

Age-Specific Incidence of Cancer in Kingston and St Andrew, Jamaica, 2003 – 2007

TN Gibson, B Hanchard, N Waugh, D McNaughton

ABSTRACT

A total of 4981 cancers were recorded in Kingston and St Andrew during the period 2003 – 2007: 2536 in males and 2445 in females. Age standardized rates per 100 000 per year (ASR) were 188.8 and 144.2 for males and females respectively, and are relatively unchanged, compared to the previous report (188.6 for males and 144.2 for females, 1998 – 2002). In males, the leading sites for cancer were prostate, bronchus and large bowel, while in females, they were breast, cervix uteri and large bowel. The leading sites for both genders have been maintained in the same order as in the previous report, but for males, there were increases in the incidence of prostate (ASR 65.5 vs 78.1 per 100 000 per year) and colorectal (ASR 13.7 vs 17.2 per 100 000 per year) cancers and a decrease in the incidence of cancer of the bronchus (ASR 22.8 vs 18.6 per 100 000 per year). For females, there was a modest decrease in incidence of cervical cancer (ASR 19 vs 17.4 per 100 000 per year) while the incidence of cancers of the breast and large bowel remained relatively stable (ASR 40.1 vs 43 per 100 000 per year for breast and ASR 13 vs 12.8 per 100 000 per year for colorectal cancer). These data support the need for urgent institution of formal programmes for prevention and control of cancers of the breast and large bowel in the Jamaican population. Malignancies of unknown primary site were common in both genders and require further investigation.

Keywords: Cancer incidence, Jamaica

Incidencia Específica por Edad del Cáncer en Kingston y Saint Andrew, Jamaica, 2003 – 2007

TN Gibson, B Hanchard, N Waugh, D McNaughton

RESUMEN

Un total de 4981 cánceres se registraron en Kingston y Saint Andrew durante el periodo 2003–2007. El número de casos en los varones fue 2536 y 2445 en las hembras. Las tasas estandarizadas por edad (ASR) por 100 000 por año fueron 188.8 y 144.2 para varones y hembras respectivamente, y permanecen relativamente sin cambios en comparación con el informe previo (188.6 para los varones y 144.2 para las hembras, 1998–2002). En los varones, los sitios principales del cáncer fueron la próstata, los bronquios y el intestino grueso, mientras que en las hembras fueron las mamas, el cuello del útero, y el intestino grueso. Los sitios principales para ambos géneros se han mantenido en el mismo orden presentado en el informe anterior; pero para los varones, hubo aumentos en la incidencia del cáncer de próstata (ASR 65.5 vs 78.1 por 100 000 por año) y el cáncer colorrectal (ASR 13.7 vs 17.2 por 100 000 por año), y una disminución en la incidencia del cáncer de bronquios (ASR 22.8 vs 18.6 por 100 000 por año). Para las mujeres, hubo una disminución modesta en la incidencia de cáncer cervical o del cuello uterino (ASR 19 vs 17.4 por 100 000 por año) mientras la incidencia de los cánceres de mama y el intestino grueso permanecía relativamente estable (ASR 40.1 vs 43 por 100 000).

From: ¹Jamaica Cancer Registry, Department of Pathology, The University of the West Indies, Kingston 7, Jamaica

Correspondence: Dr T Gibson, Department of Pathology, The University of the West Indies, Kingston 7, Jamaica West Indies. E-mail: tracey.gibson@uwimona.edu.jm

por año para el cáncer de mama y ASR 13 vs 12.8 por 100 000 por año para el cáncer colorrectal). Estos datos subrayan la necesidad de instituir de manera urgente programas formales para la prevención y control cánceres de mama e intestino grueso en la población jamaicana. Tumores malignos de sitio primario desconocido fueron comunes en ambos géneros y requieren investigación extensa.

Palabras claves: Incidencia del cáncer, Jamaica

West Indian Med J 2010; 59 (5): 457

INTRODUCTION

The Jamaica Cancer Registry, established in 1958 to record the incidence of cancer in Jamaica, has published regular five-year reports since its inception. The last report, published in 2008, covered the period 1998 – 2002, and included the incidence of cancer in males and females in Kingston and St Andrew, the population base of the registry, as well as cumulative rates and lifetime risk. This report covers the period 2003 – 2007 and includes the usual analyses of cancer incidence, with comparisons with the previous report. In addition, this is the first report that provides detailed analysis of the malignancies of unknown primary site recorded in the registry.

SUBJECTS AND METHODS

The methodology of the registry has been previously stated (1, 2). Cases are registered from information gleaned from public and private hospitals and general practitioners in Kingston and St Andrew and verified by pathologists at the Jamaica Cancer Registry in accordance with standard techniques of registration (3).

This report includes all incident cases collected from the resident population in Kingston and St Andrew, over the five-year period 2003 – 2007, tabulated by age and gender. Age-specific incidence rates were calculated for each site, as per the ninth edition of the International Classification of Diseases (ICD-9), using the average population for the period 2003 – 2007 for Kingston and St Andrew, provided by the Statistical Institute of Jamaica.

Terminology and Calculations

Age-specific incidence rate

Age-specific cancer incidence was calculated for each site by dividing the total number of cases for each five-year stratum by five times the population estimate for that stratum and multiplying the result by 100 000. The rate is therefore expressed per 100 000 per year.

Crude incidence rate (CIR)

The crude incidence rate was calculated in a manner similar to the above using the total number of cases for each site and the total population for each gender.

