Epidemiological Profile of Cancer for Grand Bahama Residents: 1988 – 2002

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ABSTRACT

This retrospective and observational study is based on a review of data from the pathology ledgers and clinical records of the Rand Memorial Hospital, of diagnoses and deaths from cancer from 1988 to 2002 (15 years). The aim was to determine the cancer incidence, mortality, survival rates and the trends for the island of Grand Bahama, Bahamas. The records indicated at least 545 (males: 187; females: 358) new cancer diagnoses giving an approximate age-standardized annual incidence rate of 167.7 per 100 000. The most frequent cancers were, in males (except for skin keratinocytic cancers) prostate 21.9%, colon/rectum 12.8% and lung 6.4%; and in females: breast 45.3%, cervix uteri 16.8% and colon/rectum 6.4%. Of these cancers, 443 (81.3%) were diagnosed in the pathology department of the hospital with the median age at diagnosis of all persons being 52 years. This comprised 119 males and 324 females. Whereas the majority of breast and cervical cancers were histologically diagnosed locally, those of prostate and lung were not. During the period, 359 (males: 181; females: 178) persons had died from cancer; an annual age-standardized mortality rate of 114.8 per 100 000, with breast 19.2%, prostate 14.5% and colon/rectum 9.5% being the most frequent. The overall median period of survival was one year (range 0–14 years). The median survival for persons with cervix uteri was five years; for breast cancer, three years; colorectal cancer, 2 years; prostate, one year; and less than a year for lung cancer. The data on cancer were not easily obtained and this may be improved if a cancer registry is established on this second most populated island of The Bahamas.

Perfil Epidemiológico del Cáncer en los Residentes de Gran Bahama: 1988 – 2002

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RESUMEN

Este estudio retrospectivo y de observación se basa en una revisión de datos de los libros de registros de patologías y las historias clínicas del Hospital Rand Memorial, en relación con el diagnóstico y las muertes de cáncer desde 1988 hasta el 2002 (15 años). El objetivo fue determinar la incidencia de cáncer, la mortalidad, las tasas de supervivencia y las tendencias, con respecto a la isla de Gran Bahamas, Bahamas. Los registros indicaron al menos 545 (varones: 187; hembras: 358) diagnósticos nuevos de cáncer, para una tasa de incidencia anual estandarizada por edad, de aproximadamente 1677 por 100000. Los tipos más frecuentes de cáncer fueron los siguientes. En los hombres (con excepción de los cánceres queratinocíticos de la piel): próstata, 21.9%; colon/recto 12.8%; y pulmón, 6.4%. En las mujeres: mamas, 45.3%, cervical uterino, 16.8%; y colon/recto 6.4%. De estos tipos de cáncer, el 81.3%, es decir, 443 (varones: 119; hembras: 324), fueron diagnosticados en el departamento de patología del hospital, con una edad mediana de 52 años en relación con todos los pacientes en el momento del diagnóstico. Mientras que la mayoría de los cánceres de cervical y de mamas se diagnosticaron histológicamente de forma local, los de próstata y pulmón no se diagnosticaron de ese modo. Durante ese período, un total de 359 personas (181 varones; 178 hembras) habían muerto de cáncer, para una tasa anual de mortalidad estandarizada por edad, de 114.8 por 100 000, siendo los cánceres de mama (19.2%), próstata (14.5%), y el colorrectal (9.5%) los más frecuentes. La mediana general del período de supervivencia fue de un año (rango 0 – 14). Después del diagnóstico, las personas continuaron viviendo con cáncer una mediana de cinco años en el caso del cáncer cervical

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uterino, tres años en el femenino de mamas, dos años en el colorrectal, un año en el de próstata, y menos de un año en el cáncer de pulmón. Los datos sobre el cáncer no fueron fáciles de obtener, y esto puede mejorarse si se establece un registro del cáncer en ésta, la segunda isla más poblada de las Bahamas.

La mediana de la supervivencia para personas con cáncer cervical uterino fue de cinco años; para el de mamas, tres años; dos años para el de próstata; y un año y menos de un año para el cáncer del pulmón.

