Chairman's Report

This year, the oncology program at Kuakini Medical Center was awarded the three year accreditation with commendation for a Community Hospital Comprehensive Cancer Program, by the American College of Surgeons' Commission on Cancer. I would like to thank each of the members of this Oncology Committee for their hard work and dedication to the program and our patients.

In 2008, 494 total analytical cases were accessioned. Each of the Commission on Cancer Program Standards were addressed in meetings held bi-monthly by the Oncology Committee and quarterly by the program coordinators. The registry contributed requested data to the Commission on Cancer, National Cancer Data Base and national research organizations through the Cancer Research Center of Hawaii. Enrollment onto clinical trials has met the required standard. Oncology Conferences, support groups and community education activities have been held with good attendance. Quality control measures have been met from Inpatient Oncology, Outpatient Chemotherapy and Radiation Oncology.

I would like to thank Dr. Jared Acoba for presenting this year's site specific study, "Survival in Colon Cancer Patients at Kuakini Based on Ethnicity and KRAS Mutation Status (1990 – 2008)".

Mark Kanemori, M.D.
Chairman, Oncology Committee

Validation of Adjuvant! Online in a Multiethnic Population of Colon Cancer Patients

Jared D. Acoba

Background and Significance

Colorectal cancer is the fourth most common cancer in the United States and ranks second in cancer mortality. In Hawaii, 700 new cases and 200 deaths from colorectal cancer are expected for 2008.[1] To make an impact on this devastating disease, we need to identify at-risk groups, understand how to best predict outcomes, and identify factors that lead to increased risk for recurrence and mortality.

Previous studies have shown ethnic disparities in cancer incidence and mortality rates.[2, 3] Japanese men have a higher rate of colorectal cancer compared to non-Hispanic white men, and Native Hawaiian women have a higher overall cancer rate than non-Hispanic white women. Overall cancer death rates are higher among Native Hawaiian men when compared to their non-Hispanic white male counterparts.[1] Quantifying these ethnic differences and eliciting the reasons for them is crucial to providing optimal culturally appropriate cancer care.[4-9] Hawaii's multiethnic population provides an ideal setting for performing such studies.

Adjuvant! Online is an internet based program that approximates the risk of mortality or relapse in patients who considering adjuvant therapy. Adjuvant! Online generates estimates of survival and recurrence using a database created with SEER (Surveillance, Epidemiology, and End Results Program) information.[10, 11] Estimates of treatment efficacy are based on results of landmark clinical trials.[12, 13] The patients enrolled on clinical trials are primarily Caucasian with a minority of Asian and Native Hawaiian patients. Because drug metabolism, tumor characteristics, and cancer outcomes vary by ethnicity, Adjuvant! Online may not accurately predict outcomes for non-Caucasian patients.[14-16]

Methods

Data was collected for colon cancer patients who have been seen at the Kuakini Medical Center with a diagnosis date from January 1, 1990 to June 30, 2008. The study population was limited to patients with a stage II or III diagnosis with at least five years of follow-up. Data was collected on a variety of patient demographics (age, sex, ethnicity, primary insurance, and area of residence), tumor characteristics (depth of invasion, total number of lymph nodes sampled, number of lymph nodes with metastatic cancer, histologic grade, and treatment and natural history features (use of chemotherapy, recurrence free survival, location of recurrence, and overall survival).

The analysis was restricted to stage II and stage III colon cancer patients to include the patients who were likely to benefit from adjuvant chemotherapy. Observed percentages were calculated for recurrence-free and overall survival. For the same data, the average Adjuvant! predicted recurrence and overall survival rates were calculated. Comparisons between the observed percentages and average predicted value assumed the latter is constant. A P value less than 0.05 was used to define significance. Separately for each outcome, the data were divided into 10% intervals for the predicted values (ie, 0 to 9.99%, 10% to 19.99%, and so on). Intervals containing fewer than 25 observations were combined. Observed percentages were calculated for each interval subset and plotted against the average predicted values. A straight line was fitted to the observed percentages and compared to a line with slope = 1 and intercept = 0. That line corresponded to perfect agreement between the observed and average predicted values. Tests of whether the fitted line differs from the predicted line were based on the estimated slope differing from 1. Failing to show a significant difference between the slopes would validate the utility of Adjuvant! in this population.