Age standardized rate (ASR)

The age standardized rate was calculated in a two-step procedure. For each site, the product of each age-specific

incidence rate and its corresponding world standard population were obtained and then all were summed to produce the ASR.

Cumulative rate

The five-year age-specific incidence rates were multiplied by five and summed for each five-year stratum between 0 and 74 years. This rate is expressed as a percentage.

Lifetime risk

Lifetime risk (to age 75 years) was calculated by dividing 100 by the cumulative rate. This is a unitary expression of the number of persons at risk.

Leading sites

The contribution of each malignancy to the total is given by the total number of cases of that malignancy expressed as a percentage of the total number of malignancies for the gender or age-group (by gender), as appropriate. Traditionally, we have excluded “unknown primary site” from calculations of the leading sites, as it is not a site *per se*. However, for this report, we decided to include them.

RESULTS

Figure 1 shows a population pyramid depicting the average population for males and females resident in Kingston and St Andrew during the period of registration, 2003 – 2007, as estimated by the Statistical Institute of Jamaica. Figure 2 shows the total population distribution of Kingston and St Andrew for the period 2003 – 2007, compared to the World Standard Population (4).

A total of 4981 new cases were recorded for the five-year period of registration; 2536 for males and 2445 for females. The crude incidence rates per 100 000 for males and females were 163 and 140.9, respectively. The age standardized rate per 100 000 per year was 188.8 for males and 144.2 for females. Cumulative rates for males and females were 23.844% and 16.553% respectively. Lifetime risk was one in four for males and one in six for females (Tables 1 and 2).

The leading cancer sites by gender are presented in Fig. 3. In males, the leading site was prostate (1042 cases), followed by bronchus [lung] (242) and large bowel (229). In females, breast was the leading site (720), followed by cervix uteri (302) and large bowel (231). Overall, in males and females, the leading sites were prostate, breast and large

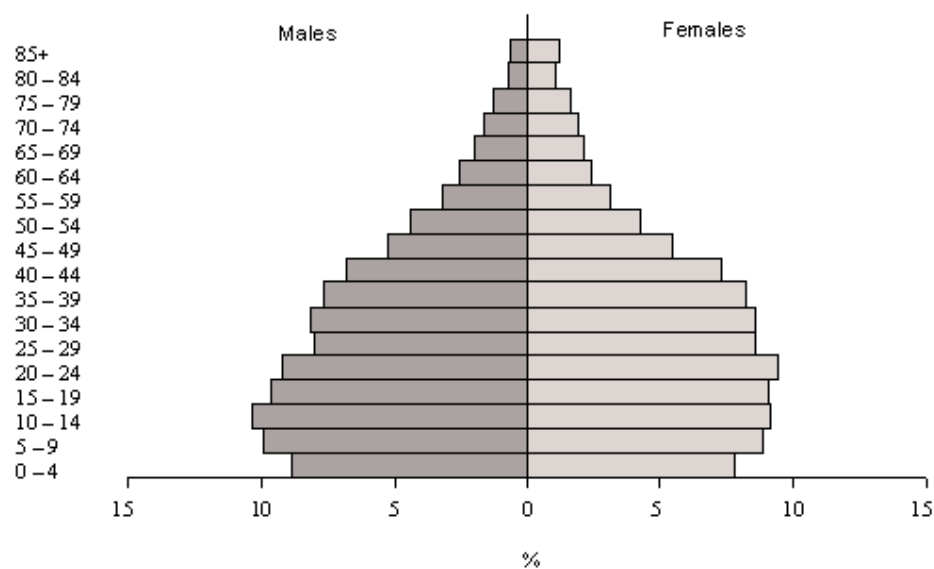


Fig. 1: Average population, males and females, Kingston and St Andrew, 2003 – 2007.

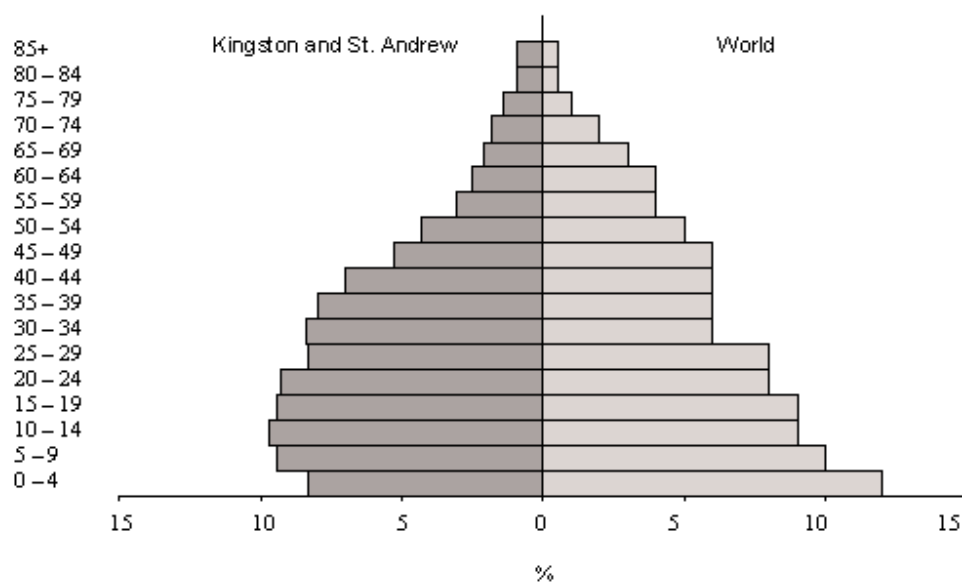


Fig. 2: Average total population, Kingston and St Andrew, 2003 – 2007 and World Standard Population.

