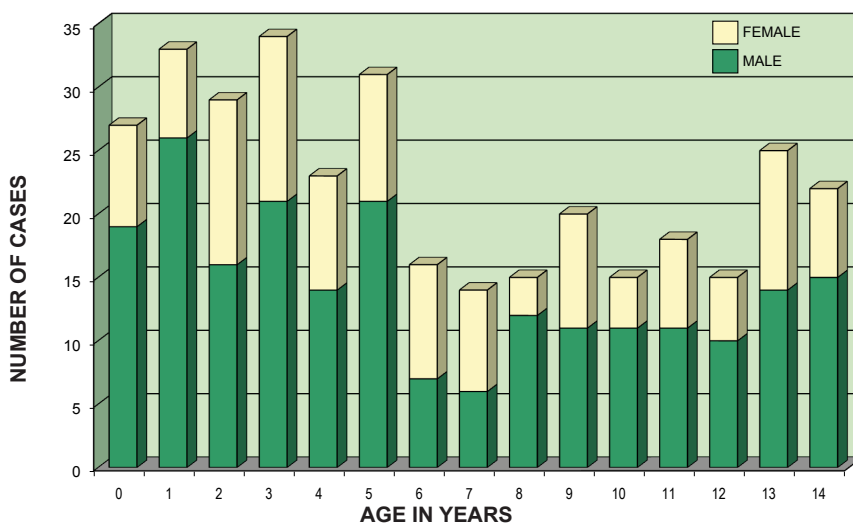


FIGURE 9

**DISTRIBUTION OF PEDIATRIC CASES BY AGE AT DIAGNOSIS
2008 (TOTAL CASES = 337)**



Of the 2,510 cases in 2008, 2,293 (91.4%) 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 217 cases (8.6%) were non-analytic (defined as cases diagnosed elsewhere and received all of their first course of treatment elsewhere). Out of the 2,293 analytic cases, pediatric cases totaled 300, with 192 males and 108 females.

See Table 5 for the distribution of cases by site, sex, class of case, and stage at diagnosis and Tables 6, 7 and 8 for the distributions of analytic cases by site, sex and age at diagnosis.

TABLE 5

CASES SEEN AT KFSH&RC BY SITE, SEX, CLASS OF CASE AND SEER SUMMARY STAGE
2008

SITE GROUP	TOTAL		SEX		CLASS OF CASE		SEER GENERAL SUMMARY STAGE			ANALYTIC CASES		
	Number	%	Male	Female	Analytic	Non-Anal	In Situ	Localized	Regional	Distant	Unstageable	
Oral Cavity	103	4.1%	45	58	100	3	0	26	58	14	2	
Nasopharynx	77	3.1%	56	21	76	1	0	0	50	26	0	
Esophagus	31	1.2%	19	12	27	4	0	2	12	12	1	
Stomach	47	1.9%	29	18	44	3	0	4	15	24	1	
Small Intestine	5	0.2%	4	1	4	0	0	1	1	2	0	
Colon	78	3.1%	41	37	71	7	1	3	34	32	1	
Rectum & Rectosigmoid	81	3.2%	49	32	77	4	0	5	45	26	1	
Anus, Anal Canal, Anorectum	5	0.2%	2	3	4	1	0	0	2	1	0	
Liver	56	2.2%	37	19	50	6	0	24	10	13	3	
Gallbladder	10	0.4%	7	3	10	0	0	1	1	7	1	
Bile Ducts	6	0.2%	2	4	5	1	0	3	1	1	0	
Pancreas	30	1.2%	18	12	29	1	0	2	10	17	0	
Retroperitoneum, Peritoneum	3	0.1%	2	1	2	1	0	0	0	2	0	
Other Digestive	4	0.2%	0	4	4	0	0	0	0	2	0	
Nasal Cavity, Sinus, Ear	7	0.3%	4	3	6	1	0	1	4	1	0	
Larynx	30	1.2%	28	2	29	1	1	9	12	7	0	
Lung, Bronchus	62	2.5%	45	17	59	3	0	4	17	37	1	
Pleura	2	0.1%	1	1	2	0	0	0	1	0	0	
Other Respiratory & Thoracic	3	0.1%	2	1	2	1	0	2	0	0	0	
Leukemia	226	9.0%	130	96	189	37	0	0	0	189	0	
Myeloma	18	0.7%	11	7	15	3	0	1	1	13	0	
Other Hematopoietic	14	0.6%	8	6	14	0	0	0	0	14	0	
Bone	71	2.8%	44	27	67	4	0	12	32	23	0	
Soft Tissue	56	2.2%	25	31	49	7	0	19	16	14	0	
Melanoma of Skin	8	0.3%	3	5	5	3	0	1	2	1	1	
Kaposi Sarcoma	7	0.3%	6	1	7	0	0	4	0	3	0	
Other Skin Cancer	41	1.6%	26	15	33	8	0	23	7	1	2	
Breast	352	14.0%	3	349	336	16	11	80	174	71	0	
Cervix Uteri	41	1.6%	0	41	38	3	4	5	20	9	0	
Corpus Uteri	63	2.5%	0	63	57	6	0	24	15	17	0	
Ovary	48	1.9%	0	48	46	2	0	7	12	27	0	
Vulva	4	0.2%	0	4	4	0	0	3	1	0	0	
Other Female Genital	4	0.2%	0	4	4	0	0	1	0	3	0	
Prostate	54	2.2%	54	0	47	7	0	28	8	10	1	
Testis	26	1.0%	26	0	23	3	0	12	5	6	0	
Bladder	63	2.5%	54	9	62	1	5	24	14	13	6	
Kidney & Renal Pelvis	82	3.3%	48	34	81	1	0	39	17	25	0	
Eye	19	0.8%	11	8	16	3	0	7	7	2	0	
Brain	91	3.6%	54	37	83	8	0	71	5	6	1	
Thyroid	246	9.8%	63	183	234	12	0	132	88	11	3	
Other Endocrine	28	1.1%	20	8	26	2	0	4	4	18	0	
Hodgkin's Disease	113	4.5%	67	46	85	28	0	2	36	47	0	
Non-Hodgkin's Lymphoma	170	6.8%	100	70	147	23	0	27	28	91	1	
Unknown or Ill-defined	25	1.0%	11	14	24	1	0	0	0	1	23	
TOTAL	2,510	100.0%	1,155	1,355	2,293	217	22	615	765	839	52	

TABLE 6

ANALYTIC CASES SEEN AT KFSH&RC BY SITE AND AGE
2008

SITE GROUP	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	1	1	0	0	5	4	6	7	10	13	11	5	7	12	8	5	5	100
Nasopharynx	0	0	3	1	3	2	3	11	7	19	10	6	1	1	7	1	1	0	76
Esophagus	0	0	0	0	0	0	0	0	0	1	3	5	5	1	5	2	1	4	27
Stomach	0	0	0	0	0	1	2	1	2	4	2	7	8	6	5	4	1	1	44
Small Intestine	0	0	0	0	1	0	0	0	0	0	1	0	1	1	0	0	0	0	4
Colon	0	0	0	0	0	5	1	6	4	12	11	9	6	6	3	4	1	3	71
Rectum & Rectosigmoid	0	0	0	0	2	0	2	4	6	11	10	11	11	5	9	3	2	1	77
Anus, Anal Canal, Anorectum	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	1	0	0	4
Liver	3	0	0	1	1	0	0	1	1	4	6	7	9	5	3	5	2	2	50
Gallbladder	0	0	0	0	0	0	0	1	0	1	2	2	1	1	2	0	0	0	10
Bile Ducts	0	0	0	0	0	0	1	1	0	0	1	0	0	1	1	0	0	0	5
Pancreas	0	0	0	0	0	0	1	1	5	1	4	5	2	3	2	3	2	0	29
Retropertoneum, Peritoneum	1	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	2
Other Digestive	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	1	0	0	4
Nasal Cavity, Sinus, Ear	0	0	1	0	0	1	0	1	1	0	0	1	1	0	0	0	0	0	6
Larynx	0	0	0	0	0	0	0	0	5	2	2	6	4	4	3	2	0	1	29
Lung, Bronchus	0	0	0	0	0	1	1	1	4	6	2	6	11	9	11	5	2	0	59
Pleura	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	2
Other Respiratory & Thoracic	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2
Leukemia	49	25	19	20	18	13	13	10	8	7	3	1	1	0	2	0	0	0	189
Myeloma	0	0	0	0	0	1	0	1	3	3	1	3	1	2	0	0	0	0	15
Other Hematopoietic	2	3	0	0	0	0	3	1	0	1	0	2	1	1	0	0	0	0	14
Bone	1	6	18	17	7	2	4	3	2	1	3	1	0	0	2	0	0	0	67
Soft Tissue	10	4	5	7	1	9	0	0	2	3	4	1	1	0	2	0	0	0	49
Melanoma of Skin	0	0	0	0	0	0	0	1	0	0	1	1	2	0	0	0	0	0	5
Kaposi Sarcoma	0	0	0	0	0	0	0	1	1	0	1	0	1	0	0	3	0	0	7
Other Skin Cancer	0	0	0	0	2	0	2	2	3	1	1	4	3	3	5	1	2	2	33
Breast	0	0	0	1	2	11	35	42	59	69	38	28	19	16	5	9	1	1	336
Cervix Uteri	0	0	0	0	0	1	6	5	6	5	2	3	3	3	2	2	0	0	38
Corpus Uteri	0	0	0	0	1	1	4	2	2	3	11	9	7	5	5	5	1	1	57
Ovary	0	0	3	1	1	6	1	2	2	7	2	4	5	3	5	1	3	0	46
Vulva	0	0	0	0	0	1	0	0	1	0	0	1	0	2	0	0	0	0	4
Other Female Genital	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	4
Prostate	0	0	0	0	0	0	0	0	1	1	0	7	7	11	9	8	3	0	47
Testis	2	0	0	3	3	6	1	6	1	0	0	1	0	0	0	0	0	0	23
Bladder	0	0	0	0	3	0	1	3	4	6	6	5	9	9	8	5	0	3	62
Kidney & Renal Pelvis	10	3	0	3	2	2	5	5	5	6	9	7	4	6	4	6	3	1	81
Eye	12	0	0	0	0	4	1	1	1	0	0	0	0	0	0	1	0	0	16
Brain	21	14	7	5	2	4	6	6	3	4	3	3	1	1	2	1	0	0	83
Thyroid	0	1	3	8	19	27	29	34	32	31	17	7	10	5	4	3	3	1	234
Other Endocrine	13	2	1	5	1	0	1	0	2	0	0	1	0	0	0	0	0	0	26
Hodgkin's Disease	2	12	17	15	9	12	6	4	1	1	3	0	3	0	0	0	0	0	85
Non-Hodgkin's Lymphoma	7	12	6	8	9	12	7	11	13	9	8	14	7	7	7	6	1	3	147
Unknown or Ill-defined	0	0	0	0	0	0	0	2	1	3	3	2	5	2	4	1	1	0	24
TOTAL	133	83	84	96	89	125	140	179	196	233	185	182	155	128	130	91	35	29	2,293