Results

Table 1: Baseline characteristics
Figure 1: Disease Free Survival
Figure 2: Overall Survival

The study population consisted of 1595 patients of which 961 were diagnosed at stage II and III with adequate follow-up data to meet the inclusion criteria. The median age of colorectal cancer patients was between 70-79 years, and there was a slight predominance of males. Of the total population nearly 85% were Japanese while only 4.2% Caucasian. Nearly all patients were adequately insured with merely 0.4% of patients uninsured or underinsured.

The predicted and observed values for disease free survival and overall survival are listed and plotted in Figures 1 and 2 respectively. For disease free survival, the difference between the predicted and observed rates was less than 10% for most intervals. The predicted and observed overall survival rates were also similar with a mean difference of 6.7%. Statistical analyses did not reveal any statistical difference between the predicted and observed rates for disease free and overall survival ($p>0.05$).

Discussion

In this study, we demonstrated that there was no significant difference between the Adjuvant! predicted disease free and overall survival rates and the observed rates. The result of the statistical analysis implies that Adjuvant! can be adequately applied to the patients at Kuakini Medical Center. The mean differences between the predicted and observed rates were 7.8% and 6.7% respectively for disease free and overall survival analyses. These differences would fall within the realm of what would be clinically acceptable. For example, an oncologist discussing the benefit of chemotherapy with a patient would explain to a patient that the risk of cancer recurrence is between 15% (predicted by Adjuvant!) and 20% (allowing for differences suggested by this analysis).

This study was intended to validate Adjuvant!'s ability to predict colon cancer outcomes in a multiethnic population, as the databases used to develop Adjuvant! were comprised overwhelmingly of Caucasian patients. However the study population was predominantly Japanese. Thus rather than validation of Adjuvant! in a multiethnic population, we have rather shown that Adjuvant is applicable to a Japanese and Japanese-American patient population.

Another unique aspect of our patient population is that less than 1% of patients were uninsured or underinsured. This likely contributed to the low dropout rate from registry follow-up. Unfortunately this also restricts the ability to extrapolate these findings to other patient populations.

One of the limitations of the study is that the data is predominantly from tumor registry data. While registry data provides the backbone for much of our understanding of cancer trends (e.g. SEER database), the shortcomings in providing accurate information in regards to treatment, recurrence, and cancer specific survival have been well documented.

In summary, our study validates the ability of Adjuvant! to predict outcomes for colon cancer patients. Adjuvant! can serve as a valuable tool for oncologists in deciding on the appropriate treatment course for their patients. We also demonstrate that Adjuvant! is applicable to a non-Caucasian population.

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Adjuvant! Online

Disease Free Survival

$p > 0.05$

Interval of predicted values	#pts	Expected DFS	Observed DFS	Exp-obs OFS
0-9	4	4.65	25.00	-20.35
10-19	9	14.62	11.00	3.62
20-29	22	25.19	31.82	-6.63
30-39	30	35.56	33.33	2.23
40-49	35	45.80	34.29	11.51
50-59	90	55.12	43.33	11.79
60-69	143	65.47	55.94	9.53
70-79	237	75.09	67.93	7.16
80-89	330	84.93	79.63	5.30
90-99	61	92.32	91.80	0.52