	SITE	ICD-9 No	Total	Unknown	Age																			Crude standardised			Cumulative rate (%)	Lifetime risk
					0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85+	rate	rate				
140	Lip	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.1	3.2	0.0	5.3	8.8	0.0	0.3	0.4	0.42	2409	
141	Tongue	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.7	9.6	8.0	5.3	17.6	10.5	1.1	1.3	0.165	607	
142	Salivary gland	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.014	7088	
143-145	Mouth	17	0	0	0	0	0	0	0	0	0	0	0	1.2	4.4	4.0	5.1	12.8	4.0	10.6	8.8	0.0	1.1	1.3	0.162	618		
146	Oropharynx	9	0	0	0	0	0	0	0	0	0	0	1.0	0.0	0.0	4.0	2.6	9.6	8.0	0.0	0.0	0.0	0.0	0.6	0.8	0.126	797	
147	Nasopharynx	15	0	0	0	1.2	0.7	0.0	0.0	0.0	0.0	1.7	0.0	1.2	1.5	8.1	7.7	3.2	0.0	0.0	0.0	0.0	1.0	1.1	0.126	793		
148	Hypopharynx	8	0	0	0	0	0	0	0	0	0	0	0	0	0	3.0	2.0	7.7	0.0	4.0	8.8	0.0	0.5	0.7	0.083	1203		
149	Pharynx	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.016	6264	
150	Oesophagus	32	0	0	0	0	0	0	0	0	0	0	0	0	4.4	6.0	10.2	22.4	16.0	42.2	17.6	0.0	2.1	2.4	0.299	334		
151	Stomach	103	0	0	0	0	0	0	0	0	0	0	0	8.7	11.8	12.1	35.8	54.3	83.9	47.5	70.6	94.8	6.6	7.8	1.049	95		
152	Small intestine	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	10.5	0.1	0.1	0.000	0	
153	Colon	162	0	0	0	0	0	0	0	1.6	2.4	2.5	2.9	6.2	16.2	26.2	53.6	76.6	127.9	110.8	149.9	73.8	10.4	12.1	1.581	63		
154	Rectum	67	0	0	0	0	0	0	0	0	0	0	0	8.8	1.9	5.0	7.4	12.1	31.9	48.0	68.6	17.6	21.1	4.3	5.1	0.654	163	
155	Liver	13	0	0	0	0	0	0	0	0	0	0	0	0	0	2.0	5.1	6.4	12.0	5.3	8.8	0.0	0.8	1.0	0.142	702		
156	Gall bladder	9	0	0	0	0	0	0	0	0	0	0	0	0	0	1.5	0.0	7.7	0.0	12.0	5.3	0.0	10.5	0.6	0.7	0.106	947	
157	Pancreas	29	0	0	0	0	0	0	0	0	0	1.7	1.0	2.5	5.9	4.0	5.1	9.6	12.0	21.1	26.5	21.1	1.9	2.0	0.212	472		
158	Peritoneum	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000	0	
160	Nose, sinuses	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.6	0.0	4.0	0.0	0.0	0.0	0.3	0.4	0.048	2088	
161	Larynx	59	0	0	0	0	0	0	0	0	0	0	0	1.0	0.0	1.5	16.1	15.3	44.7	59.9	26.4	44.1	42.1	3.8	4.6	0.693	144	
162	Bronchus, trachea	242	3	0	0	0	0	0	0	0	0	1.6	1.7	3.8	16.2	45.8	60.4	84.3	134.1	131.9	158.3	97.0	73.8	15.6	18.6	2.402	42	
163	Pleura	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000	0	
164	Other thoracic organs	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	3.2	0.0	0.0	0.0	0.0	0.1	0.2	0.022	4507	
170	Bone	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.6	3.2	0.0	0.0	0.0	0.4	0.5	0.047	2139		
171	Connective tissue	33	0	2.2	0.0	0.6	3.0	2.1	0.8	0.8	1.7	2.9	2.5	3.0	2.0	7.7	16.0	0.0	4.0	10.6	8.8	21.1	2.1	2.4	0.230	494		
172	Melanoma of skin	13	1	0	0	0	0	0	0	0	0	0	0	0	0	8.1	7.7	3.2	0.0	5.3	0.0	10.5	0.8	1.0	0.105	963		
173	Other skin	91	1	0	0	0	0	0	0	0	0	2.5	4.8	11.2	17.7	14.1	35.8	16.0	40.0	31.7	44.1	94.8	5.8	6.6	0.730	137		
175	Breast	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.6	0.0	8.0	21.1	8.8	10.5	0.6	0.6	0.057	1739		
185	Prostate	10-42	3	0	0	0	0	0	0	0	0	0	0	5.7	12.4	50.2	145.0	352.4	619.4	895.1	328.9	935.0	832.4	67.0	78.1	10.402	10	
186	Testis	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.018	5406	
187	Penis	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	6.4	8.0	15.8	17.6	31.6	1.2	1.2	0.120	830	
188	Bladder	56	0	0	0	0	0	0	0	0	0	0	0	0	8.9	8.1	15.3	28.7	44.0	26.4	97.0	10.5	3.6	4.1	0.538	186		
189	Other urinary	29	0	0.7	0	0	0	0	0	0	0	0	0	0	0	3.8	2.5	6.0	7.7	0.0	12.0	36.9	8.8	10.5	1.9	2.0	0.186	537
190	Eye	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.0	0.0	0.0	8.0	5.3	0.0	0.0	0.6	0.6	0.075	1329	
191-192	Brain, nervous system	16	0	2.2	0.6	0	0	0	1.4	0.8	0.0	0.8	1.0	1.2	3.0	0.0	2.6	0.0	4.0	10.6	0.0	0.0	1.0	1.1	0.088	1140		
193	Thyroid	16	0	0	0	0	0	0	0	0	0	0	0	0	0	3.0	4.0	5.1	6.4	4.0	5.3	0.0	10.5	1.0	1.2	0.132	766	
194	Other endocrine	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	4.0	0.0	0.0	0.0	0.0	0.1	0.1	0.020	5005	
201	Hodgkin's disease	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.015	6758	
202	Non-Hodgkin's lymphoma	130	0	1.4	0.6	2.5	1.3	1.4	7.2	7.9	5.0	8.6	17.4	20.7	18.1	43.4	12.8	48.0	52.8	35.3	10.5	8.4	9.2	3.982	102			
203	Multiple myeloma	54	0	0	0	0	0	0	0	0	0	0	0	0	6.2	16.2	8.1	17.9	28.5	16.0	31.7	35.3	42.1	3.5	4.1	0.454	220	
204	Lymphocytic leukaemia	16	0	0.7	1.3	0.0	1.3	0.0	0.8	0.0	0.0	0.0	0.0	0.0	1.5	4.0	0.0	3.2	4.0	15.8	0.0	21.1	1.0	1.1	0.084	1187		
205	Myeloid leukaemia	26	0	0.7	0.6	0.6	1.3	0.7	1.6	0.8	1.7	0.0	5.0	4.4	2.0	0.0	3.2	4.0	10.6	8.8	21.1	1.7	1.7	3.133	749			
206	Monocytic leukaemia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000	0	
207	Other specified leukaemia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000	0	
208	Leukemia unspecified	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.6	3.2	0.0	0.0	8.8	0.0	0.3	0.4	0.036	2770	
199	Primary site unknown	156	1	0.7	0.0	0.0	0.0	0.0	0.7	2.4	3.2	1.7	6.7	11.2	22.2	42.3	48.5	70.2	79.9	58.1	105.8	84.3	10.0	11.7	1.448	69		
2536	All sites	10	8.7	4.5	5.6	3.4	8.3	23.3	21.2	28.3	58.1	120.7	26.4	429.0	830.0	1242.1	1714.4	1773.3	1790.6	1570.0	163.0	163.0	188.8	23.844	4			
2446	All sites but 173	9	8.7	4.5	5.6	3.4	8.3	20.1	22.4	25.8	53.3	109.5	246.7	794.2	1226.1	1674.4	1741.7	1746.5	1475.2	152	152	182.2	23.114	4				