TABLE 7

ANALYTIC MALE CASES SEEN AT KFSH&RC BY SITE AND AGE
2008

SITE GROUP	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	1	1	0	0	2	2	3	2	6	4	4	3	4	3	6	2	1	44
Nasopharynx	0	0	2	0	2	0	1	6	4	18	9	4	0	1	6	1	1	0	55
Esophagus	0	0	0	0	0	0	0	0	0	0	1	2	3	1	4	1	1	3	16
Stomach	0	0	0	0	0	1	0	0	0	3	0	6	6	4	2	3	1	0	26
Small Intestine	0	0	0	0	1	0	0	0	0	0	1	0	1	1	0	0	0	0	4
Colon	0	0	0	0	0	2	0	4	1	4	6	7	3	4	1	2	1	1	36
Rectum & Rectosigmoid	0	0	0	0	0	0	0	4	4	7	5	6	7	2	6	1	1	1	45
Anus, Anal Canal, Anorectum	3	0	0	0	1	0	0	0	0	0	0	0	1	1	1	0	0	0	2
Liver	0	0	0	0	0	0	0	1	1	2	0	3	6	3	2	3	2	2	33
Gallbladder	0	0	0	0	0	0	0	1	0	0	2	1	1	0	2	0	0	0	7
Bile Ducts	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2
Pancreas	0	0	0	0	0	0	0	0	4	0	3	3	1	1	2	1	1	0	17
Retroperitoneum, Peritoneum	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Other Digestive	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nasal Cavity, Sinus, Ear	0	0	1	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	4
Larynx	0	0	0	0	0	0	0	0	4	2	2	5	4	4	3	2	0	1	27
Lung, Bronchus	0	0	0	0	0	0	1	1	4	2	4	4	10	6	9	4	2	0	44
Pleura	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Other Respiratory & Thoracic	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2
Leukemia	30	16	13	10	9	6	7	5	5	5	2	1	0	0	1	0	0	0	110
Myeloma	0	0	0	0	0	1	0	1	2	1	1	1	1	1	0	0	0	0	9
Other Hematopoietic	2	2	0	0	0	0	1	0	0	1	0	1	1	0	0	0	0	0	8
Bone	0	2	11	13	5	2	2	2	1	0	2	0	0	0	1	0	0	0	41
Soft Tissue	7	1	2	2	1	3	0	0	1	0	3	0	1	0	1	0	0	0	22
Melanoma of Skin	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2
Kaposi Sarcoma	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	3	0	0	6
Other Skin Cancer	0	0	0	0	0	0	2	0	1	0	2	3	1	3	3	1	2	2	20
Breast	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	3
Cervix Uteri	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Corpus Uteri	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
Vulva	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Female Genital	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	1	1	0	7	7	11	9	8	3	0	47
Testis	2	0	0	3	3	6	1	6	1	5	6	5	9	8	6	3	0	0	23
Bladder	0	0	0	0	2	1	1	3	3	4	8	5	9	8	6	3	0	2	53
Kidney & Renal Pelvis	5	3	0	0	1	1	2	3	2	4	8	5	1	4	1	5	2	1	48
Eye	8	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	9
Brain	13	7	7	2	1	3	3	3	3	3	0	2	1	0	1	1	0	0	51
Thyroid	0	1	1	2	5	2	7	8	5	7	5	3	5	3	1	1	0	1	57
Other Endocrine	8	2	1	5	1	0	0	0	2	0	0	0	0	0	0	0	0	0	19
Hodgkin's Disease	2	8	11	7	6	5	3	4	1	1	3	0	0	0	0	0	0	0	51
Non-Hodgkin's Lymphoma	6	9	3	4	4	6	3	10	7	3	6	7	3	5	6	4	0	0	86
Unknown or Ill-defined	0	0	0	0	0	0	0	1	0	2	1	2	4	0	1	0	0	0	11
TOTAL	87	52	53	48	43	41	38	69	61	77	81	85	81	68	71	53	19	15	1,042

TABLE 8

ANALYTIC FEMALE CASES SEEN AT KFSH&RC BY SITE AND AGE
2008

SITE GROUP	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	2	3	5	4	9	7	2	3	9	2	3	4	56
Nasopharynx	0	0	1	1	0	2	2	5	3	1	1	2	1	0	1	0	0	0	21
Esophagus	0	0	0	0	0	0	0	0	0	1	2	1	2	2	3	1	0	1	11
Stomach	0	0	0	0	0	0	2	1	2	1	2	1	2	2	3	1	0	1	18
Small Intestine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Colon	0	0	0	0	0	3	1	2	3	8	5	2	3	2	2	2	0	2	35
Rectum & Rectosigmoid	0	0	0	0	2	0	2	0	2	4	5	5	4	3	3	1	1	0	32
Anus, Anal Canal, Anorectum	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	2
Liver	0	0	0	1	0	0	0	0	3	2	3	3	3	2	1	2	0	0	17
Gallbladder	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	0	3
Bile Ducts	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	3
Pancreas	0	0	0	0	0	0	0	1	1	1	0	2	0	2	0	2	1	0	12
Retropertitoneum, Peritoneum	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Other Digestive	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	1	0	0	4
Nasal Cavity, Sinus, Ear	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	2
Larynx	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2
Lung, Bronchus	0	0	0	0	0	1	0	0	0	4	1	2	1	3	2	1	0	0	15
Pleura	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Other Respiratory & Thoracic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Leukemia	19	9	6	10	9	7	6	5	3	2	1	0	1	0	1	0	0	0	79
Myeloma	0	0	0	0	0	0	0	0	1	2	0	2	0	1	0	0	0	0	6
Other Hematopoietic	0	1	0	0	0	0	2	1	0	0	1	1	0	1	0	0	0	0	6
Bone	1	4	7	4	2	0	2	1	0	1	1	1	0	0	1	0	0	0	26
Soft Tissue	3	3	3	5	0	6	0	0	1	3	1	1	0	0	1	0	0	0	27
Melanoma of Skin	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	3
Kaposi's Sarcoma	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	1
Other Skin Cancer	0	0	0	1	2	0	0	1	2	1	0	0	2	0	0	0	0	0	13
Breast	0	0	0	1	2	11	35	42	59	69	38	27	19	15	5	8	1	1	333
Cervix Uteri	0	0	0	0	0	1	6	5	6	5	2	3	3	3	2	2	0	0	38
Corpus Uteri	0	0	0	0	1	1	4	2	2	3	11	9	7	5	5	5	1	1	57
Ovary	0	0	3	1	1	6	1	2	2	7	2	4	5	3	5	1	3	0	46
Vulva	0	0	0	0	0	0	0	0	1	0	0	1	0	2	0	0	0	0	4
Other Female Genital	0	0	0	0	0	1	0	2	1	0	0	0	0	0	0	0	0	0	4
Prostate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Testis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bladder	0	0	0	0	1	1	0	0	1	1	0	0	0	1	2	2	0	1	9
Kidney & Renal Pelvis	5	0	0	3	1	0	3	2	3	2	1	2	3	2	3	1	1	0	33
Eye	4	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	7
Brain	8	7	0	3	1	1	3	3	0	1	1	2	0	1	1	0	0	0	32
Thyroid	0	0	2	6	14	25	22	26	27	24	12	4	5	2	3	2	3	0	177
Other Endocrine	5	4	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	7
Hodgkin's Disease	0	4	6	8	3	7	3	0	0	0	0	0	3	0	0	0	0	0	34
Non-Hodgkin's Lymphoma	1	3	3	4	5	6	4	1	6	6	2	7	4	2	1	2	1	3	61
Unknown or Ill-defined	0	0	0	0	0	0	0	1	1	1	2	0	1	2	3	1	1	0	13
TOTAL	46	31	31	48	46	84	102	110	135	156	104	97	74	60	59	38	16	14	1,251

TRENDS IN RELATIVE FREQUENCY OF CANCER AT KFSH&RC (cont'd)

The crude 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 while leukemia, lymphoma and thyroid cancer are more common. The following 2008 analytic cases, which show a quite similar pattern with the data from the Saudi Cancer Registry (SCR), exhibit significant differences in trends from those of the West when compared to the data published in *Cancer Facts & Figures - 2008*, by the American Cancer Society:

TABLE 9
COMPARATIVE DATA - KFSH&RC vs SCR vs USA
(% to TOTAL CANCER CASES)

SITE	KFSH&RC 2008 Analytics	SCR 2006 Saudis	USA 2008 Estimates
BREAST	14.7%	12.4%	12.8%
THYROID	10.2%	6.7%	2.6%
LEUKEMIA	8.2%	6.3%	3.1%
COLON, RECTUM	6.5%	9.7%	10.4%
NON-HODGKIN'S LYMPHOMA	6.4%	7.3%	4.6%
HODGKIN'S LYMPHOMA	3.7%	3.6%	0.6%
BRAIN, CNS	3.6%	3.1%	1.5%
LUNG, BRONCHUS	2.6%	3.9%	15.0%
BONE	2.9%	1.2%	0.2%
SKIN MELANOMA	0.2%	0.3%	4.3%
PROSTATE (% to MALES)	4.5%	2.8%	25.0%

Breast - The most common malignancy seen at KFSH&RC is breast cancer, comprising 14.7% of all cases, as compared to 12.8% of all neoplasms diagnosed in the U.S.A. It affects mostly women under the age of 50, while in the U.S.A., those more than 50 years of age are most frequently affected. As in the Western countries, it is the number one cancer among women.

Thyroid – 10.2% of all malignancies in KFSH&RC are thyroid cancer, much higher than in the West. It represents 14.1% of female malignant neoplasms, second to breast cancer. The male/female ratio is 0.3:1. Thyroid cancer accounts for only 2.6% of all cases in the U.S.A. and 4.1% of female malignancies.

Leukemia – The most striking feature is the high crude relative frequency of leukemia cases, constituting 8.2% of all cases seen at KFSH&RC, as compared to 3.1% of all neoplasms diagnosed in the U.S.A. The male/female ratio is 1.4:1. It is the most common type of malignancy seen in males and third in females. It is also the most common malignancy among pediatric cases.

Colo-Rectal - Less common than in the West, this disease represents only 6.5% of all cancer cases. In the U.S.A. it constitutes 10.4% of newly diagnosed cancer cases. Dietary factors, particularly lower animal fat intake, may play a role. The male/female ratio at KFSH&RC is 1.2:1.

Non-Hodgkin's Lymphoma - Cases of non-hodgkin's lymphoma account for 6.4% of all cases. The male/female ratio is 1.4:1. In the U.S.A., NHL accounts for only 4.6% of all cancers.

Hodgkin's Lymphoma - The incidence of hodgkin's lymphoma is comparatively more frequent at KFSH&RC than in Western countries. In the U.S.A. it constitutes 0.6% of all cancers, compared to 3.7% at KFSH&RC. The male/female ratio is 1.5:1.

Brain,CNS - Primary malignant neoplasm of the brain and CNS accounts for 3.6% of all malignancies and ranks second among the most common pediatric malignancies. The male/female ratio is 1.6:1. This is much 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 15.0% of all cancer cases (15.4% in males, and 14.5% in females). At KFSH&RC, 2.6% of all diagnoses are lung cancer; in males it is the eighth most common tumor, constituting 4.2% of male malignancies and in females,1.2%. The male/female ratio is 2.9:1, in the West, 1.1:1.

Skin Melanoma - The relative frequency of skin melanoma at KFSH&RC (0.2%) is much lower than that of the West (4.3%). The male/female ratio is 0.7:1 at KFSH&RC and 1.3:1 in the West.

Prostate - The observed rate of prostatic cancer in men is significantly lower than in the West, where it is the most common male cancer (constituting 25.0% of the male malignancies). This is in contrast to the KFSH&RC experience, where prostatic cancer makes up only 4.5% of the male cancer. This is probably due to the population age difference, screening and early detection. Prostate cancer is a disease predominantly of older men and the population of Saudi Arabia is, in general, very young.