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INTRODUCTION

The Commonwealth of The Bahamas is an archipelago of 700 islands and cays that extends southwards in the Atlantic from the tip of the Florida panhandle, United States of America (USA), and of which some 29 are said to be inhabited. The capital city, Nassau, is on the island of New Providence, and so too the main Government acute-care institution, the Princess Margaret Hospital, which serves as the main referral centre for the rest of The Bahamas. Grand Bahama Island is the fourth largest but second most populated of the chain. On it is located the only other government acute-care institution the Rand Memorial Hospital (RMH) which has 86 beds.

The 2000 population census for all Bahamas was 303 611 and for Grand Bahama 46 994. The latter represented a 14.8% increase of the 1990 census. The gender difference was small, 946 more females in the 2000 data. The combined age distribution in years was 31.8% between 0–14 years; 50.9%, 15–44 years; 12.2%, 45–59 years and 5.1%, 60 years and older. It is said that for the Commonwealth of Bahamas almost 85% of the population is of African descent and 15% Caucasian (1).

In statistics from the Ministry of Health (2, 3), deaths from cancer have always ranked high in the Bahamas: first in 1979 at 85 per 100 000 population, first in 1984 at 102.2 per 100 000 population and third for the period 1996 to 1998, following diseases of the heart and AIDS. In 1998, it was responsible for 266 (15.2%) of all deaths at 90.6 per 100 000 population, when it was also the second leading cause of death in persons 45 years and over. A preliminary report lists cancer as the second leading cause of death for all Bahamas in 2001, 285 (16.3%) deaths. A review of deaths on Grand Bahama (4) recorded cancer as the leading specific cause for the ten-year period of 1993 to 2002 with 250 deaths.

In general, death rates from cancer vary among countries, being influenced by a host of factors such as stage at diagnosis, availability and level of healthcare and socio-economic reasons. Mortality rates from neoplasm in the Caribbean at the end of the 1990 ranged between 69.2 for females in Puerto Rico to 171.6 for males in Barbados (5). Also, the risk of developing a cancer may be partly dependent on lifestyles and behavioural changes that accompany socio-economic development. The gross national income of the Bahamas at US$ per capita of 16 400 in 2000 was second only to that of the USA in the Americas and the overall lifestyle is English Caribbean but influenced by the proximity to the USA.

Surgical specimens from the RMH were sent for pathologic examinations to Nassau prior to September 1987. Since then the Grand Bahama institution developed the capability for tissue processing, examination and reporting in its laboratory, and is the only one offering this service on the island.

This presentation includes all cancers diagnosed at this laboratory on persons considered resident on Grand Bahama prior to the diagnosis, irrespective of ethnicity, nationality or length of residency, for the period January 1, 1988 to December 31, 2002 (15 years). What determines residency in Grand Bahama is not defined. It is based on the opinion of the demographic officer in the medical records department that a person has not migrated to the island just for healthcare and that the information provided is acceptable for establishing Grand Bahama as the usual residence. Also, neither in the census nor in the medical records is ethnicity recorded. The majority, about 80% of these persons, are born-Bahamians but others, about 8%, include immigrants from other Caribbean countries, particularly Haiti, Turks and Caicos and Jamaica, and from elsewhere such as North America and Europe. In addition, for this paper, mortality data are included, not only from the above, but also on others who have died from cancer but whose diagnoses may have been made clinically, from post mortem examinations, or were made elsewhere. The objective of this study is to better define the epidemiological profile of cancer, in general, and for few specific sites on the island. Incidence, mortality and survival rates will be assessed and some comparisons made, particularly with the data for all Bahamas.

MATERIALS AND METHODS

Data for this observational and retrospective study, derived from three internal hospital sources, were used to determine the incidence and the mortality profiles for cancer. There is no registry for cancer on Grand Bahama. The histology ledgers of the laboratory were reviewed from January 1, 1988 to December 31, 2002 and cancer diagnoses extracted. All the available patient medical records of the hospital were then retrieved and more information obtained for this report. In the absence of clinical records, and particularly from the private out-patient sources, only the information provided on

the request forms were used (Group A). The first co-author had been collecting basic mortality data from the medical records department of the hospital from January 1, 1993 to December 31, 2002. The clinical records of those with cancer as the underlying cause of death, other than those from group A, were further reviewed for this report (Group B). In addition, the death register of that department was scanned to obtain other cancer deaths from January 1, 1988 to December 31, 1992 (Group C). The clinical records for this period were not readily available. It should be understood that it is in the records department of the RMH that deaths occurring on the island are first processed for certification and then registration. The mortality statistics for the 15-year period are derived from combining groups B and C with the deaths from group A. The incident numbers are obtained by combining all of group A with those persons of group B whose dates of diagnoses were known to be within the 15-year period. For the study, no contact was made with patients. The statistical method of analysis was by SPSS (Statistical Package for the Social Sciences).