Age-Specific Incidence of Cancer

Table 2: Jamaica, Kingston and St. Andrew 2003 - 2007 (Female) Average incidence per 100,000 by age group (years)

SITE	ICD9 No	Total	Age																Age																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
			Unknown	0-	5	10-	15-	20-	25-	30-	35-	40-	45-	50-	55-	60-	65-	70-	75-	80-	85+	Crude rate	standardised rate	Cumulative rate (%)	Lifetime risk																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
Lip	140	1	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3	0.0	0.1	0.0	0.000	0																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
Tongue	141	5	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	2.7	6.0	3.6	0.0	0.0	0.3	0.3	0.056	1806																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
Salivary gland	142	4	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.033	3062																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
Mouth	143-145	8	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.7	0.0	0.0	0.0	0.0	0.0	8.2	3.0	0.0	10.5	0.0	0.5	0.4	0.063	1597																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
Oropharynx	146	4	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	3.0	0.0	0.0	0.0	0.2	0.3	0.042	2366																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
Nasopharynx	147	10	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	1.1	0.0	0.0	4.8	5.4	8.9	0.0	0.0	0.0	0.6	0.7	0.108	923																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
Hypopharynx	148	1	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.012	8369																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
Pharynx	149	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
Esophagus	150	19	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	2.4	10.9	6.0	10.8	5.3	24.2	1.1	1.0	0.116	860																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
Stomach	151	72	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.7	2.4	1.1	4.1	16.9	7.2	38.1	38.8	25.1	52.7	29.0	4.2	4.1	0.553	181																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
Small intestine	152	9	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8	5.4	3.0	0.0	0.0	4.8	0.5	0.6	0.080	1247																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
Colon	153	157	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38.2	51.7	68.6	64.6	105.4	96.8	9.0	8.8	1.078	93																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
Rectum	154	74	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.9	16.3	23.9	32.3	58.0	29.0	4.3	4.0	0.442	226																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
Liver	155	11	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8	0.0	3.0	0.0	15.8	0.0	0.6	0.6	0.067	1482																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
Gall bladder	156	18	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	9.4	4.8	0.0	3.0	14.4	10.5	0.0	1.1	0.108	926																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
Pancreas	157	43	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	7.5	2.4	16.3	20.9	25.1	26.4	19.4	2.5	2.3	0.281	366																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
Peritoneum	158	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
Nose, sinuses	160	1	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.007	14563																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
Larynx	161	5	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	2.4	0.0	6.0	3.6	0.0	0.0	0.3	0.3	0.051	1956																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
Bronchus, trachea	162	67	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.2	33.5	35.4	20.9	50.2	15.8	14.5	3.9	4.3	0.537	186																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
Pleura	163	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
Other thoracic organs	164	4	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	3.6	0.0	0.0	0.0	0.2	0.2	0.013	7991																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
Bone	170	5	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.044	2267																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
Connective tissue	171	29	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7	9.6	0.0	3.0	0.0	10.5	0.0	1.7	1.7	0.198	635																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
Melanoma of skin	172	20	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	7.5	4.8	10.9	6.0	3.6	15.8	0.0	1.3	0.167	600																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
Other skin	173	101	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.4	21.5	27.2	29.8	46.7	31.6	48.4	5.8	5.6	0.616	162																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
Breast	174	720	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.1	121.3	149.8	174.5	143.2	175.9	221.3	125.8	41.5	43.1	4.824	21																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
Cervix uteri	180	302	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.8	22.2	20.3	30.2	48.9	57.7	43.1	43.0	51.7	35.8	25.1	52.7	53.2	17.4	17.4	1.811	55																																																																																																																																																																																																																																																																																																																																																																																																																																																														
Ovarian carcinoma	181	5	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.018	5636																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
Corpus uteri	182	177	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	2.8	0.8	1.1	6.9	39.3	95.6	62.6	104.4	86.1	52.7	43.6	10.2	11.5	1.581	63																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Ovary	183	80	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.7	3.5	6.4	8.5	11.0	9.4	21.5	27.2	29.8	46.7	31.6	48.4	5.8	5.6	0.616	162																																																																																																																																																																																																																																																																																																																																																																																																																																																														
Other female genital	184	15	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Leading Cancer Sites, Kingston and St Andrew, 2003 – 2007