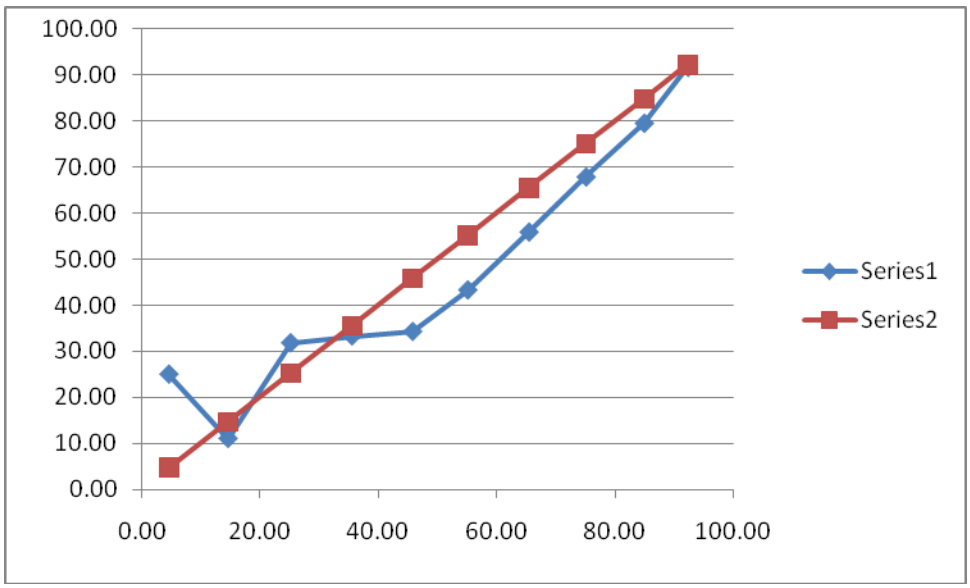


Figure 1: Y axis = Observed DFS, X axis = Adjuvant! predicted DFS, Series1 = KMC data

Overall Survival

$p > 0.05$

Interval of predicted values	#pts	Expected OS	Observed OS	Exp-Obs OS
0-9	1	4.60	0.00	4.60
10-19	8	16.20	12.50	3.70
20-29	13	25.89	38.46	-12.57
30-39	35	34.79	37.14	-2.35
40-49	27	45.66	40.74	4.92
50-59	76	55.38	38.16	17.22
60-69	127	65.32	61.41	3.91
70-79	223	75.49	69.06	6.43
80-89	314	85.42	78.66	6.76
90-99	137	92.86	88.32	4.54

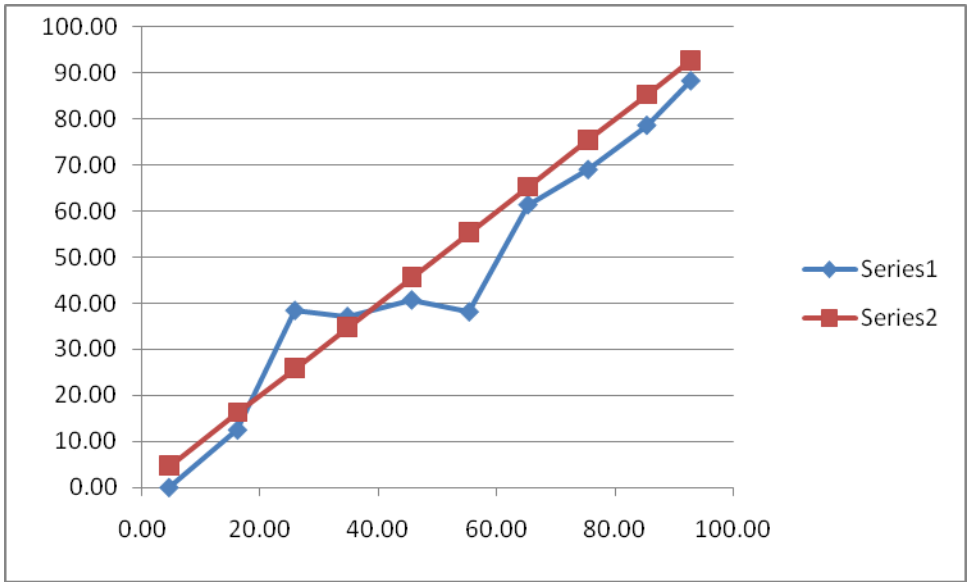


Figure 2: Y axis = Observed OS, X axis = Adjuvant! predicted OS, Series1 = KMC data

Kuakini Colorectal Cancer
November 2009

Baseline characteristics

Characteristic	N	%
Total	1595	
Age		
<40	23	
40-49	69	
50-59	190	
60-69	399	
70-79	515	
80+	399	
Sex		
Male	897	56.2
Female	698	43.8
Year of diagnosis		
1990-1994	490	
1995-1999	482	
2000-2004	414	
2005-2008	209	
Birthplace		
Hawaii	811	
Mainland	42	
Japan	89	
Zip Code		
Honolulu	1151	
Other	432	
Ethnicity		
White	63	4.2
Chinese	75	5.0
Filipino	54	3.6
Hawaiian	36	2.4
Japanese	1269	84.8
Insurance		
Un/Underinsured	6	
Private only	220	
Medicare	477	