RESULTS

Cancers diagnosed histologically in local laboratory – Group A.

In the 15-year period of this report there were 443 (119 males, 324 females) new diagnoses of cancers as listed by anatomic sites. This number included 61 keratinocytic skin cancers but not *in-situ* malignancies (which were seen in the cervix uteri, breast, ovary and skin). The median age at diagnosis was 52 years (range 3–89 years; 60 years males, 50 years females). Within the period 145 (47 males, 98 females, 32.7%) of these persons had died from cancer (case fatality 0.33) at a median age of 55 years (range 24–84 years; (60 males, 52 females) and a median survival, equal in males and females, of one year (range 0–14), with the range in males 0–8 and in females 0–14 years.

Table 1 shows that the majority of cancers in males were of the skin (41, 34.5%) but 38 of these were keratinocytic carcinomas. This was followed by cancers of the colon and rectum (16.0%) and of the prostate (14.3%). The upper aerodigestive tract (oral cavity, pharynx, oesophagus) accounted for 14 (11.8%), stomach 7 (5.9%), followed by the liver, pancreas, gall bladder and bile ducts together 6 (5.0%) and of blood and blood forming organs *eg* leukaemia, lymphoma and multiple myeloma, 5 (4.2%).

Table 1 further shows that the breast represented the most frequently diagnosed site of cancer in women, 46.6% of cases. The reproductive organs, not including the breast, accounted for 89 (27.5%) of which the cervix uteri was 58 (17.9%). There were 19 (5.8%) colorectal cancers (one from the vermiform appendix is listed separately), 8 (2.5%) of stomach, eight (2.5%) of blood and blood forming organs, seven (2.2%) from soft tissue and four (1.2%) from the upper aerodigestive tract.

Table 1: Cancers of Grand Bahama residents diagnosed histologically at local laboratory (1988 – 2002) – group A

Site	Total Number	(%)	Males Number	(%)	Females Number	(%)
Breast	154	(34.8)	3	(2.5)	15	(46.6)
Skin	68	(15.3)	41	(34.5)	27	(8.2)
Cervix uteri	58	(13.1)	–	–	58	(17.9)
Colon/rectum	38	(8.6)	19	(16.0)	19	(5.8)
Endometrium	20	(4.5)	–	–	20	(6.2)
Prostate	17	(3.8)	17	(14.3)	–	–
Stomach	15	(3.4)	7	(5.9)	8	(2.5)
Haematopoietic system	13	(2.9)	5	(4.2)	8	(2.5)
Ovary	10	(2.3)	–	–	10	(3.1)
Soft tissue	10	(2.3)	3	(2.5)	7	(2.2)
Oral cavity	7	(1.6)	5	(4.2)	2	(0.6)
Oesophagus	7	(1.6)	6	(5.0)	1	(0.3)
Pancreas/Gall Bladder and Bile Ducts	5	3	2	(0.6)		
Lung	4	(0.9)	2	(1.7)	2	(0.6)
Liver	4	(0.9)	3	(2.5)	1	(0.3)
Naso/Oro pharynx	3	(0.7)	3	(2.5)	–	–
Kidney	2	(0.5)	–	–	2	(0.6)
Larynx	1	(0.2)	–	–	1	(0.3)
Vermiform-Appendix	1	(0.2)	–	–	1	(0.3)
Peritoneum	1	(0.2)	–	–	1	(0.3)
Penis	1	(0.2)	1	(0.8)	–	–
Vulva	1		–		1	(0.3)
Unknown 1^0	3	(0.7)	1	(0.8)	2	(0.6)
Total	**443**	**(100)**	**119**	**(26.9)**	**324**	**(73.1)**