Figure 3: Leading cancer sites, Kingston and St Andrew, 2003 – 2007

The top ten cancer sites in Kingston and St. Andrew are included for males, females and both genders combined. The bars represent the percentages of total new cases in each site. Numbers of cases are shown to the right of the graphs.

ALL CANCERS

Incidence

Male	2536
Female	2445
Total	4981

N.B. Head and neck cancers include ICD-9 sites 140-149

Large bowel includes cancers of the colon and rectum.

Skin includes melanoma.

UK: Unknown

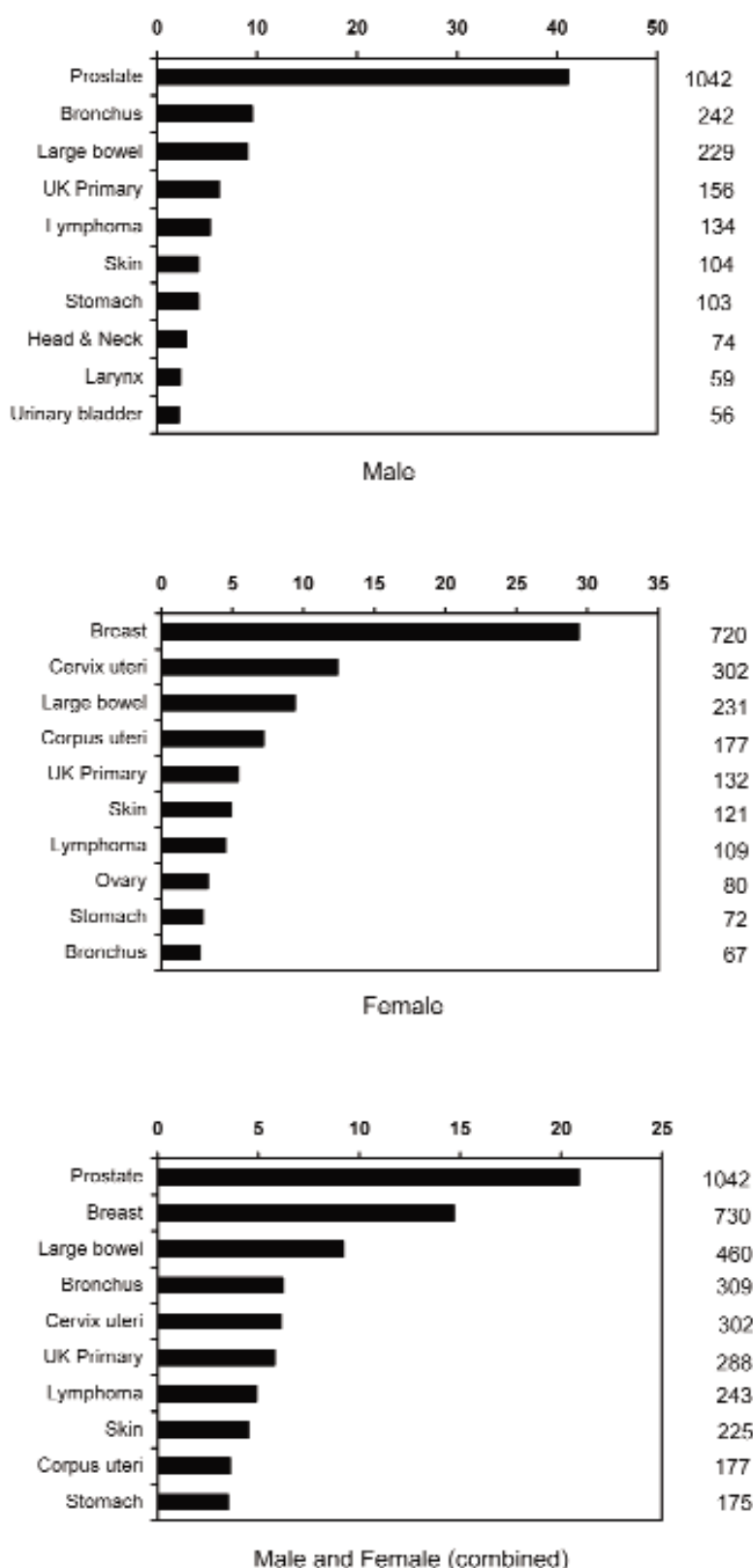


Fig. 3: Leading cancer sites, Kingston and St Andrew, 2003 – 2007.

bowel, followed by bronchus, cervix uteri and unknown primary site.

The most common method of ascertainment for malignancies of unknown primary site was histology (57.6%), followed by radiology (21.5%) and cytology (14.9%). The majority of the biopsied malignancies were adenocarcinomas (56.0%) and the most commonly biopsied sites were liver (17.5%) and lymph nodes (15.1%). Adenocarcinoma was also the commonest diagnosis among those cases ascertained by cytology (39.5%), followed by "malignant cells, not otherwise specified" (34.9%). In those cases ascertained *via* radiological imaging, the most commonly imaged region was the abdomen (67.7%).

Follow-up information was available for 172 (59.6%) of the 288 patients with a diagnosis of "malignancy of unknown primary site". In 76 of the remaining 116 patients, review of patient records revealed no further documentation following diagnosis, and for the other 40 patients, the clinical records could not be located for review. Of the 172 patients for whom follow-up information was available, 166 (96.5%) died before further investigation could be performed, three (1.0%) were managed as cases of unknown primary, two (0.7%) travelled overseas for further management, and one (0.3%) refused chemotherapy and was subsequently lost to follow-up.

The leading sites by age-group and gender are presented in Fig. 4. In males, prostate cancer was the leading site in the three older age groups (25 – 59, 60 – 74 and 75+ years), with the majority of cases occurring in the 60 – 74-year group. Haematopoietic malignancies were the commonest seen in younger males (0 – 14 and 15 – 24 years). Breast cancer was the commonest site in women aged 25 years and over, with most cases being found in those between the ages of 25 and 59 years. Cancer of the cervix uteri was also common in this age group. In younger females less than 25 years of age, haematopoietic malignancies and malignancies of the brain and nervous system, ovary and soft tissue were among the commonest.

DISCUSSION

The numbers of new cases and the ASRs for both males and females have remained relatively stable when compared to the previous report (5). The ASR for females has remained the same at 144.2 per 100 000 per year and that for males has shown minimal increase from 188.6 to 188.8 per 100 000 per year.