Characteristic	N	%
Grade		
Well Diff	170	10.7
Mod Diff	1165	73.0
Poor Diff	127	8.0
Undiff	2	0.1
Undefined	131	8.2
Location		
Right	476	
Left	528	
Rectum	447	
T stage		
T0/Missing	146	
T1	188	
T2	220	
T3	923	
T4	118	
N stage		
N0	814	51.0
N1	352	22.1
N2	253	15.9
Missing	176	11.0
AJCC stage		
0	68	4.3
I	302	18.9
IIA	394	24.7
IIB	20	1.3
IIIA	55	3.4
IIIB	241	15.1
IIIC	253	15.9
IV	247	15.5
Missing	15	0.9
Chemotherapy administration		
Chemo given	663	
Chemo not given	871	
Chemo refused	14	

Cancer Incidence Comparison US vs. Kuakini

United States*				Kuakini Medical Center			
Male=745,180		**Female=692,000**		**Male=236**		**Female=258**	
Prostate	25%	Breast	26%	Prostate	13%	Breast	45%
Lung	15%	Lung	14%	Lung	17%	Lung	10%
Colorectal	10%	Colorectal	10%	Colorectal	19%	Colorectal	14%
Bladder	7%	Uterus	6%	Bladder	5%	Uterus	0%
Lymphoma	5%	Lymphoma	4%	Lymphoma	6%	Lymphoma	4%
Kidney	4%	Thyroid	4%	Kidney	3%	Thyroid	3%
Oral Cavity	3%	Ovary	3%	Oral Cavity	8%	Ovary	1%
Leukemia	3%	Kidney	3%	Leukemia	0.4%	Kidney	2%
Pancreas	3%	Leukemia	3%	Pancreas	4%	Leukemia	1%

*exludes basal & squamous cell skin cancers and insitu carcinoma except urinarybladder

Cancer Incidence Comparison at Kuakini : 2007 vs 2008

Male	2007	2008	Female	2007	2008
Total # cases	**287**	**236**	**Total # cases**	**255**	**258**
Prostate	20%	13%	Breast	46%	45%
Colorectal	18%	19%	Colorectal	11%	14%
Lung	15%	17%	Lung	12%	10%
Oral Cavity	5%	8%	Pancreas	4%	3%
Bladder	3%	5%	Stomach	4%	3%
Stomach	6%	6%	Thyroid	2%	3%
Kidney	4%	3%	Kidney	2%	2%
Lymphoma	4%	6%	Liver	2%	3%
Pancreas	6%	4%	Bladder	0.8%	2%
Liver	4%	3%	Brain/CNS	2%	3%

Kuakini Medical Center
2008 Analytic Cases Stage Distribution

Primary Site	0	I	II	III	IV	NA/Unk
Oral cavity, Pharynx	0	0	1	4	17	0
Digestive System						
Esophagus	0	1	1	2	2	1
Stomach	0	10	4	5	3	2
Colon, Small bowel	1	14	17	13	8	2
Rectum, Rectosig, Anus	1	3	5	10	3	5
Liver, Biliary	0	7	4	1	0	2
Pancreas	0	0	4	3	9	1
Other digestive	0	2	0	3	2	1
Respiratory System						
Larynx	0	1	1	1	1	0
Lung, Pleura	0	17	4	17	19	6
Other respiratory	0	0	0	0	0	1
Hematopoietic	0	0	0	0	0	11
Soft tissue	0	0	1	1	0	0
Skin	0	0	1	0	0	0
Breast	41	47	14	6	3	5
Genitourinary						
Female genital	0	0	0	0	2	1
Male genital	1	1	26	2	2	0
Kidney, Renal pelvis	2	4	0	0	4	0
Urinary bladder	11	2	2	1	0	0
Ureter/Other urinary	0	0	0	1	0	0
Eye/Orbit	0	0	0	0	0	1
Brain, CNS	0	0	0	0	0	9
Thyroid/Other endocrine	0	4	0	1	3	2
Hodgkins lymphoma	0	0	2	0	0	0
NonHodgkins lymphoma	0	9	4	3	6	0
Primary Site Unknown	0	0	0	0	0	16
Total Cases	**57**	**122**	**91**	**74**	**84**	**66**
Percent	**12%**	**25%**	**18%**	**15%**	**17%**	**13%**