Additional mortality from cancer (1993–2002) – group B

In addition to persons from group A, another 149 (97 males, 52 females) patients were diagnosed clinically, otherwise or elsewhere had died from cancer from the beginning of 1993 to the end of 2002. Of these, 31% were said to have been diagnosed elsewhere, 16% clinically diagnosed, 12% from autopsies and for 41%, the information was not obtained. The median age at death in this group was 66 years (range 5–98 years: 69 males, 59 females), and the median survival period was one year, equal by gender. As seen in Table 2, the most frequent diagnoses for males were of the prostate 37 (38.1%), lung 14 (14.4%), gastrointestinal tract 14 (14.4%), upper aerodigestive system 12 (12.4%), liver, pancreas, gallbladder and ducts together 7 (7.2%) and blood and blood forming organs 5 (5.2%). Approximate dates of diagnoses within the 15-year period were obtained for 68 (70.1%) males. Table 2 also identifies the major sites for the females as breast 14 (26.9%), gastrointestinal tract 7(13.5%), cervix uteri, ovary and *corpus uteri* together 7 (13.5%), and upper aerodigestive system 6 (11.5%). Thirty-four (65.4%) cases were diagnosed within the period 1988–2002 and two diagnosed before 1988. For 16 (30.8%) cases, the dates of diagnoses were not obtained.

Table 2: Additional cancers from mortality data of Grand Bahama residents (1993–2002) – group B

Site	MALES Dates of diagnosis				FEMALES Dates of diagnosis					
	Known	Unknown	Total		Known	Unknown	Total		Total	
	Number	Number	Number	(%)	Number	Number	Number	(%)	Number	(%)
Prostate	24	13	37	(38.1)	–	–	–	–	37	(24.8)
Lung	10	4	14	(14.4)	2	0	2	(3.8)	16	(10.7)
Breast	–	–	–	–	11	13	14	(26.9)	14	(9.4)
Stomach	5	3	8	(8.2)	2	1	3	(5.8)	11	(7.4)
Pancreas/Gall bladder/Ducts	4	1	5	(5.2)	2	4	6	(11.5)	11	(7.4)
Haematopoietic system	5	0	5	(5.2)	2	1	3	(5.8)	8	(5.4)
Colon/rectum	4	1	5	(5.2)	3	0	3	(5.8)	8	(5.4)
Oesophagus	2	0	2	(2.1)	2	1	3	(5.8)	5	(3.4)
Oral cavity	2	1	3	(3.1)	2	0	2	(3.8)	5	(3.4)
Larynx	5	0	5	(5.2)	–	–	–	–	5	(3.4)
Unknown 1^0	1	1	2	(2.1)	1	1	2	(3.8)	4	(2.7)
Kidney	0	2	2	(2.1)	2	0	2	(3.8)	4	(2.7)
Ovary	–	–	–	–	3	0	3	(5.8)	3	(2.0)
Liver	1	1	2	(2.1)	–	–	–	–	2	(1.3)
Nasopharynx	2	0	2	(2.1)	–	–	–	–	2	(1.3)
Adrenal	2	0	2	(2.1)	–	–	–	–	2	(1.3)
Cervix uteri	–	–	–	–	2	0	2	(3.8)	2	(1.3)
Corpus uteri	–	–	–	–	1	1	2	(3.8)	2	(1.3)
Bone	0	1	1	(1.0)	1	0	1	(1.9)	2	(1.3)
Small intestine	0	1	1	(1.0)	0	1	1	(1.9)	2	(1.3)
Penis	1	0	1	(1.0)	–	–	–	–	1	(0.7)
Soft tissue	–	–	–	–	0	1	1	(1.9)	1	(0.7)
Middle ear	–	–	–	–	0	1	1	(1.9)	1	(0.7)
Brain	–	–	–	–	0	1	1	(1.9)	1	(0.7)
Total	**68**	**29**	**97**	**(100%)**	**36**	**16**	**52**	**(100%)**	**149**	**(100%)**