FIGURE 10

**DISTRIBUTION OF 20 MOST COMMON MALIGNANCIES
2008 ANALYTIC CASES (TOTAL CASES = 2,293)**

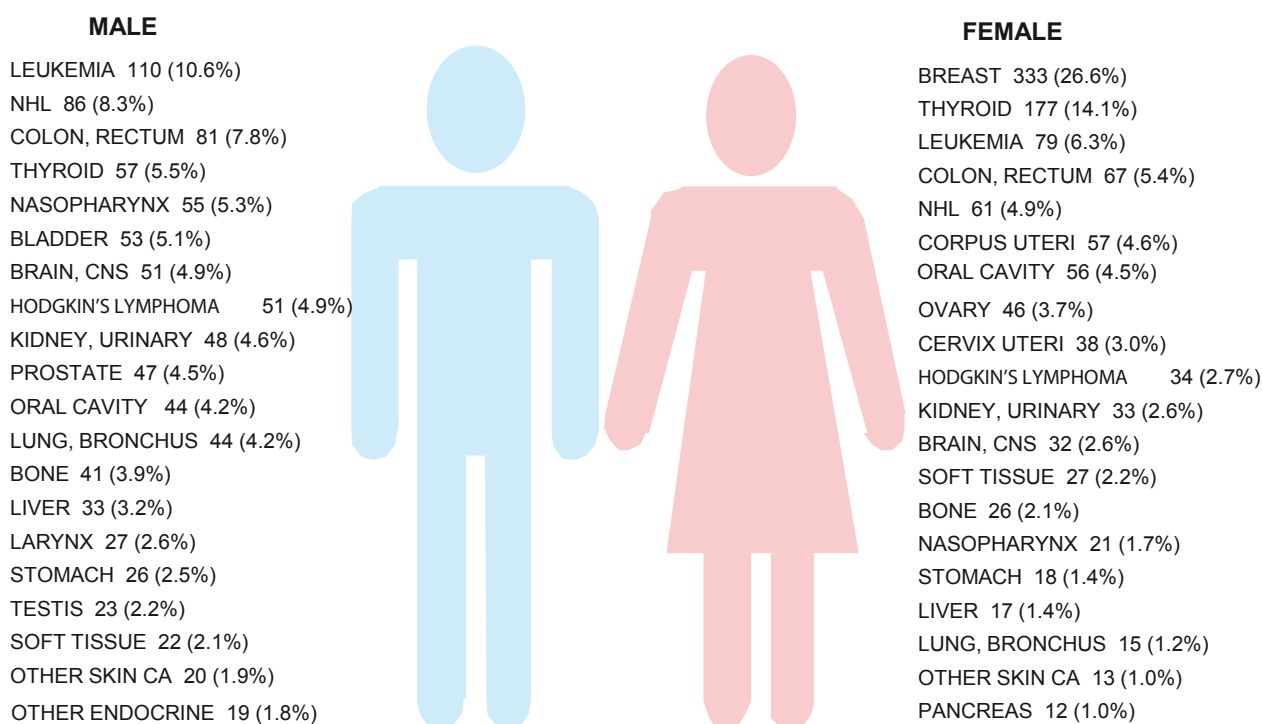


FIGURE 11

**DISTRIBUTION OF PEDIATRIC MALIGNANCIES
2008 ANALYTIC CASES (TOTAL CASES = 300)**

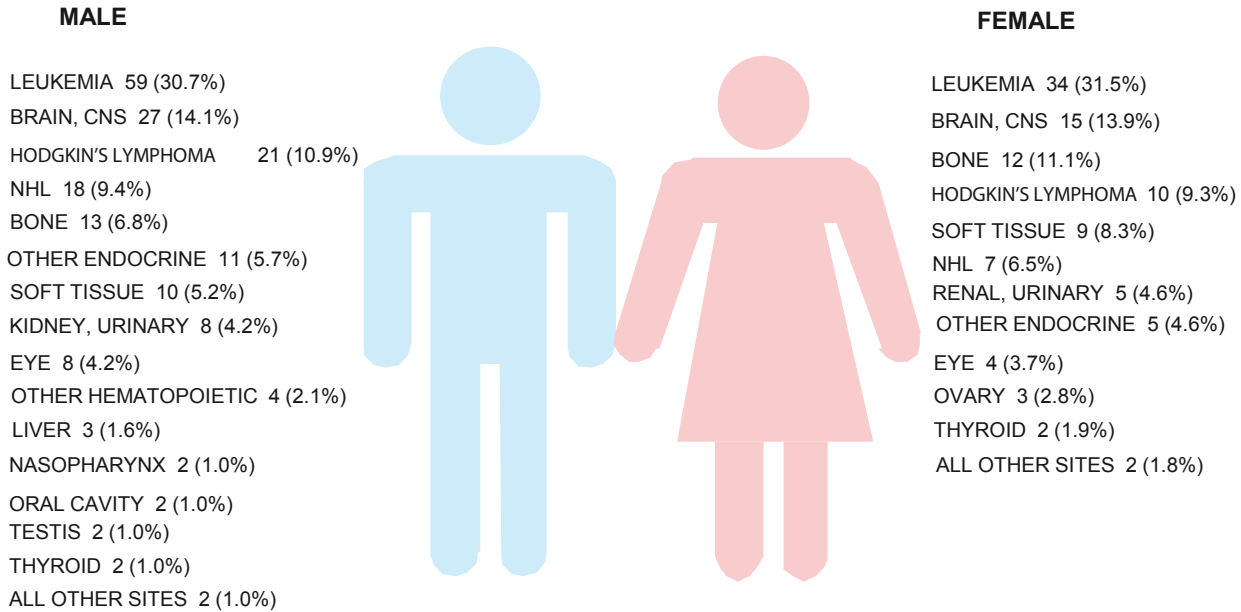


FIGURE 12

**DISTRIBUTION OF 10 MOST COMMON PEDIATRIC MALIGNANCIES BY HISTOLOGY
2008 ANALYTIC CASES (TOTAL CASES = 300)**

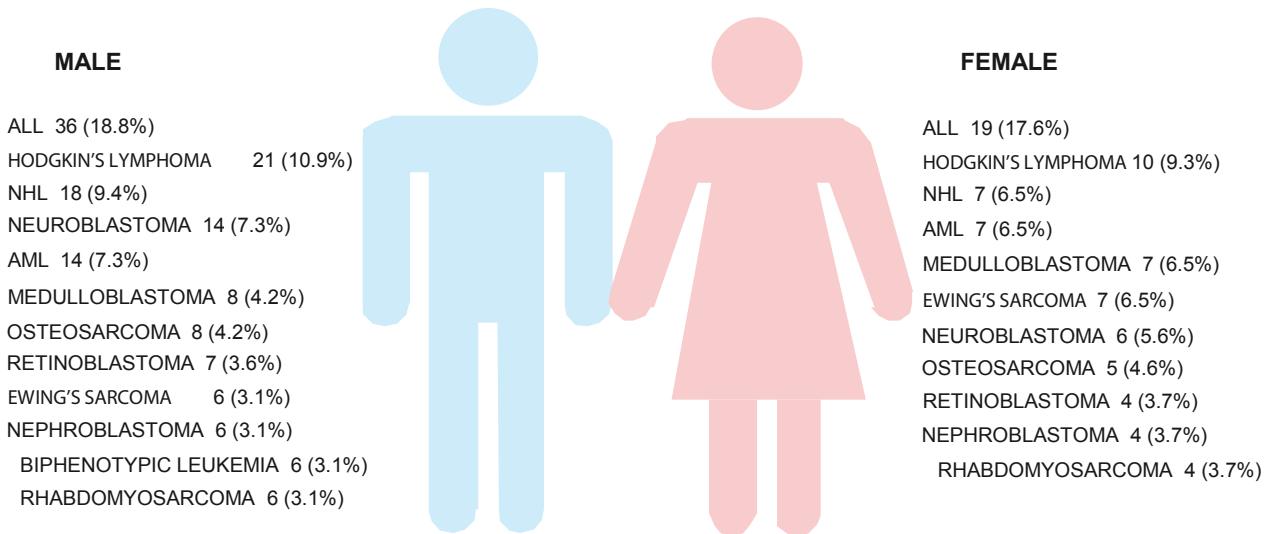


TABLE 10
PRIMARY SITE TABLE
(INCLUDES MULTIPLE PRIMARIES)
2 0 0 8

SITE (NOS-Not Otherwise Specified)	HISTOLOGY	ALL CASES	ADULTS		PEDIATRICS	
			MALE	FEMALE	MALE	FEMALE
		2,510	941	1,232	214	123
LIP		4	4	0	0	0
	Squamous Cell Carcinoma	4	4	0	0	0
TONGUE		30	14	16	0	0
	Squamous Cell Carcinoma	27	12	15	0	0
	Adenoid Cystic Carcinoma	1	1	0	0	0
	Non-Hodgkin's Lymphoma	1	1	0	0	0
	Malignant Neoplasm, NOS	1	0	1	0	0
GUM		23	7	15	1	0
	Squamous Cell Carcinoma	18	5	13	0	0
	Non-Hodgkin's Lymphoma	3	1	1	1	0
	Adenoid Cystic Carcinoma	1	0	1	0	0
	Verrucous Carcinoma	1	1	0	0	0
FLOOR OF MOUTH		3	2	1	0	0
	Squamous Cell Carcinoma	3	2	1	0	0
PALATE		7	2	5	0	0
	Mucoepidermoid Carcinoma	3	1	2	0	0
	Non-Hodgkin's Lymphoma	2	1	1	0	0
	Squamous Cell Carcinoma	1	0	1	0	0
	Malignant Neoplasm, NOS	1	0	1	0	0
OTHER AND UNSPECIFIED PARTS OF MOUTH		17	7	10	0	0
	Squamous Cell Carcinoma	12	5	7	0	0
	Non-Hodgkin's Lymphoma	2	0	2	0	0
	Epithelial-Myoepithelial Carcinoma	1	1	0	0	0
	Mucoepidermoid Carcinoma	1	0	1	0	0
	Verrucous Carcinoma	1	1	0	0	0
SALIVARY GLANDS, MAJOR		15	4	9	2	0
	Mucoepidermoid Carcinoma	5	1	3	1	0
	Adenoid Cystic Carcinoma	4	1	3	0	0
	Squamous Cell Carcinoma	2	1	1	0	0
	Non-Hodgkin's Lymphoma	2	1	1	0	0
	Acinar Cell Carcinoma	1	0	1	0	0
	Malignant Rhabdoid Tumor	1	0	0	1	0
TONSIL		11	5	6	0	0
	Non-Hodgkin's Lymphoma	7	3	4	0	0
	Squamous Cell Carcinoma	3	1	2	0	0
	Basaloid Squamous Cell Carcinoma	1	1	0	0	0
OROPHARYNX		3	2	1	0	0
	Non-Hodgkin's Lymphoma	2	1	1	0	0
	Basaloid Squamous Cell Carcinoma	1	1	0	0	0
NASOPHARYNX		79	55	21	2	1
	Carcinoma, Undifferentiated	39	28	9	2	0
	Squamous Cell Carcinoma	30	23	7	0	0
	Carcinoma, NOS	6	3	2	0	1
	Non-Hodgkin's Lymphoma	2	1	1	0	0