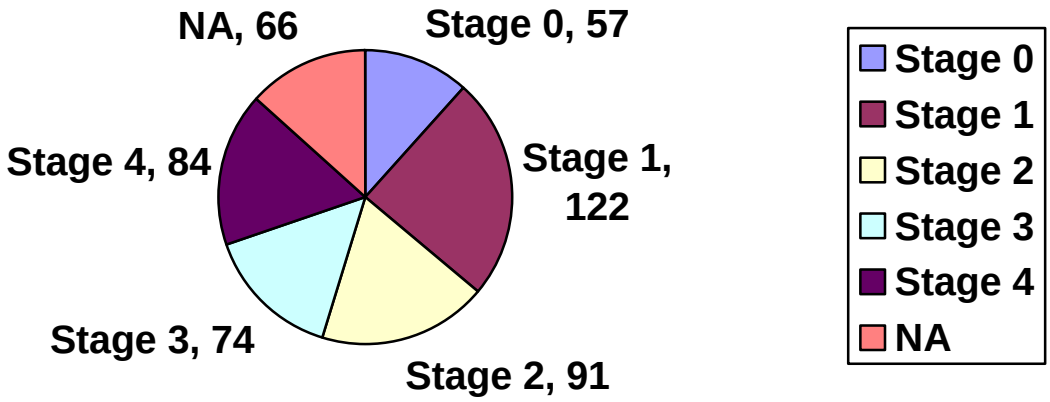
Kuakini Medical Center
2008 Analytic Cases Treatment Distribution

Primary Site	Male	Female	Total	Surgery	Radiation	Chemo/Immuno
Oral cavity, Pharynx	20	2	22	11	22	10
Digestive System						
Esophagus	6	1	7	1	6	3
Stomach	15	9	24	19	7	11
Colon, Small bowel	31	24	55	49	0	13
Rectum, Rectosig, Anus	15	12	27	22	16	16
Liver, Biliary	7	7	14	7	0	2
Pancreas	9	8	17	2	7	10
Other digestive	4	4	8	5	5	2
Respiratory System						
Larynx	3	1	4	1	4	2
Lung, Pleura	37	26	63	13	30	23
Other respiratory	1	0	1	1	0	0
Hematopoietic	7	4	11	1	0	2
Soft tissue	2	0	2	2	1	1
Skin	1	0	1	1	1	0
Breast	0	116	116	110	76	19
Genitourinary						
Female genital	0	3	3	1	0	3
Male genital	32	0	32	6	25	0
Kidney, Renal pelvis	6	4	10	9	0	2
Urinary bladder	11	5	16	16	1	10
Ureter/Other urinary	1	0	1	1	0	0
Eye/Orbit	0	1	1	1	1	0
Brain, CNS	2	7	9	2	2	1
Thyroid/Other endocrine	2	8	10	8	7	6
Hodgkins lymphoma	1	1	2	1	1	2
NonHodgkins lymphoma	12	10	22	5	8	9
Primary Site Unknown	11	5	16	0	4	4
Total Cases	**236**	**258**	**494**	**295**	**224**	**151**
Percent	**48%**	**52%**	**100%**	**60%**	**45%**	**31%**

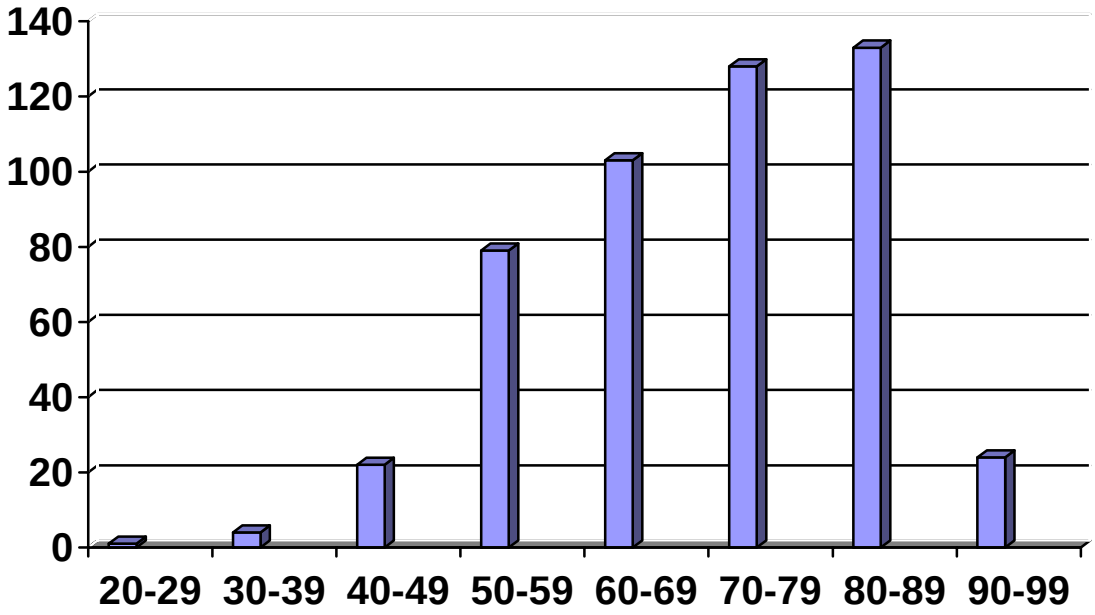
Kuakini Medical Center
2008 Analytic Cases Ethnic Distribution