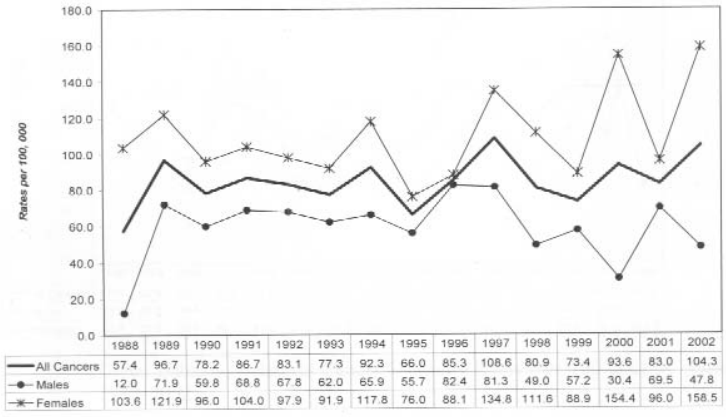
Death register (1988–1992) – group C

Of the 98 residents certified as dying from cancer in this five-year period, 33 were from group A. This implies that the other 65 (37 males, 28 females) for which the subsequent data apply, either had diagnoses of cancer prior to 1988 or that the diagnoses were not made in the local laboratory. Twenty-six (40%) were either first diagnosed or confirmed by postmortem examinations. The median age at death was 66 years (range 4–89 years; 67 males, 62 females).

Combination of data

Incidence

In addition to the 443 cases diagnosed at the laboratory in group A, there were at least another 102 from group B known to have been otherwise diagnosed within the fifteen-year period. Thus, in the 15 years, at least 545 (187 males, 358 females) cancers were diagnosed in the residents of Grand Bahama. The approximate annual incidence rates ranged from 57.4 to 108.6 with a mean of 84.9 per 100 000; male 59.2 (range12.0–82.4) and female 109.8 (range 76.0–158.5) (Fig. 1). By successive five-year periods from 1988, the numbers were 152, 185 and 208. The age-standardized rates



	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
All Cancers	57.4	96.7	78.2	86.7	83.1	77.3	92.3	66.0	85.3	108.6	80.9	73.4	93.6	83.0	104.3
Males	12.0	71.9	59.8	68.8	67.8	62.0	65.9	55.7	82.4	81.3	49.0	57.2	30.4	69.5	47.8
Females	103.6	121.9	96.0	104.0	97.9	91.9	117.8	76.0	88.1	134.8	111.6	88.9	154.4	96.0	158.5

Fig. 1: Grand Bahama, Bahamas Cancer incidence rates (per 100 000) by gender, 1988–2002.

(ASR) obtained by adjusting to the world standard population (6) were 167.7 (154.4 males, 195.7 females) per 100 000. The most frequent male cancers were of the prostate 41 (21.9%), colon and rectum 23 (12.8%) and lung 12 (6.4%), and in women, breast 162 (45.3%), cervix uteri 60 (16.8%) and colon/rectum 23 (6.4%).

Mortality

For the period 1988 to 2002, the mortality from cancer totalled 359 (181 males, 178 females) 145 from group A, 149 from group B and 65 from group C. Table 3 shows that the leading sites were breast, prostate, colon/rectum, lung, stomach and uterine cervix, totalling 64% of cases. Over successive five-year periods from 1988, the numbers were 98, 110, and 151. The crude mean annual mortality rate was 55.8 (lowest 34.2, highest 70.9) per 100 000 population; male 56.9 (range 30.4–94.9) and female 54.7 (range 26.4–104.3) (Fig 2). The ASR were 114.8 (140.2 males, 103.3 females) per 100,000.

Table 3: Deaths from cancer of Grand Bahama residents (1988 – 2002)

Site	Group A	Group B 1993 – 2002	Group C 1988 – 1992	Total	%
Breast	51	14	4	69	19.2
Prostate	8	37	7	52	14.5
Colon/rectum	22	8	4	34	9.5
Lung	4	16	9	29	8.1
Stomach	10	11	6	27	7.5
Cervix Uteri	14	2	2	18	5
Pancreas/Gall bladder/ducts bile	4	11	3	18	5
Oesophagus	5	5	5	15	4.2
Haematopoietic system	2	8	3	13	3.6
Unknown 1^0	2	4	6	12	3.3
Corpus Uteri	6	2	2	10	2.8
Oral cavity	3	5	1	9	2.5
Larynx	1	5	2	8	2.2
Liver	4	2	1	7	1.9
Ovary	2	3	1	6	1.7
Soft tissue	3	1	–	4	1.1
Nasopharynx	2	2	–	4	1.1
Kidney	–	4	–	4	1.1
Brain	–	1	3	4	1.1
Penis	1	1	1	3	0.8
Adrenal	–	2	1	3	0.8
Small intestine	–	2	–	2	0.5
Bone	–	2	–	2	0.5
Peritoneum	1	–	–	1	0.3
Middle ear	–	1	–	1	0.3
Intra-abdominal carcinoid	–	–	1	1	0.3
Anus	–	–	1	1	0.3
Skin (Melanoma)	–	–	1	1	0.3
Urinary bladder	–	–	1	1	0.3
Total	**145**	**149**	**65**	**359**	**00%**