Prostate cancer and breast cancer remain the leading cancer sites for males and females, respectively. The ASR for prostate cancer continues to climb, reaching 78.1 per 100 000 per year for the period 2003 – 2007, compared to 65.5 per 100 000 in the previous report. As stated in the previous report, this is expected, in keeping with the progressive increase that has occurred since 1983 when PSA testing first became available in Jamaica.

The incidence of breast cancer in females continues to show an ASR that fluctuates around the 40 per 100 000 per year mark. The current ASR of 43.0 per 100 000 per year shows an increase from the last report of 1998 – 2002 (ASR 40.1 per 100 000 per year), and is similar to the ASR of 43.2 per 100 000 per year reported for the earlier period of 1993 – 1997. The increase in breast cancer incidence expected with the increasing use of mammography (6, 7) is not evident in these figures. The lack of a national structured screening programme for breast cancer in Jamaica may explain the relatively stable ASR for this cancer.

Cancers of the bronchus (lung) and cervix uteri remain the second commonest for males and females, respectively, although the ASRs of both these cancers have decreased since the last report. The ASR of cancer of the bronchus in males has decreased from 22.8 in the previous report to 18.6 in the current, and the ASR of cancer of the cervix continues to show a downward trend (25.2 per 100 000 per year in 1993 – 1997, 19 per 100 000 per year in 1998 – 2002, and now 17.4 per 100 000 per year in the current report).

The decline in the incidence of lung cancer mirrors that which has been observed elsewhere – such as in the United States, United Kingdom and Northern Europe (8) – where this trend has been largely attributed to a reduction in the use of tobacco (8). Programmes designed to curtail cigarette smoking within the population are still in their infancy in Jamaica, and so decreased tobacco use is an unlikely explanation for the decline in lung cancer incidence that we have observed. Nevertheless, the trend is encouraging and will be followed carefully over the next reporting period.

The incidence of invasive cervical cancer continues to fall. It has been well documented that the incidence of this cancer decreases with the ablation of pre-malignant lesions identified through screening with cervical smears (9, 10). The recent introduction of vaccination against Human Papilloma Virus (HPV), the main causative agent of cervical cancer, may also contribute to further future reduction in the incidence (8). There is no formal screening programme for cervical cancer in Jamaica, but it would appear that the *ad hoc* screening prevalent in the island is contributing to the decline in cervical cancer incidence. We will continue to carefully monitor the incidence of this cancer to see the future effects of continued screening and the recently introduced HPV vaccine.