Primary Site	Japanese	Chinese	White	Korean	Filipino	Hawaiian	Other
Oral cavity, Pharynx	11	2	2	0	3	3	1
Digestive System							
Esophagus	5	0	1	0	1	0	0
Stomach	19	1	1	1	1	1	0
Colon, Small bowel	40	6	2	0	4	1	2
Rectum, Rectosig, Anus	16	3	0	1	3	2	2
Liver, Biliary	9	1	0	2	1	1	0
Pancreas	16	0	0	0	0	1	0
Other digestive	6	0	1	0	1	0	0
Respiratory System							
Larynx	2	0	2	0	0	0	0
Lung, Pleura	38	4	7	4	3	3	4
Other respiratory	1	0	0	0	0	0	0
Hematopoietic	9	0	0	1	0	0	1
Soft tissue	0	0	1	0	0	0	1
Skin	0	1	0	0	0	0	0
Breast	75	4	7	3	11	7	9
Genitourinary							
Female genital	2	0	0	0	0	1	0
Male genital	19	0	4	0	5	3	1
Kidney, Renal pelvis	8	0	1	0	0	0	1
Urinary bladder	9	0	3	3	1	0	0
Ureter/Other urinary	1	0	0	0	0	0	0
Eye/ Orbit	1	0	0	0	0	0	0
Brain, CNS	4	1	1	0	1	0	2
Thyroid/Other Endocrine	7	0	0	0	1	0	2
Hodgkins lymphoma	1	0	1	0	0	0	0
NonHodgkins lymphoma	14	2	4	0	1	1	0
Primary Site Unknown	10	0	2	1	0	0	3
Total Cases	**323**	**25**	**40**	**16**	**37**	**24**	**29**
Percent	**65%**	**5%**	**8%**	**3%**	**7%**	**5%**	**6%**