Group A = persons with cancers diagnosed in local laboratory and who died in the fifteen-year period; groups B and C were not diagnosed in local laboratory.

Specific cancers

Female Breast

One hundred and fifty-one of the cases were from group A, with a median age at diagnosis of 48 years (range 25–84 years); 41.3% were under 44 years, 45.3% were ages 45–64 years and 13.3% were 65 years and older. The histologic sub-types were medullary, 15; comedo, 3; colloid, 3; lobular and sarcoma one each, and the other 128 (84.8%) were the usual ductal cancers. Laterality was virtually equal, 74 in the right and 76 in the left breast. One patient had simultaneous cancer diagnoses of both breasts. Over successive five-year periods from 1988 the numbers diagnosed were 39, 42 and 70.

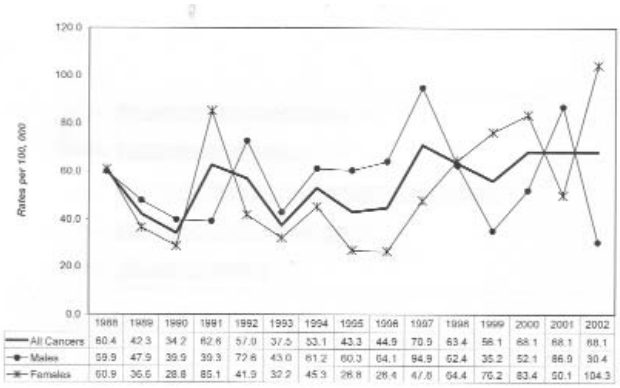


Fig. 2: Grand Bahama, Bahamas Cancer Mortality Rates (per 100 000) by gender, 1988–2002.

At the end of 2002, 50 (33.1%) of these persons had died and for these the median ages at diagnosis and death were 48 and 52 years respectively. To the end of 2002, persons in group A had a median survival of 3 years (range 0–14) years. Of the total, approximately 1.3% had lived 14 years; 17% for 10 years, 38% for 5 years (Fig 3) and 56% for three years. In addition, from groups B and C, another 18 women had died from breast cancer at a median age of 58 years, 57 and 63 years respectively. The median age at diagnosis of group B persons was 44 (range 31–81) years. Therefore, in the 15-year period, there were 68 deaths from cancer of the female breast.

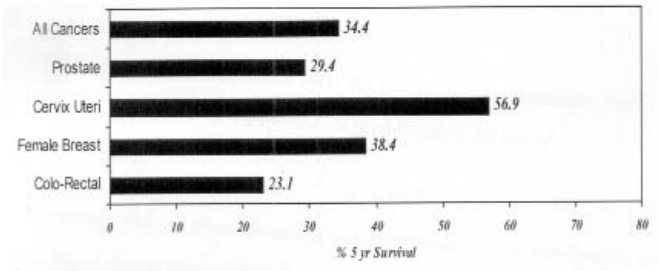


Fig. 3: Per cent surviving five or more years after cancer diagnosis at December 31, 2002.