SITE	HISTOLOGY (NOS-Not Otherwise Specified)	ALL CASES	ADULTS		PEDIATRICS	
			MALE	FEMALE	MALE	FEMALE
	Chordoma	1	0	1	0	0
	Rhabdomyosarcoma	1	0	1	0	0
HYPOPHARYNX		9	4	5	0	0
	Squamous Cell Carcinoma	7	3	4	0	0
	Adenocarcinoma, NOS	1	0	1	0	0
	Carcinoma, NOS	1	1	0	0	0
ESOPHAGUS		31	19	12	0	0
	Squamous Cell Carcinoma	22	10	12	0	0
	Adenocarcinoma, NOS	7	7	0	0	0
	Melanoma	1	1	0	0	0
	Malignant Neoplasm, NOS	1	1	0	0	0
STOMACH		59	33	26	0	0
	Adenocarcinoma, NOS	25	16	9	0	0
	Signet Ring Cell Carcinoma	14	8	6	0	0
	Non-Hodgkin's Lymphoma	12	4	8	0	0
	Adenocarcinoma Intestinal Type	5	3	2	0	0
	Carcinoma Diffuse Type	2	1	1	0	0
	Squamous Cell Carcinoma	1	1	0	0	0
SMALL INTESTINE		9	6	2	1	0
	Non-Hodgkin's Lymphoma	4	2	1	1	0
	Neuroendocrine Carcinoma	2	1	1	0	0
	Spindle Cell Sarcoma	1	1	0	0	0
	Adenocarcinoma, NOS	1	1	0	0	0
	Carcinoma, NOS	1	1	0	0	0
COLON		80	41	37	0	2
	Adenocarcinoma, NOS	64	34	30	0	0
	Mucinous Adenocarcinoma	9	5	4	0	0
	Carcinoma, NOS	3	1	2	0	0
	Signet Ring Cell Carcinoma	2	1	1	0	0
	Non-Hodgkin's Lymphoma	2	0	0	0	2
RECTOSIGMOID JUNCTION		19	12	7	0	0
	Adenocarcinoma, NOS	17	11	6	0	0
	Adenocarcinoma In Villous Adenoma	1	1	0	0	0
	Non-Hodgkin's Lymphoma	1	0	1	0	0
RECTUM		63	37	26	0	0
	Adenocarcinoma, NOS	51	34	17	0	0
	Mucinous Adenocarcinoma	10	3	7	0	0
	Signet Ring Cell Carcinoma	1	0	1	0	0
	Carcinoma, NOS	1	0	1	0	0
ANUS, ANAL CANAL		6	3	3	0	0
	Adenocarcinoma, NOS	2	1	1	0	0
	Squamous Cell Carcinoma	2	1	1	0	0
	Gastrointestinal Stromal Sarcoma	1	0	1	0	0
	Non-Hodgkin's Lymphoma	1	1	0	0	0
LIVER, INTRAHEPATIC BILE DUCTS		58	34	19	5	0
	Hepatocellular Carcinoma	41	27	14	0	0
	Cholangiocarcinoma	9	5	4	0	0
	Hepatoblastoma	4	0	0	4	0
	Non-Hodgkin's Lymphoma	2	1	0	1	0
	Signet Ring Cell Carcinoma	1	1	0	0	0
	Adenocarcinoma, NOS	1	0	1	0	0
GALLBLADDER, EXTRAHEPATIC BILE DUCTS		16	9	7	0	0
	Adenocarcinoma, NOS	10	6	4	0	0

SITE	HISTOLOGY (NOS-Not Otherwise Specified)	ALL CASES	ADULTS		PEDIATRICS	
			MALE	FEMALE	MALE	FEMALE
	Cholangiocarcinoma	2	1	1	0	0
	Signet Ring Cell Carcinoma	2	1	1	0	0
	Klatskin Tumor	1	0	1	0	0
	Carcinoma, NOS	1	1	0	0	0
PANCREAS		31	19	12	0	0
	Adenocarcinoma, NOS	22	13	9	0	0
	Malignant Neoplasm, NOS	3	1	2	0	0
	Duct Carcinoma	2	1	1	0	0
	Neuroendocrine Carcinoma	1	1	0	0	0
	Pleomorphic Carcinoma	1	1	0	0	0
	Non-Hodgkin's Lymphoma	1	1	0	0	0
	Carcinoma, NOS	1	1	0	0	0
OTHER DIGESTIVE		4	0	4	0	0
	Mucinous Adenocarcinoma	2	0	2	0	0
	Signet Ring Cell Carcinoma	1	0	1	0	0
	Adenocarcinoma, NOS	1	0	1	0	0
NASAL CAVITY, MIDDLE EAR		1	0	1	0	0
	Adenocarcinoma, NOS	1	0	1	0	0
ACCESSORY SINUSES		8	4	1	2	1
	Embryonal Rhabdomyosarcoma	2	0	0	1	1
	Squamous Cell Carcinoma	2	2	0	0	0
	Non-Hodgkin's Lymphoma	2	1	0	1	0
	Chondroblastic Osteosarcoma	1	0	1	0	0
	Mucinous Adenocarcinoma	1	1	0	0	0
LARYNX		31	29	2	0	0
	Squamous Cell Carcinoma	23	21	2	0	0
	Basaloid Squamous Cell Carcinoma	1	1	0	0	0
	Combined Small Cell Carcinoma	1	1	0	0	0
	Pseudosarcomatous Carcinoma	1	1	0	0	0
	Squamous Cell Carcinoma, Spindle Cell	1	1	0	0	0
	Verrucous Carcinoma	1	1	0	0	0
	Carcinoma, NOS	1	1	0	0	0
	Adenocarcinoma, NOS	1	1	0	0	0
	Non-Hodgkin's Lymphoma	1	1	0	0	0
TRACHEA		1	0	1	0	0
	Adenoid Cystic Carcinoma	1	0	1	0	0
LUNG, BRONCHUS		62	45	17	0	0
	Adenocarcinoma, NOS	22	16	6	0	0
	Squamous Cell Carcinoma	15	12	3	0	0
	Non-Small Cell Carcinoma	8	6	2	0	0
	Mucinous Adenocarcinoma	4	3	1	0	0
	Small Cell Carcinoma	3	3	0	0	0
	Carcinoma, NOS	3	2	1	0	0
	Bronchiolo-Alveolar Adenocarcinoma	2	1	1	0	0
	Carcinoid Tumor	2	1	1	0	0
	Adenoid Cystic Carcinoma	1	0	1	0	0
	Hodgkin's Lymphoma	1	0	1	0	0
	Malignant Neoplasm, NOS	1	1	0	0	0
THYMUS		2	2	0	0	0
	Thymoma, Malignant	2	2	0	0	0
MEDIASTINUM		3	2	1	0	0
	Neuroendocrine Carcinoma	2	1	1	0	0
	Seminoma	1	1	0	0	0

SITE	HISTOLOGY (NOS-Not Otherwise Specified)	ALL CASES	ADULTS		PEDIATRICS	
			MALE	FEMALE	MALE	FEMALE
PLEURA		3	2	1	0	0
	Mesothelioma	2	1	1	0	0
	Non-Hodgkin's Lymphoma	1	1	0	0	0
BONES, JOINTS, CARTILAGE		83	36	19	16	12
	Osteosarcoma	24	9	3	7	5
	Ewing's Sarcoma	23	7	3	6	7
	Non-Hodgkin's Lymphoma	9	4	4	1	0
	Chondroblastic Osteosarcoma	8	4	3	1	0
	Chordoma	8	5	3	0	0
	Chondrosarcoma	3	2	1	0	0
	Parosteal Osteosarcoma	2	0	2	0	0
	Plasmacytoma	2	2	0	0	0
	Ameloblastic Fibrosarcoma	1	1	0	0	0
	Leiomyosarcoma	1	1	0	0	0
	Periosteal Osteosarcoma	1	1	0	0	0
	Hodgkin's Lymphoma	1	0	0	1	0
BONE MARROW		239	68	60	69	42
	Acute Lymphoblastic Leukemia	101	19	16	41	25
	Acute Myeloid Leukemia	58	20	21	9	8
	Chronic Myeloid Leukemia	23	9	11	2	1
	Acute Biphenotypic Leukemia	19	8	3	6	2
	Acute Promyelocytic Leukemia	7	2	2	3	0
	Juvenile Myelomonocytic Leukemia	6	0	0	2	4
	Acute Megakaryoblastic Leukemia	3	1	0	2	0
	Acute Monocytic Leukemia	3	2	1	0	0
	Chronic Lymphocytic Leukemia	3	2	1	0	0
	Myelodysplastic Syndrome, NOS	3	1	0	2	0
	Refractory Anemia With Excess Blasts	3	0	2	1	0
	Chronic Myeloproliferative Disease	2	1	1	0	0
	Essential Thrombocythemia	2	0	2	0	0
	Acute Myelomonocytic Leukemia	1	0	0	1	0
	Burkitt Cell Leukemia	1	1	0	0	0
	Acute Leukemia, NOS	1	0	0	0	1
	Myelosclerosis With Myeloid Metaplasia	1	1	0	0	0
	Polycythemia Vera	1	1	0	0	0
	Refractory Anemia With Sideroblasts	1	0	0	0	1
MULTIPLE MYELOMA		16	9	7	0	0
SPLEEN		2	2	0	0	0
	Hepatosplenic Cell Lymphoma	1	1	0	0	0
	Non-Hodgkin's Lymphoma	1	1	0	0	0
OTHER HEMATOPOIETIC		1	0	0	1	0
	Langerhans Cell Histiocytosis	1	0	0	1	0
SKIN (MELANOMA)		8	2	4	1	1
	Melanoma, NOS	5	2	3	0	0
	Acral Lentiginous Melanoma	1	0	1	0	0
	Melanoma In Giant Pigmented Nevus	1	0	0	1	0
	Nodular Melanoma	1	0	0	0	1
SKIN (NON-MELANOMA)		66	40	24	1	1
	Squamous Cell Carcinoma	16	10	6	0	0
	Mycosis Fungoides	12	6	5	0	1
	Basal Cell Carcinoma	13	9	4	0	0
	Kaposi Sarcoma	7	6	1	0	0
	Dermatofibrosarcoma	6	4	2	0	0