Colorectal cancer incidence in males, which was relatively stable over the previous two reports, has increased since the last report (ASR of 13.7 per 100 000 per year in 1998 – 2002, to 17.2 per 100 000 per year in 2003 – 2007), and it remains the third commonest cancer in this gender. Colorectal cancer also remains the third commonest in females, but unlike the case for males, the ASR in females has remained relatively unchanged (13.0 per 100 000 per year in 1998 – 2002 and 12.8 per 100 000 per year in 2003 – 2007). The increasing incidence of colorectal cancer in males and its relatively unchanged incidence in females underscore the

Leading Cancer Sites by Age, Kingston and St Andrew, 2003 – 2007

Figure 4: Leading cancer sites for cancer incidence, Kingston and St Andrew, 2003 – 2007, by gender and age group

For each age group and gender, the top ranking new cancer sites in 2003–2007 are included. Each cancer is represented as a percentage of total new cases in that age group. Actual numbers appear to the right of the bars.

ALL CANCERS

Incidence by age group and gender

Female

0 – 14	36
15 – 24	43
25 – 59	1113
60 – 74	735
75+	507
Unknown	11

Male

0 – 14	28
15 – 24	26
25 – 59	641
60 – 74	1143
75+	688
Unknown	10

N.B. Head and neck cancers include ICD-9 sites 140-149. Large bowel includes cancers of the colon and rectum.

Skin includes melanoma.

NS: Nervous system

UK: Unknown

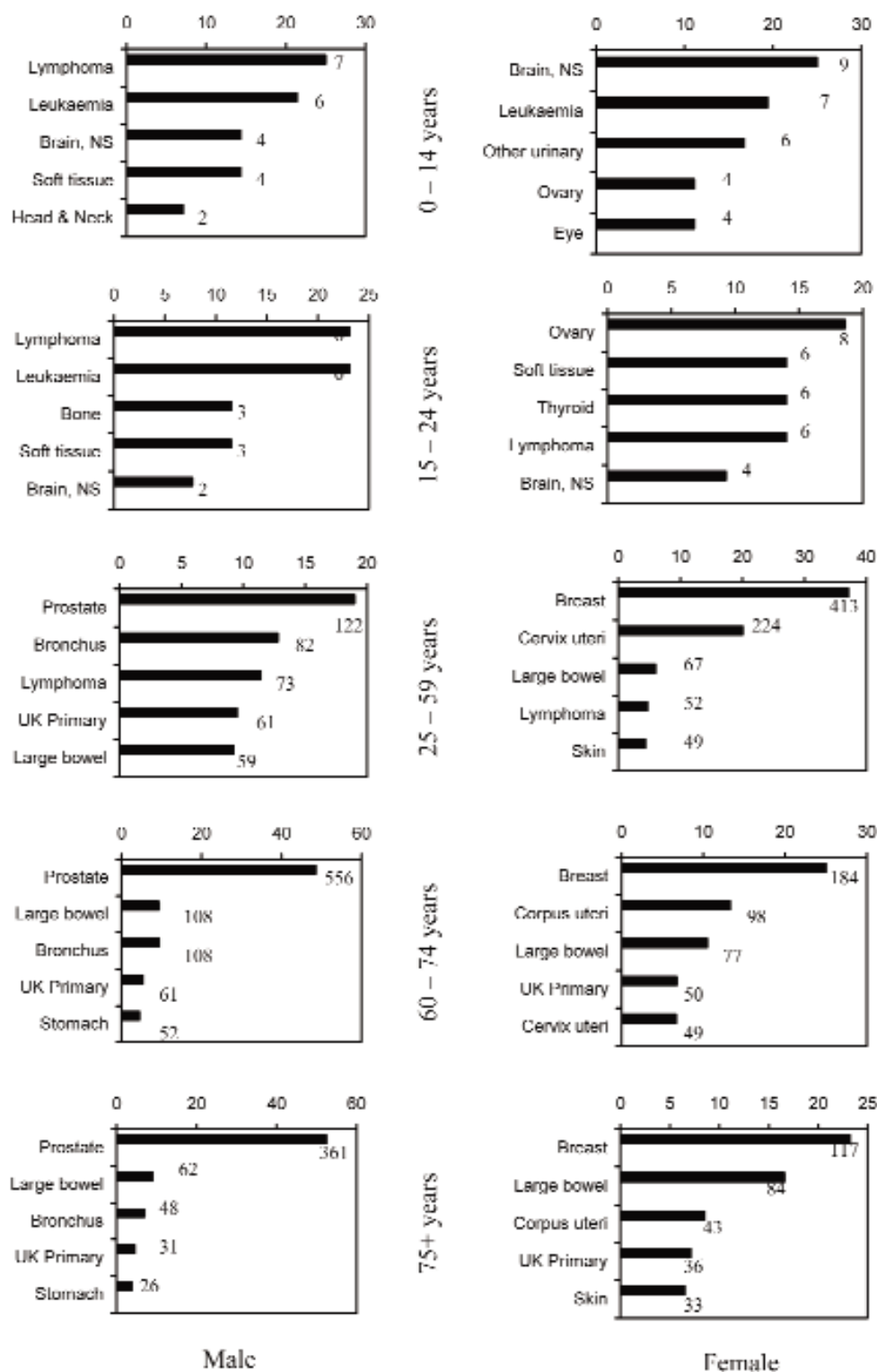


Fig. 4: Leading cancer sites by gender and age group, Kingston and St Andrew, 2003 – 2007.

need for national organized screening protocols for this cancer, as suggested in 2006 by Lee (11) and previously referred to in our last report (5).