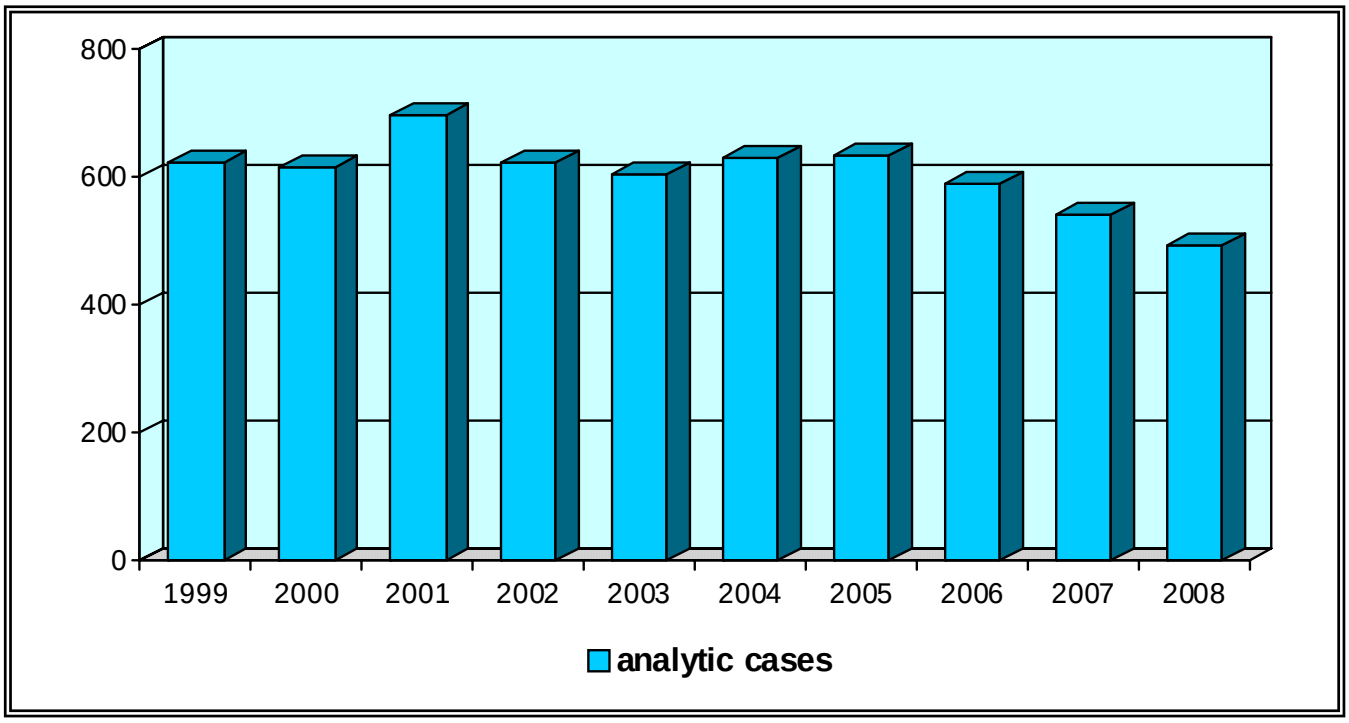
Stage Distribution: 2008 Analytic Cases



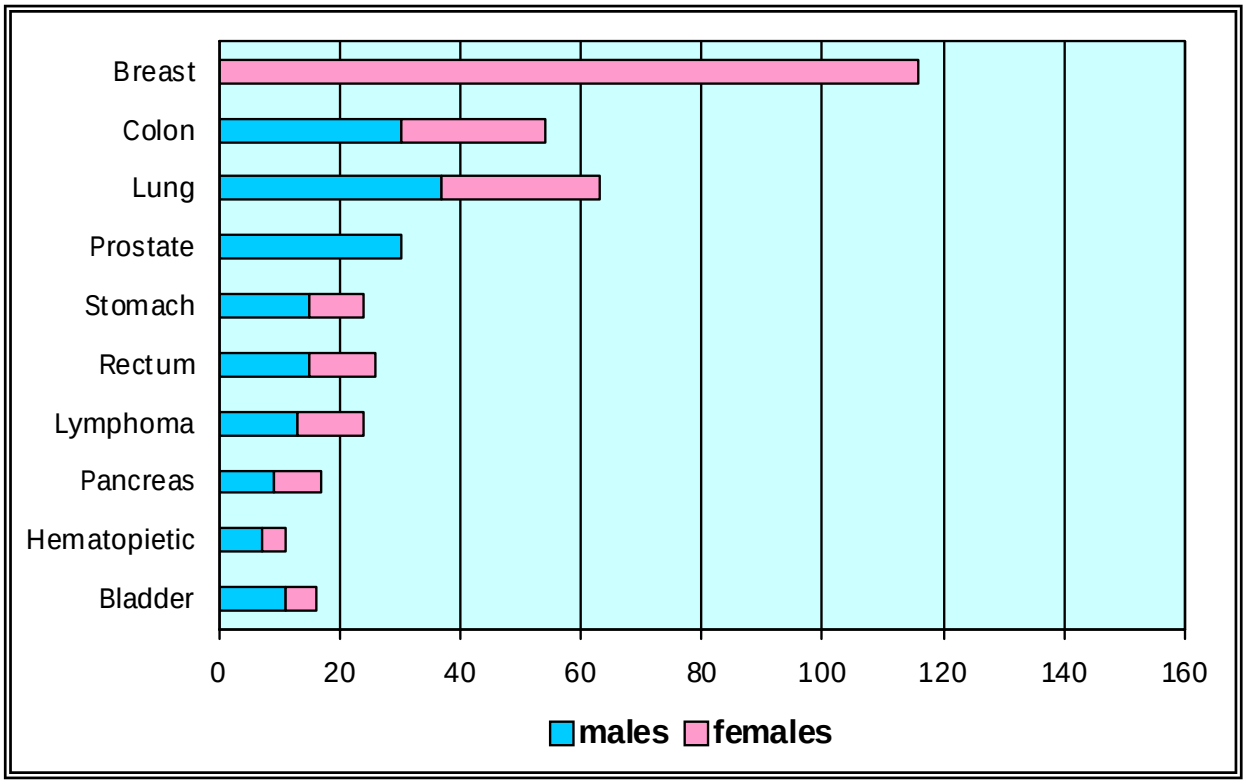
Age Distribution: 2008 Analytic Cases



Ten Year Comparison of Analytic Caseload: 1999 - 2008



Primary Site Distribution 2008 Analytic Cases



Clinical Research Report 2008

For 2008, nineteen (19) Kuakini patients, which represented 3.8% of 494 analytic cases, were enrolled into oncology clinical trials among the following.

Cancer and Leukemia Group B (CALGB)	1 patient
Eastern Cooperative Oncology Group (ECOG)	10 patients
National Surgical Adjuvant Breast and Bowel Project (NSABP)	5 patients
North Central Cancer Treatment Group (NCCTG)	3 patients

Summary of Oncology Conferences 2008

Multidisciplinary Oncology Conferences are conducted weekly at Kuakini Medical Center every Thursday morning at 7:30am to provide consultative services to our oncology patients. Physician representatives from surgery, medical oncology, radiation oncology, diagnostic radiology, pathology and other appropriate disciplines attend and participate in this activity. At least 10% of the annual analytic caseload is presented including all major sites of cancer representing the institution's case mix.

A total of 50 Oncology Conferences were held at Kuakini Medical Center during 2008 with 133 cases presented. This represents 28% of Kuakini's analytic caseload for 2008.

SITE	*CASES*
Colon	19
Prostate	16
Breast	14
Stomach	13
Lung	12
Non-Hodgkin's Lymphoma	7
Rectum	7
Pancreas	5
Liver	4
Soft Tissue	4
Thyroid	4
Kidney	3
Ureter	3
Urinary Bladder	3
GI stromal tumor	3
Appendix	2
Oral Cavity	2
Peritoneum	2
Adrenal gland	1
Bile Duct	1
Brain, benign	1
Brain, malignant	1
Esophagus	1
Gallbladder	1
Ovary	1
Salivary gland	1
Tongue	1
Primary Site Unknown	1
Total	**133**

Kuakini Breast Cancer Education and Support Group (2009)