SITE	HISTOLOGY (NOS-Not Otherwise Specified)	ALL CASES	ADULTS		PEDIATRICS	
			MALE	FEMALE	MALE	FEMALE
	Non-Hodgkin's Lymphoma	6	2	3	1	0
	Basosquamous Carcinoma	3	2	1	0	0
	Paget Disease, Extramammary	1	0	1	0	0
	Sebaceous Adenocarcinoma	1	0	1	0	0
	Verrucous Carcinoma	1	1	0	0	0
	RETROPERITONEUM, PERITONEUM	3	1	1	1	0
	Embryonal Rhabdomyosarcoma	1	0	0	1	0
	Mucinous Adenocarcinoma	1	1	0	0	0
	Papillary Serous Cystadenocarcinoma	1	0	1	0	0
	CONNECTIVE/SUBCUTANEOUS/SOFT TISSUE	60	16	21	12	11
	Synovial Sarcoma	8	2	6	0	0
	Rhabdomyosarcoma	8	0	0	4	4
	Liposarcoma	6	3	3	0	0
	Ewing's Sarcoma	5	2	1	1	1
	Neuroblastoma	5	0	0	3	2
	Peripheral Neuroectodermal Tumor	4	0	2	1	1
	Non-Hodgkin's Lymphoma	4	3	0	0	1
	Fibromyxosarcoma	3	1	2	0	0
	Giant Cell Sarcoma	2	1	1	0	0
	Leiomyosarcoma	2	2	0	0	0
	Spindle Cell Sarcoma	2	1	1	0	0
	Yolk Sac Tumor	2	0	0	2	0
	Clear Cell Sarcoma	1	0	0	1	0
	Epithelioid Sarcoma	1	0	0	0	1
	Fibrosarcoma	1	0	1	0	0
	Hemangiosarcoma	1	0	1	0	0
	Malignant Fibrous Histiocytoma	1	0	1	0	0
	Myxoid Chondrosarcoma	1	0	1	0	0
	Osteosarcoma	1	1	0	0	0
	Sarcoma, NOS	1	0	1	0	0
	Teratoma, Malignant	1	0	0	0	1
	BREAST	354	3	351	0	0
	Duct Cell Carcinoma	298	3	295	0	0
	Lobular Carcinoma	22	0	22	0	0
	Metaplastic Carcinoma	6	0	6	0	0
	Duct Carcinoma and Paget's Disease	5	0	5	0	0
	Duct Mixed with Other Carcinoma	3	0	3	0	0
	Mucinous Adenocarcinoma	3	0	3	0	0
	Carcinoma, NOS	3	0	3	0	0
	Papillary Carcinoma	2	0	2	0	0
	Phyllodes Tumor, Malignant	2	0	2	0	0
	Non-Hodgkin's Lymphoma	2	0	2	0	0
	Duct and Lobular Carcinoma	1	0	1	0	0
	Lobular Mixed with other Carcinoma	1	0	1	0	0
	Intracystic Carcinoma	1	0	1	0	0
	Medullary Carcinoma	1	0	1	0	0
	Carcinosarcoma	1	0	1	0	0
	Ewing's Sarcoma	1	0	1	0	0
	Adenocarcinoma, NOS	1	0	1	0	0
	Malignant Neoplasm, NOS	1	0	1	0	0
	VULVA	4	0	4	0	0
	Squamous Cell Carcinoma	2	0	2	0	0
	Verrucous Carcinoma	2	0	2	0	0

SITE	HISTOLOGY (NOS-Not Otherwise Specified)	ALL CASES	ADULTS		PEDIATRICS	
			MALE	FEMALE	MALE	FEMALE
CERVIC UTERI		41	0	41	0	0
	Squamous Cell Carcinoma	28	0	28	0	0
	Mucinous Adenocarcinoma	4	0	4	0	0
	Adenocarcinoma, NOS	3	0	3	0	0
	Carcinoma, NOS	3	0	3	0	0
	Carcinosarcoma	1	0	1	0	0
	Leiomyosarcoma	1	0	1	0	0
	Adenosquamous Carcinoma	1	0	1	0	0
CORPUS UTERI		63	0	63	0	0
	Endometrioid Adenocarcinoma	37	0	37	0	0
	Adenocarcinoma, NOS	5	0	5	0	0
	Papillary Serous Cystadenocarcinoma	4	0	4	0	0
	Carcinosarcoma	3	0	3	0	0
	Serous Cystadenocarcinoma	3	0	3	0	0
	Clear Cell Adenocarcinoma	2	0	2	0	0
	Adenosarcoma	1	0	1	0	0
	Endometrial Stromal Sarcoma	1	0	1	0	0
	Endometrioid Secretory Adenocarcinoma	1	0	1	0	0
	Leiomyosarcoma	1	0	1	0	0
	Mullerian Mixed Tumor	1	0	1	0	0
	Rhabdomyosarcoma	1	0	1	0	0
	Stromal Sarcoma	1	0	1	0	0
	Undifferentiated Sarcoma	1	0	1	0	0
	Squamous Cell Carcinoma	1	0	1	0	0
OVARY		48	0	45	0	3
	Serous Cystadenocarcinoma	18	0	18	0	0
	Papillary Serous Cystadenocarcinoma	9	0	9	0	0
	Dysgerminoma	3	0	2	0	1
	Adenocarcinoma, NOS	3	0	3	0	0
	Carcinoma, NOS	3	0	3	0	0
	Serous Surface Papillary Carcinoma	2	0	2	0	0
	Yolk Sac Tumor	2	0	1	0	1
	Carcinosarcoma	1	0	1	0	0
	Clear Cell Adenocarcinoma	1	0	1	0	0
	Endometrioid Adenocarcinoma	1	0	1	0	0
	Germinoma	1	0	0	0	1
	Mucinous Adenocarcinoma	1	0	1	0	0
	Pleomorphic Rhabdomyosarcoma	1	0	1	0	0
	Spindle Cell Sarcoma	1	0	1	0	0
	Struma Ovarii Malignant	1	0	1	0	0
PLACENTA		4	0	4	0	0
	Choriocarcinoma	4	0	4	0	0
PROSTATE		54	54	0	0	0
	Adenocarcinoma, NOS	50	50	0	0	0
	Malignant Neoplasm, NOS	2	2	0	0	0
	Small Cell Carcinoma	1	1	0	0	0
	Carcinoma, NOS	1	1	0	0	0
TESTIS		27	23	0	4	0
	Seminoma	10	10	0	0	0
	Mixed Germ Cell Tumor	8	8	0	0	0
	Yolk Sac Tumor	2	0	0	2	0
	Embryonal Carcinoma	1	1	0	0	0
	Embryonal Rhabdomyosarcoma	1	1	0	0	0

SITE	HISTOLOGY (NOS-Not Otherwise Specified)	ALL CASES	ADULTS		PEDIATRICS	
			MALE	FEMALE	MALE	FEMALE
	Germinoma	1	1	0	0	0
	Mixed Type Rhabdomyosarcoma	1	1	0	0	0
	Rhabdomyosarcoma	1	0	0	1	0
	Teratoma, Malignant	1	1	0	0	0
	Non-Hodgkin's Lymphoma	1	0	0	1	0
KIDNEY		79	38	28	8	5
	Renal Cell Carcinoma	50	26	24	0	0
	Nephroblastoma	10	0	0	6	4
	Papillary Adenocarcinoma	9	7	2	0	0
	Collecting Duct Carcinoma	2	1	1	0	0
	Clear Cell Adenocarcinoma	1	1	0	0	0
	Clear Cell Sarcoma of Kidney	1	0	0	1	0
	Cyst-Associated Renal Cell Carcinoma	1	1	0	0	0
	Ewing's Sarcoma	1	0	1	0	0
	Malignant Rhabdoid Tumor	1	0	0	0	1
	Medullary Carcinoma	1	1	0	0	0
	Neuroblastoma	1	0	0	1	0
	Malignant Neoplasm, NOS	1	1	0	0	0
RENAL PELVIS		3	2	1	0	0
	Papillary Transitional Cell Carcinoma	2	1	1	0	0
	Transitional Cell Carcinoma	1	1	0	0	0
URINARY BLADDER		63	54	9	0	0
	Papillary Transitional Cell Carcinoma	33	32	1	0	0
	Transitional Cell Carcinoma	24	18	6	0	0
	Squamous Cell Carcinoma	4	3	1	0	0
	Small Cell Carcinoma	1	1	0	0	0
	Adenocarcinoma, NOS	1	0	1	0	0
EYE, ADNEXA		20	2	3	10	5
	Retinoblastoma	13	0	0	8	5
	Squamous Cell Carcinoma	3	1	2	0	0
	Alveolar Soft Part Sarcoma	1	0	0	1	0
	Carcinoma In Pleomorphic Adenoma	1	1	0	0	0
	Rhabdomyosarcoma	1	0	1	0	0
	Non-Hodgkin's Lymphoma	1	0	0	1	0
BRAIN		85	23	21	28	13
	Glioblastoma	19	11	7	1	0
	Medulloblastoma	19	3	0	9	7
	Astrocytoma	16	3	4	6	3
	Oligodendroglioma	7	2	5	0	0
	Glioma, NOS	6	1	3	1	1
	Ependymoma	5	1	0	3	1
	Primitive Neuroectodermal Tumor	5	0	0	5	0
	Atypical Teratoid/Rhabdoid Tumor	2	0	0	2	0
	Mixed Glioma	2	1	1	0	0
	Germinoma	1	0	0	1	0
	Mixed Germ Cell Tumor	1	0	0	0	1
	Oligodendroglioma Anaplastic	1	1	0	0	0
	Non-Hodgkin's Lymphoma	1	0	1	0	0
OTHER NERVOUS SYSTEM		7	2	1	1	3
	Ependymoma	3	2	1	0	0

SITE	HISTOLOGY (NOS-Not Otherwise Specified)	ALL CASES	ADULTS		PEDIATRICS	
			MALE	FEMALE	MALE	FEMALE
	Glioma, NOS	3	0	0	1	2
	Pilocytic Astrocytoma	1	0	0	0	1
THYROID		251	62	184	2	3
	Papillary Adenocarcinoma	166	41	121	2	2
	Papillary Carcinoma, Follicular Variant	40	10	30	0	0
	Papillary Microcarcinoma	11	1	10	0	0
	Follicular Adenocarcinoma	7	3	4	0	0
	Oxyphilic Adenocarcinoma	5	1	4	0	0
	Non-Hodgkin's Lymphoma	5	1	3	0	1
	Medullary Carcinoma	4	2	2	0	0
	Papillary Carcinoma, Columnar Cell	4	1	3	0	0
	Carcinoma, Anaplastic	3	1	2	0	0
	Papillary Carcinoma, Oxyphilic Cell	2	0	2	0	0
	Carcinoma, NOS	2	0	2	0	0
	Papillary Carcinoma, Encapsulated	1	0	1	0	0
	Myxosarcoma	1	1	0	0	0
ADRENAL GLAND		19	1	2	11	5
	Neuroblastoma	13	0	0	11	2
	Ganglioneuroblastoma	3	0	0	0	3
	Adrenal Cortical Carcinoma	1	1	0	0	0
	Pheochromocytoma, Malignant	1	0	1	0	0
	Carcinoma, NOS	1	0	1	0	0
OTHER ENDOCRINE GLANDS		7	5	1	1	0
	Germinoma	4	3	0	1	0
	Pineoblastoma	1	1	0	0	0
	Yolk Sac Tumor	1	1	0	0	0
	Carcinoma, NOS	1	0	1	0	0
LYMPH NODES, HODGKIN'S LYMPHOMA		111	43	33	23	12
	Nodular Sclerosis	80	32	24	16	8
	Mixed Cellularity	14	5	3	3	3
	Hodgkin's Lymphoma, NOS	8	3	2	3	0
	Nodular Lymphocyte Predominance	5	2	2	1	0
	Lymphocyte-Rich	4	1	2	0	1
LYMPH NODES, NON HODGKIN'S LYMPHOMA		79	41	23	12	3
	Large B-Cell Diffuse	38	21	16	1	0
	Burkitt's	8	2	1	5	0
	Anaplastic Large Cell	7	2	3	1	1
	Precursor T-Cell Lymphoblastic	6	1	0	4	1
	Follicular	5	3	2	0	0
	Non-Hodgkin's Lymphoma, NOS	4	3	0	1	0
	Mantle Cell	3	2	1	0	0
	Mature T-Cell	3	3	0	0	0
	Precursor B-Cell Lymphoblastic	2	1	0	0	1
	Angioimmunoblastic T-Cell	1	1	0	0	0
	Small B Lymphocytic	1	1	0	0	0
	NK/T-Cell Lymphoma, Nasal Type	1	1	0	0	0
PRIMARY UNKNOWN		25	11	14	0	0
	Adenocarcinoma, NOS	13	5	8	0	0
	Carcinoma, NOS	6	3	3	0	0
	Neuroendocrine Carcinoma	2	0	2	0	0
	Carcinoid Tumor	1	1	0	0	0
	Mucinous Adenocarcinoma	1	0	1	0	0
	Squamous Cell Carcinoma	2	2	0	0	0