Malignancies of unknown primary sites were among the top ten malignancies in both males and females. The remaining malignancies listed among the top ten leading sites for males, females and all persons are similar to those documented in the previous report, with a few exceptions. For males, unknown primary site and urinary bladder replace oesophagus (which shows a decrease in ASR from 4.3 to 2.4 per 100 000 per year) and soft tissue. In females, unknown primary site replaces thyroid. Stomach and larynx in males, and lymphoma, stomach and bronchus in females, occupy lower rankings than in the 1998 – 2002 report, though they still appear in the respective top ten lists. In the leading site list that encompasses males and females, unknown primary site replaces head and neck. The prominence of “malignancy of unknown primary site” may be partially explained by the increasing use of imaging modalities over the past several years, resulting in an increase in the biopsy or fine needle aspiration of detected abnormalities by clinicians and interventional radiologists.

The unavailability of follow-up information in 40.4% of patients with a diagnosis of “malignancy of unknown primary site” leaves unanswered questions. It is uncertain whether these patients died before further investigation could be done, defaulted from follow-up or sought further medical attention (including the identification of a primary site) outside the country. As the majority of cases were ascertained through laboratory investigation (histology, radiology or cytology), rather than *via* clinical examination only, or by extraction of death certificate data, one may speculate that access to investigative modalities was not a significant deterrent to further work-up. However, more structured follow-up systems are required to assist in further analysis of the malignancies of unknown primary site seen in our registry.

For those patients in whom follow-up information was available, the high mortality is not surprising, as patients with the diagnosis “malignancy of unknown primary site” would have presented with metastatic disease.

The significant contribution of adenocarcinomas to the category of “malignancy of unknown primary site” (56.0% of biopsied and 39.5% of cytologically diagnosed malignancies) is in keeping with data previously reported in the literature, where this subtype of carcinoma accounts for approximately 60% of cancers of unknown primary site (12).

Analysis of the cancer incidence data for 2003 – 2007 in Kingston and St Andrew has shown that the total number

of new registrations has remained fairly stable since the last report (1998 – 2002). The leading cancer sites for both males and females have remained relatively unchanged, as have the ASRs per 100 000 per year for both genders. There have been notable increases in the incidences of prostate and colorectal cancer in males and a decrease in the ASR of bronchus in this gender. In females, breast and colorectal cancer rates have remained relatively stable and cervical cancer ASR has declined. National screening programmes for breast and colorectal cancer are urgently needed and more stringent mechanisms for patient follow-up are required for further investigation of the prominence of malignancies of unknown primary site.

ACKNOWLEDGEMENTS

We would like to thank the staff of the Statistical Institute of Jamaica for providing data on the population denominators for Kingston and St Andrew.

REFERENCES

1. Bras G. Cancer incidence in Jamaica, Kingston and St Andrew 1958 – 1963. In: Doll R, Payne P, Waterhouse J, eds. Cancer incidence in five continents, Vol. 1, Berlin: Springer Verlag; 1966: 84–9.
2. Brooks SEH, Wolff C. Age-specific incidence of cancer in Kingston and St Andrew, Jamaica. Part I: 1978 – 1982. *West Indian Med J* 1991; **40**: 127–8.
3. Skeet RG. Quality and quality control. In: Jensen OM, Parkin DM, MacLennan R, Muir CS, Skeet RG, eds. Cancer registration: principles and methods (IARC Scientific Publications no. 95). Lyon: IARC; 1991: 101–7.
4. Doll R. Comparison between registries: Age standardized rates. In: Waterhouse J, Muir C, Correa P, Powell J, eds. Cancer incidence in five continents. Vol 3, Lyon: IARC; 1976: 453–9.
5. Gibson TN, Blake G, Hanchard B, Waugh N, McNaughton D. Age-specific incidence of cancer in Kingston and St. Andrew, Jamaica, 1998–2002. *West Indian Med J* 2008; **57**: 81–9.
6. Garne JP, Aspegren K, Balldin G, Ranstam J. Increasing incidence of and declining mortality from breast carcinoma. Trends in Malmo, Sweden, 1961–1992. *Cancer* 1997; **79**: 69–74.
7. Richardson A, Cox B, Brown T, Smale P. The impact of breast cancer screening on breast cancer registrations in New Zealand. *N Z Med J* 2005; **118**: U1291.
8. Boyle P, Levin B eds. World Cancer Report 2008. Lyon: International Agency for Research on Cancer (IARC); 2008.
9. Dunn JE, Schweitzer V. The relationship of cervical cytology to the incidence of invasive cervical cancer and mortality in Alameda County, California, 1960 to 1974. *Am J Obstet Gynecol* 1981; **139**: 868–76.
10. Macgregor JE, Campbell MK, Mann EM, Swanson KY. Screening for cervical intraepithelial neoplasia in north east Scotland shows fall in incidence and mortality from invasive cancer with concomitant rise in preinvasive disease. *BMJ* 1994; **308**: 1407–11.
11. Lee MG. Colon cancer screening [Editorial]. *West Indian Med J* 2006; **55**: 365–7.
12. Varadhachary GR. Carcinoma of unknown primary origin. *Gastrointest Cancer Res* 2007; **1**: 229–35.