- The KBCESG continues its commitment to empowering breast cancer survivors on their journey in a comforting, supportive environment. Members share experiences, encouragement and support each other through all phases and dimensions of survivorship.
- Meetings are on the last Wednesday of each month, from 0930-1100 in HPM-1 Conference Room, with alterations in the November / December dates, due to the holidays.
- The session format generally includes 30 minutes for introductions and sharing, followed by an educational presentation. Topics are based on requests from the group. Time is provided for questions and answers at the end of each presentation. Some meetings are left open for "talk story," depending on the needs of the group. A Clinical Nurse Specialist serves as facilitator.
- Speakers are invited, based on the members' requested topics. Besides allowing some "Talk Story" sessions, education presentations for CY09 included:
    - Heredity and Breast Cancer
    - Exercises After Breast Surgery
    - The Soy Controversy
    - Surviving and Thriving*, Gabriela Layi, Study Coordinator, Cancer Research Center of Hawaii*
    - What about Recurrence?
    - Reliable Internet Resources, *Eric Nagamine, Medical Education Librarian, Kuakini Medical Center*
    - Pink Ribbon Craft
    - Celebrating Survivorship -- Holiday Potluck
- Book and video resources, shared by members, are available for loan.
- Membership ranges from newly diagnosed to 15+ year survivors, with women's ages ranging from their 30's to 80's.
- Team Kuakini, consisting of KBCESG members, Kuakini Health System employees, family, and friends, has participated in the local Susan G. Komen for the Cure – Hawaii Affiliate Race for The Cure annually since 2003. There were 49 participants on Team Kuakini this year.