TABLE 11
MULTIPLE PRIMARY SITES TABLE
2 0 0 8

PRIMARY SITE 2008	HISTOLOGY (NOS-Not Otherwise Specified)	OTHER PRIMARIES (PREVIOUS OR CONCURRENT)	ALL PATIENTS	MALE	FEMALE
			103	34	69
TONGUE			3	1	2
	Squamous Cell Carcinoma	Nasopharynx - Carcinoma	1	1	0
	Squamous Cell Carcinoma	Colon - Carcinoma	1	0	1
	Squamous Cell Carcinoma	Breast - Duct Cell Carcinoma	1	0	1
GUM			3	1	2
	Squamous Cell Carcinoma	Rectosigmoid Junction - Adenoca	1	1	0
	Squamous Cell Carcinoma	Unknown Primary - Sq Cell Ca	1	0	1
	Squamous Cell Carcinoma	Cheek Mucosa - Verrucous Ca	1	0	1
PALATE			1	0	1
	Neoplasm, Malignant	Lung - Non-Small Cell Ca	1	0	1
PAROTID GLAND			2	0	2
	Mucoepidermoid Carcinoma	Nasal Cavity - NHL	1	0	1
	Mucoepidermoid Carcinoma	Thyroid-Papillary Ca Follicular Variant	1	0	1
TONSIL			1	1	0
	Squamous Cell Carcinoma	Chronic Myeloid Leukemia	1	1	0
ESOPHAGUS			1	0	1
	Squamous Cell Carcinoma	Liver - Hepatocellular Ca	1	0	1
STOMACH			4	3	1
	Adenocarcinoma	Rectum - Adenocarcinoma	1	1	0
	Adenocarcinoma	Small Intestine - Carcinoid Tumor	1	1	0
	Adenocarcinoma	Thyroid - Papillary Carcinoma	1	0	1
	Non-Hodgkin>s Lymphoma	Nasopharynx - NHL	1	1	0
SMALL INTESTINE			2	2	0
	Carcinoma, NOS	Skin - Basal Cell Carcinoma	1	1	0
	Non-Hodgkin>s Lymphoma	Skin - Basal Cell Carcinoma	1	1	0
COLON			4	2	2
	Adenocarcinoma, NOS	Rectum - Adenocarcinoma	1	1	0
	Adenocarcinoma, NOS	Bladder - Papillary Transitional Cell Ca	1	0	1
	Signet Ring Cell Carcinoma	Thyroid - Papillary Carcinoma	1	0	1
	Carcinoma, NOS	Kidney - Renal Cell Carcinoma	1	1	0
RECTOSIGMOID JUNCTION			2	1	1
	Adenocarcinoma, NOS	Colon, Hepatic Flexure - Adenoca	1	0	1
	Adenocarcinoma, NOS	Lymph Nodes - NHL	1	1	0
RECTUM			3	2	1
	Adenocarcinoma, NOS	Rectum - Adenoca in Villous Adenoma	1	1	0
	Adenocarcinoma, NOS	Sigmoid Colon - Adenoca	1	0	1
	Adenocarcinoma, NOS	Thyroid - Papillary Carcinoma	1	1	0
ANUS, ANAL CANAL			1	1	0
	Adenocarcinoma, NOS	Rectum - Adenocarcinoma	1	1	0

PRIMARY SITE 2008	HISTOLOGY (NOS-Not Otherwise Specified)	OTHER PRIMARIES (PREVIOUS OR CONCURRENT)	ALL PATIENTS	MALE	FEMALE
LIVER			2	1	1
Hepatocellular Carcinoma		Ovary - Granulosa Cell Tumor Malignant	1	0	1
Hepatocellular Carcinoma		Skin - Sq Cell Carcinoma	1	1	0
NASAL CAVITY			1	0	1
Adenocarcinoma, NOS		Thyroid - Papillary Carcinoma	1	0	1
LUNG, BRONCHUS			4	4	0
Non-Small Cell Carcinoma		Skin - Basal Cell Carcinoma	1	1	0
Non-Small Cell Carcinoma		Contra Lung-Bronchiolo- Alveolar Adenoca	1	1	0
Adenocarcinoma, NOS		Stomach-Gastrointestinal Stromal Sarcoma	1	1	0
Squamous Cell Carcinoma		Larynx - Sq Cell Carcinoma	1	1	0
BONE			1	1	0
Osteosarcoma		Soft Tissue - Rhabdomyosarcoma	1	1	0
BONE MARROW			2	1	1
Acute Lymphoblastic Leukemia		Thyroid - Follicular Adenoca	1	0	1
Multiple Myeloma		Thyroid - Papillary Carcinoma	1	1	0
SKIN			8	3	5
Melanoma		Thyroid - Papillary Carcinoma	1	0	1
Melanoma		Corpus Uteri-Clear Cell Adenoca	1	0	1
Basal Cell Carcinoma		Nasopharynx - Carcinoma, Undiff	1	1	0
Basal Cell Carcinoma		Eye - Sq Cell Ca Spindle Cell	1	0	1
Squamous Cell Carcinoma		Acute Myeloid Leukemia	1	1	0
Squamous Cell Carcinoma		Breast - Duct Cell Carcinoma	1	0	1
Basoquamous Cell Carcinoma		Skin - Sq Cell Carcinoma	1	0	1
Kaposi Sarcoma		Prostate - Adenocarcinoma	1	1	0
SOFT TISSUE			1	0	1
PNET		Lymph Nodes - NHL	1	0	1
BREAST			29	0	29
Duct Cell Carcinoma		Contra Breast - Duct Cell Ca	16	0	16
Duct Cell Carcinoma		Thyroid - Papillary Carcinoma	3	0	3
Duct Cell Carcinoma		LNS - Hodgkin's Lymphoma	2	0	2
Duct Cell Carcinoma		Contra Breast - Lobular Ca	1	0	1
Duct Cell Carcinoma		Ovary - Fibrosarcoma	1	0	1
Duct Cell Carcinoma		Stomach-Gastrointestinal Stromal Sarcoma	1	0	1
Duct Cell Carcinoma		Kidney - Renal Cell Carcinoma	1	0	1
Duct Cell Carcinoma		Corpus Uteri - Endometrioid Adenoca	1	0	1
Duct Cell Carcinoma		Contra Breast - Lobular Ca	2	0	2
Duct Cell Carcinoma		Contra Breast - Duct & Lobular Ca	1	0	1
CERVIX UTERI			2	0	2
Carcinoma, NOS		Stomach - NHL	1	0	1
Squamous Cell Carcinoma		Vulva - Sq Cell Carcinoma	1	0	1

PRIMARY SITE 2008	HISTOLOGY (NOS-Not Otherwise Specified)	OTHER PRIMARIES (PREVIOUS OR CONCURRENT)	ALL PATIENTS	MALE	FEMALE
CORPUS UTERI			4	0	4
	Endometrioid Adenocarcinoma	Breast - Duct Cell Carcinoma	1	0	1
	Carcinosarcoma	Corpus Uteri - Endometrioid Adenoca	1	0	1
	Adenosarcoma	Thyroid - Papillary Ca, Follicular	1	0	1
	Stromal Sarcoma	Cervix Uteri - Sq Cell Ca	1	0	1
OVARY			1	0	1
	Serous Cystadenocarcinoma	Breast - Duct Cell Carcinoma	1	0	1
PROSTATE			3	3	0
	Adenocarcinoma, NOS	Rectosigmoid Junction - Adenoca	1	1	0
	Adenocarcinoma, NOS	Testis - Mixed Germ Cell Tumor	1	1	0
	Adenocarcinoma, NOS	Kidney - Renal Cell Carcinoma	1	1	0
KIDNEY			2	1	1
	Renal Cell Carcinoma	LN's - Hodgkin's Lymphoma	1	0	1
	Renal Cell Carcinoma	Stomach - NHL	1	1	0
URINARY BLADDER			5	2	3
	Transitional Cell Carcinoma	Lung - Adenocarcinoma	1	1	0
	Transitional Cell Carcinoma	Liver - Hepatocellular Ca	2	0	2
	Papillary Transitional Cell Ca	Esophagus - Adenocarcinoma	1	1	0
	Adenocarcinoma, NOS	Breast - Duct Cell Carcinoma	1	0	1
BRAIN			1	0	1
	Astrocytoma Anaplastic	Thyroid - Papillary Carcinoma	1	0	1
THYROID			7	1	6
	Papillary Adenocarcinoma	Colon - Adenocarcinoma	1	0	1
	Papillary Adenocarcinoma	Nasopharynx - Carcinoma, Undiff	1	0	1
	Papillary Adenocarcinoma	Breast - Duct Cell Carcinoma	1	0	1
	Papillary Adenocarcinoma	Maxillary Sinus - NHL	1	1	0
	Papillary Adenocarcinoma	Bladder - Papillary Transitional Cell Ca	1	0	1
	Papillary Adenocarcinoma	Cervix Uteri - Sq Cell Ca	1	0	1
	Papillary Adenocarcinoma	Thyroid - Papillary Ca, Tall Cell Var	1	0	1
LYMPH NODES			2	2	0
	Follicular Lymphoma	Kidney - Renal Cell Ca	1	1	0
	Non-Hodgkin's Lymphoma	Stomach - NHL	1	1	0
PRIMARY UNKNOWN			1	1	0
	Carcinoid Tumor	Thyroid - Papillary Carcinoma	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 assigned at the time of initial diagnosis. 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

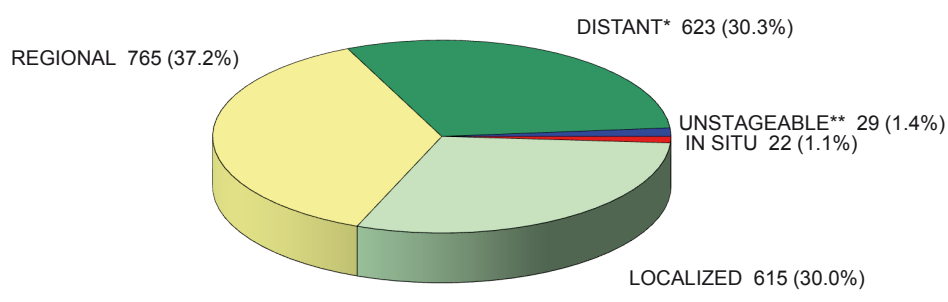
Systemic diseases, i.e., leukemia and multiple myeloma and cases of unstageable unknown primary were disregarded in graphically illustrating the stages for all analytic cases seen at KFSH&RC in 2008 (Figure 13). The 29 cases unstageable at diagnosis were those patients who refused further diagnostic workup, or further workup was not possible due to the patients' state of health, e.g., terminal cases or those with co-morbid conditions, or those with not enough information from the referring hospitals to stage the disease. Please refer also to Table 5 for the distribution of the 2008 analytic cases by site and stage at diagnosis.

In addition to the SEER Summary Staging, the cases were also staged according to the American Joint Committee on Cancer (AJCC) TNM system. This scheme is based on the premise that cancers of similar histology or site of origin share similar patterns of growth and extension. This system is based on the assessment of three components:

- T: Extent of the primary tumor
- N: Absence or presence and extent of regional lymph node involvement
- M: Absence or presence of distant metastasis

Analytic cases of four major sites, i.e., breast, lung, nasopharynx and hodgkin's lymphoma are presented in Table 12 with their clinical group stages and yearly comparative figures from 2004 to 2008. The pathologic group stages of stomach and colo-rectal are also presented in the same table.

FIGURE 13
DISTRIBUTION OF ANALYTIC CASES
BY STAGE (SEER) AT DIAGNOSIS
2008 (TOTAL CASES = 2,055)



*Excludes Hematopoietic Primaries (216 cases)
 **Excludes Unstageable Unknown Primaries (23 cases)

FIGURE 14
DISTRIBUTION OF ANALYTIC CASES BY
FIRST COURSE OF TREATMENT MODALITY
2008 (TOTAL CASES = 2,293)

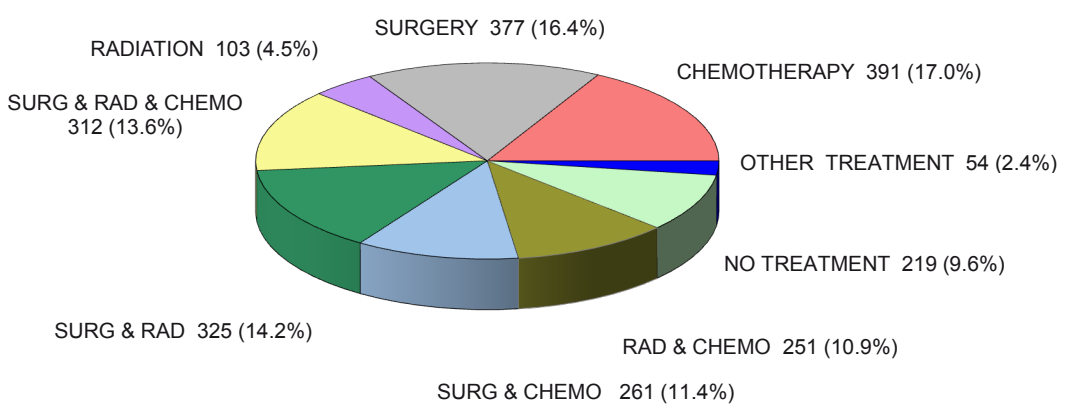


TABLE 12

AJCC CLINICAL TNM GROUP STAGE OF ANALYTIC CASES OF MAJOR SITES* BY YEAR
2004 - 2008

BREAST

Stage	2004		2005		2006		2007		2008		TOTAL	
	No	%	No	%	No	%	No	%	No	%	No	%
0	12	3.2	7	2.0	5	1.6	8	2.4	11	3.3	43	2.5
1	34	9.0	30	8.6	23	7.5	24	7.3	32	9.5	143	8.4
2A	59	15.7	62	17.8	56	18.2	57	17.3	61	18.1	295	17.4
2B	49	13.0	56	16.1	54	17.6	70	21.2	59	17.6	288	17.0
3A	29	7.7	26	7.4	27	8.8	15	4.5	17	5.1	114	6.7
3B	53	14.1	43	12.3	47	15.3	38	11.5	34	10.1	215	12.7
3C	10	2.7	5	1.4	7	2.3	3	0.9	1	0.3	26	1.5
4	59	15.7	77	22.1	50	16.3	62	18.8	70	20.8	318	18.7
Unstageable	71	18.9	43	12.3	38	12.4	53	16.1	51	15.2	256	15.1
Total	376	100.0	349	100.0	307	100.0	330	100.0	336	100.0	1,698	100.0

LUNG

Stage	2004		2005		2006		2007		2008		TOTAL	
	No	%	No	%	No	%	No	%	No	%	No	%
0	0	0.0	0	0.0	1	1.7	0	0.0	0	0.0	1	0.3
1A	2	2.5	2	2.5	1	1.7	2	3.4	3	5.1	10	3.0
1B	4	4.9	5	6.3	2	3.4	1	1.7	3	5.1	15	4.5
2A	0	0.0	0	0.0	1	1.7	1	1.7	0	0.0	2	0.6
2B	4	4.9	6	7.6	5	8.6	0	0.0	1	1.7	16	4.8
3A	3	3.7	3	3.8	6	10.3	2	3.4	7	11.9	21	6.3
3B	10	12.3	10	12.7	6	10.3	10	17.2	3	5.1	39	11.6
4	44	54.3	46	58.2	29	50.0	29	50.0	34	57.6	182	54.3
Unstageable	14	17.3	7	8.9	7	12.1	13	22.4	8	13.6	49	14.6
Total	81	100.0	79	100.0	58	100.0	58	100.0	59	100.0	335	100.0

NASOPHARYNX

Stage	2004		2005		2006		2007		2008		TOTAL	
	No	%	No	%	No	%	No	%	No	%	No	%
0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
1	3	3.3	0	0.0	2	2.6	0	0.0	0	0.0	5	1.3
2A	4	4.4	2	2.6	1	1.3	1	1.5	1	1.3	9	2.3
2B	7	7.8	3	3.9	5	6.6	2	3.0	2	2.6	19	4.9
3	21	23.3	20	26.0	10	13.2	17	25.8	18	23.7	86	22.3
4A	24	26.7	18	23.4	22	28.9	18	27.3	19	25.0	101	26.2
4B	16	17.8	21	27.3	17	22.4	14	21.2	12	15.8	80	20.8
4C	13	14.4	11	14.3	18	23.7	12	18.2	21	27.6	75	19.5
Unstageable	2	2.2	2	2.6	1	1.3	2	3.0	3	3.9	10	2.6
Total	90	100.0	77	100.0	76	100.0	66	100.0	76	100.0	385	100.0

* Excludes Lymphoma Cases.

**AJCC CLINICAL TNM GROUP STAGE OF ANALYTIC CASES OF MAJOR SITES BY YEAR
2004 - 2008**

HODGKIN'S LYMPHOMA

Stage	2004		2005		2006		2007		2008		TOTAL	
	No	%	No	%	No	%	No	%	No	%	No	%
1A	10	8.0	4	3.7	4	5.0	3	3.1	2	2.4	23	4.6
1B	1	0.8	0	0.0	0	0.0	0	0.0	0	0.0	1	0.2
2A	45	36.0	52	48.1	27	33.8	37	38.1	30	35.3	191	38.6
2B	11	8.8	6	5.6	5	6.3	7	7.2	4	4.7	33	6.7
3A	18	14.4	13	12.0	13	16.2	9	9.3	14	16.5	67	13.5
3B	14	11.2	9	8.3	8	10.0	9	9.3	10	11.8	50	10.1
4A	7	5.6	11	10.2	9	11.3	12	12.4	9	10.6	48	9.7
4B	19	15.2	13	12.0	14	17.5	20	20.6	16	18.8	82	16.6
Unstageable	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	125	100.0	108	100.0	80	100.0	97	100.0	85	100.0	495	100.0

**AJCC PATHOLOGIC TNM GROUP STAGE OF ANALYTIC CASES OF MAJOR SITES* BY YEAR
2004 - 2008**

STOMACH

Stage	2004		2005		2006		2007		2008		TOTAL	
	No	%	No	%	No	%	No	%	No	%	No	%
0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
1A	0	0.0	0	0.0	2	3.5	1	2.2	2	4.5	5	1.9
1B	3	4.8	2	3.8	6	10.5	2	4.4	2	4.5	15	5.7
2	5	7.9	3	5.7	2	3.5	0	0.0	2	4.5	12	4.6
3A	8	12.7	6	11.3	4	7.0	3	0.0	5	11.4	26	9.9
3B	3	4.8	6	11.3	3	5.3	0	6.7	1	2.3	13	5.0
4	10	15.9	6	11.3	5	8.8	7	15.6	9	20.5	37	14.1
Unstageable	34	54.0	30	56.6	35	61.4	32	71.1	23	52.3	154	58.8
Total	63	100.0	53	100.0	57	100.0	45	100.0	44	100.0	262	100.0

COLON, RECTUM

Stage	2004		2005		2006		2007		2008		TOTAL	
	No	%	No	%	No	%	No	%	No	%	No	%
0	0	0.0	0	0.0	1	0.6	0	0.0	2	1.4	3	0.4
1	6	3.6	9	5.5	6	3.4	7	4.2	5	3.4	33	4.0
2A	16	9.7	15	9.1	25	14.4	18	10.9	21	14.2	95	11.6
2B	1	0.6	2	1.2	6	3.4	2	1.2	0	0.0	11	1.3
3	4	2.4	3	1.8	4	2.3	5	3.0	1	0.7	17	2.1
4A	14	8.5	16	9.7	16	9.2	18	10.9	15	10.1	79	9.7
4B	5	3.0	4	2.4	14	8.1	8	4.8	7	4.7	38	4.7
4C	20	12.1	24	14.5	20	11.5	23	13.9	15	10.1	102	12.5
Unstageable	99	60.0	92	55.8	82	47.1	84	50.9	82	55.4	439	53.7
Total	165	100.0	165	100.0	174	100.0	165	100.0	148	100.0	817	100.0

* Excludes Lymphoma Cases.

Analysis of Cancer Statistics for Breast Cancer

Dahish Ajarim, MD, Senior Consultant, Medical Oncology

In 2008, we registered 354 cases with breast cancer at the KFSH&RC. The number of breast cancer treated at our center continues to increase with 347 cases treated in 2007. Figure A shows the distribution of cases by 5-year period. 9.0% of patients presented with stage I, 34.5% stage II, 15.5% stage III and 20.9% stage IV (Figure B). 97.2% of the tumors were invasive breast carcinoma (n=344) and 2.8% were in situ.

FIGURE A
Breast Cancer Cases by 5-Year Period
1979 - 2008

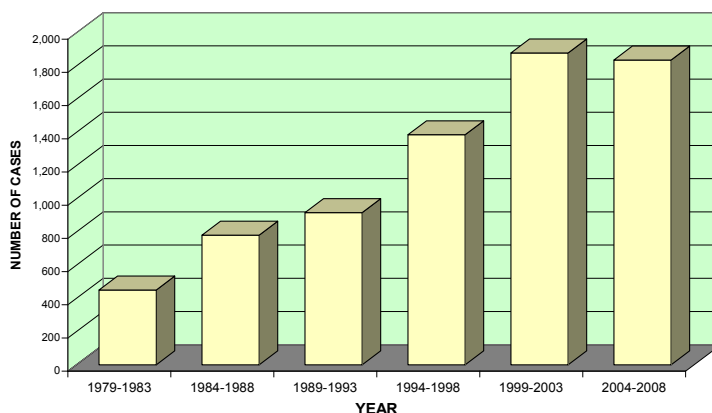
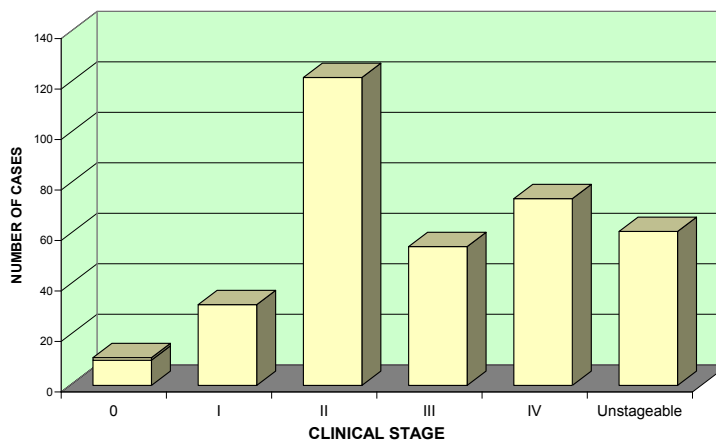


FIGURE B
Breast Cancer Cases by Clinical Stage
2008



Breast cancer is the most common cancer in women world wide, accounting for about 24% of all female cancer. In Europe, there were about 421,000 new cases and nearly 90,000 deaths and in USA, there were more than 192,370 new cases and 40,170 deaths in 2008. The incidence is higher in western countries and low in developed countries. The difference between incidence and mortality rate is smaller in developing countries than in developed countries, e.g. in North America the incidence is about 99/100,000 and mortality about 19/100,000 of female, but in Eastern Africa incidence is about 19.5 per 100,000 while mortality is 14/100,000 among females for obvious reasons including advance stages at presentation and limited availability of treatment.

As per Saudi Cancer Registry published data, 982 female breast cancer and 19 male breast cancer cases were diagnosed in Saudi Arabia in 2005. The Age Standard Rate (ASR) was 18/100,000 and the highest incidence was between 45 and 55 years of age group (Figure C). The ASR in Saudi Arabia is one of the lowest age standard rates compared with other countries in the world, e.g., ASR in USA is 123/100,000, in Canada 100/100,000 and in Kuwait 53/100,000 (Figure D). About 44% of the breast cancer cases in KSA presented with regional stage, 25% localized stage, 12% distant stage, and about 17% unknown stage.

FIGURE C

Age-Specific Incidence Rate (AIR) for Breast Cancer in Saudi Arabia, 2005 (SCR)

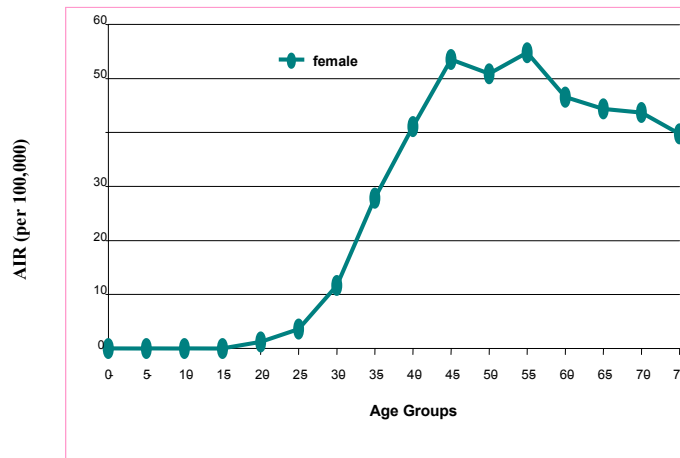


FIGURE D

Comparison of ASR for Breast Cancer Saudi Arabia vs. Selected Countries

Country	ASR
Uruguay, Montevideo	114.9
USA, Washington, Seattle	96.0
Netherlands	85.6
Iceland	76.1
Bahrain	58.6
Singapore	43.5
Kuwait	36.0
Qatar	33.2
United Arab Emirates	27.2
Japan, Saqa Prefecture	23.6
Algeria, Algiers	21.3
Oman	15.3
Saudi Arabia	15.0*
Thailand, Khon Kaen	10.8
China, Jiashan	9.1
Gambia	7.0

* Average ASR rate, 1994-2001

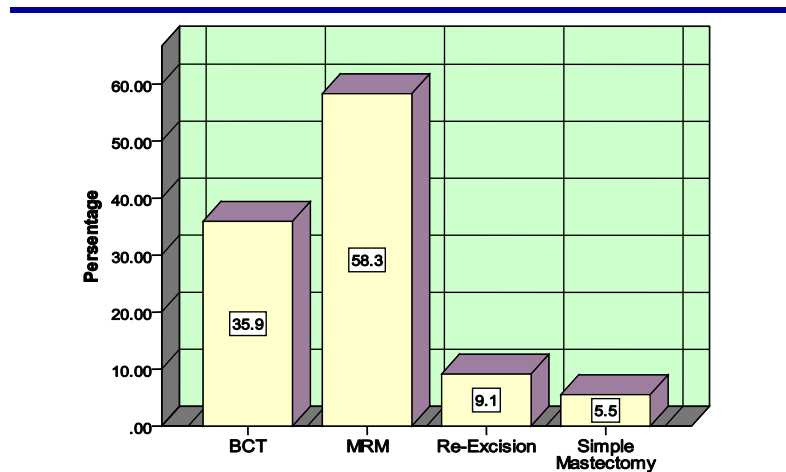
In the King Faisal Specialist Hospital from 1975 to 2008, about 7,000 breast cancer cases were seen, out of which 1.2% were male breast cancers. Since 2001, about 350-400 new breast cancer cases are seen every year. About 81% of the cases are among Saudi patients, median duration of symptoms at presentation is about 9 months and mean age 47 years. Eighty one percent are

married, 48% had history of short courses of OCP use, 16% had family history of breast cancer and 8% had immediate family history. The mean tumor size is 6 cm, about 98% presenting symptom is breast lump and less than 1% cases are diagnosed by screening. 45% of the patients were diagnosed by true cut or excision biopsy and only 34% had clinically negative axillary nodes. About 52% of patients had regional disease, 23% had local disease, about 18% with distant mets, 2% had carcinoma in-situ, and 3.6% had unstageable disease.

About 80% of breast cancer patients were treated with curative intent, 88% patients underwent surgery, 70% received radiotherapy, most of the patients had chemotherapy and about 60% received hormonal therapy. The average pathological size of tumor was 4.5 cm. The most common surgery was MRM (58%) followed by BCT (36%) (Figure E). IDC was the most common histopathology (84%). About 42% were grade 2 and 37% were grade 3. The average number of dissected axillary nodes was 10 and average number of positive axillary nodes was 4.

FIGURE E

***Distribution of Patients by Types of Surgery
1992 - 2009***



Preliminary survival data from our breast cancer data base indicated comparable 5 years over all survival by stage with western countries. Overall 5 years survival by stage was 96% for stage I, 95% for stage II, 85% for stage III and 53% for stage IV. The combined overall 5 years survival for all stages was 75%.

Comparing pattern of breasts cancer in the KSA with North America; the incidence is about 18/100,000 among female population vs. 100/100,000 in the North America. About 32% of patients were diagnosed younger than 40 years of age compared with only 10% in Western countries. In the Western countries, 52% of the cases are diagnosed above age 60 while in KSA only about 15% cases are diagnosed above age 60. Stage I is about 41% in NA and about 6% in the KSA, stage IV is about 20% in KSA while in the Western countries it is less than 3.5%.

The pattern of breast cancer is very different in the KSA. Patients are younger with long duration of symptoms, presented in advanced stages with bulky tumors and most of the patients underwent optimum treatment including surgery, chemo, radiation, hormonal and targeted therapy.

Overall breast cancer treatment is protracted, sequential, complicated and costly. Breast cancer is the most common malignancy among females and a significant health problem in KSA. Therefore, the importance of screening, early detection, and increased public awareness cannot be over emphasized to significantly change the current disease trends, patterns and down stages at presentation.

Easy access to tertiary care centers, multidisciplinary treatment approach with evidence based standardized management guidelines can improve the overall survival and decrease the morbidity and mortality from breast cancer. Multidisciplinary approach for breast cancer in KFSHRC was established more than 15 years ago consisting of team of consultant surgeons, medical and radiation oncologists, pathologists, radiologists, and palliative care. The number of new cancer cases is growing exponentially. The Breast Cancer Program was approved in September 2005 as a Core Competency Program and in January 2010 was launched as Center of Excellence-horizontally, integrated, multi-disciplinary, and matrix management structured program, with a clear established mission, goals and objectives to optimize breast cancer management for best possible survival outcomes.

APPENDIX

REQUESTS FOR TUMOR REGISTRY DATA 2008

*Publication **KFSH&RC Presentation ***Outside KFSH&RC Presentation

January

Pediatric Low Grade Glioma Cases (1997-2005) (MR Numbers)**	Dr. A. Kofide
Pediatric Acute Myeloid Leukemia Cases (2000-2005) (MR Numbers)	Dr. M. Saleh
Thyroid Cancer Cases (2000-2006) (MR Numbers) (Update)	Dr. A. Zahrani
Cervical Cancer Cases (less than 80 years old) with SEER General Summary Stage, AJCC Stage, Chemotherapy and Recurrence Information (2000-2005) (MR Numbers)	Dr. A. Munkarah

May

Pediatric (00-14 years old) and Adolescent (15-17 years old) Cancer Cases by Year, Region, Site and Histology (1994-2008)**	Dr. K. Sackey
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June

Cancer Cases by Site and Gender (2007)	Ministry of Health
Cervical Cancer Cases with SEER General Summary Stage, AJCC Stage, Chemotherapy and Recurrence Information (2006) (MR Numbers) (Update)	Dr. A. Munkarah
Lymphoma Cases with Hepatitis B Virus or Hepatitis C Virus Infection (2000-2007) (MR Numbers)	Dr. A. Al-Zahrani

July

Pediatric Cancer Cases by Year (1996-2008)	Dr. A. Belgaumi
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August

Lymphoma Cases with Age, Gender, Nationality, Region, Histology and Vital Status as of Last Contact (2002-2008) (MR Numbers)	Dr. N. Batarfi
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September

Pediatric Cancer Cases with Patient's Name, Site and Histology (2006) (MR Numbers)	Dr. A. Belgaumi
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October

Pediatric Juvenile Myelomonocytic Leukemia Cases with Patient's Name, Age at Diagnosis, Gender, Date of Diagnosis and Treatment (1990-2008) (MR Numbers)	Dr. A. Al Ahmari
Pediatric Acute Myeloid Leukemia Cases with Patient's Name and Age at Diagnosis (2004-2008) (MR Numbers)	Dr. A. Belgaumi

November

Acute Myeloid Leukemia Cases (14 years old & above) with Gender, Age at Diagnosis, Nationality, Marital Status, Region, Date of Diagnosis, First Course of Treatment, Recurrence Date, Second Course of Treatment and Vital Status as of Last Contact (1996-2006) (MR Numbers)	Dr. F. Al-Mohareb
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December

22 Lymphoma Cases – Provide the Radiation Field and Dose	Dr. S. Akhtar
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V. GLOSSARY OF TERMS

Accessioned: Cases 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.

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. A patient who has more than one primary is reported as multiple cases.

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

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

Stage of Disease: Extent of disease process determined at first course of treatment.

SEER (Surveillance, Epidemiology and End Results) Summary Staging:

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.

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

T+N+M = Stage

T: Extent of primary tumor

N: Extent of regional lymph node involvement

M: Distant Metastasis

Clinical Stage: Classification based on the evidence acquired before treatment. Such evidence arises from physical examination, imaging, endoscopy, biopsy, surgical exploration and other relevant findings.

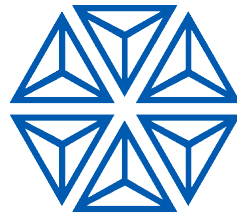
Pathologic Stage: Classification based on the evidence acquired before treatment, supplemented or modified by the additional evidence acquired from surgery and from pathologic examination of the resected specimen.



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