Cervix uteri

The median age of cervical cancer at diagnosis in group A was 42 (range 27–77) years of which 57% were under 44 years, 36% between 45 to 64 years and 7% were 65 years and older. The histologic subtypes were adenocarcinoma-3,

Table 4: Median ages in years at diagnosis and death for selected cancers of Grand Bahama residents

Site	Group A				Group B			
	Median age at diagnosis	Median age at death	Median survival Interval (range) of deceased		Median age at diagnosis	Median age at death	Median survival Interval (range) of deceased	
Prostate	73	76	1.5	(0–5)	74	76	1.5	(0–10)
Breast (female)	48	52	2.0	(0–14)	44	57	2.0	(0–7)
Cervix uteri	42	48	1.5	(0–8)	59	61	2.0	(1–3)
Lung	55	55.5	0	(0–1)	61.5	62	0	(0–9)
Endometrium	65	67	0.5	(0–2)	56	58	2.0	(2–2)
Colon/rectum	56	60	1.0	(0–4)	58	58	0	(0–5)
Stomach	60	60	0	(0–1)	48	48	0	(0–3)

Group A = persons diagnosed in local laboratory. Group B = persons otherwise diagnosed.

adeno-squamous carcinoma – 2, sarcoma – 1, and the other 52 (89.7%) were squamous cancers. Over the successive five years the numbers were 22, 19, and 17. To the end of 2002, 24.1% had died with the median age at death 48 (range 28–78) years, and all persons lived a median of 5 (range 0–14) years with cancer. Approximately 16% had lived for 14 years, 26% for 10 years, 57% for 5 years (Fig 3) and 65.5% for three years. Of those that died, the mean survival interval was 1.5 (range 0–8) years. In addition to the 14 of group A, another 4 persons from groups B and C had died from cervical cancer at a median age of 63 years.

Prostate

Seventeen persons were diagnosed in group A with adenocarcinoma of the prostate, of which 52.9% had died by the end of 2002. The median age at diagnosis was 73 (range 54–78) years and at death 76 years. Persons lived with cancer for a median of one year (range 0–13 years), but only four had lived beyond five years, two beyond 12 years and one beyond 13 years for this report. From groups B and C, another 44 men had died at a median age of 75, 76 and 70 years respectively, with the diagnoses made at an estimated median age of 74 (range 63–87) years for those from group B.

Colon/rectum

Thirty-nine (19 males, 20 females) colorectal cancers were diagnosed in group A. The site distribution was rectosigmoid 29 (74.3%), ascending four, transverse three, descending two and one of appendix. The median age at diagnosis was 56 (range 20–86) years. Twenty-two (56.4%) of these had died at a median age of 60 (range 37-88) years, all within four years of diagnosis. All persons diagnosed were living with cancer at a median of two (range 0–12) years. Approximately 44% were alive after three years, 23% after five years (Fig 3), 10% after ten years and 8% after twelve years. The median age at death for the additional 12 from groups B and C persons was 58 (range 31–69) years with a similar estimated median age at diagnosis.

Lung

In this laboratory only four cases of lung cancer were diagnosed in 1988–2002, all dying within eight months. Another 25 persons had died with cancer of the lung from groups B and C. The median age at diagnosis for groups A and B was 58 (range 35–75) years and at death was 59 years with an average survival of 10 (range 0–107) months, with the longest survivor only clinically diagnosed. Seven persons were females and 22 were males.

DISCUSSION

For all cancers, the crude annual incidence was approximately 84.9 per 100 000 population but 167.7 per 100 000 when age-standardized. However these data can only represent least incidence as it does not include any cancer from group C and also not all from group B, as the dates of diagnoses were not known. Incident cancer diagnoses were more common in females than in males. The equivalent mortality rate, crude 55.8 and age-standardized 114.8 per 100 000, was more weighted to the males. The mortality rate (ASR) is rather close to the all Bahamas 109.8. The mortality rates of Caribbean islands are variable but, except for St. Kitts and Nevis, males have higher rates than females as is also seen in Grand Bahama (6). The estimated all-Caribbean mortality rates for 2002 are given as males 135.8 and females 98.4 per 100 000; not too unlike the rates in this study of 140.2 and 103.3 respectively (7). Although average rates for the 15 years are used in comparisons, it should be appreciated that there was great annual variation both in total and by gender in the incident and mortality rates for Grand Bahama.

Whereas the majority of breast (91%), cervical (97%) and colorectal (83%) cancers were histologically diagnosed locally, most diagnoses of prostate cancer (68%) were otherwise made, but it accounted for the highest number of deaths from cancer in men. Similarly, most cancers of lung, larynx, pancreas, gall bladder and bile ducts and oesophagus were otherwise diagnosed. We believe that most of these were diagnosed in Nassau and reflects the relative unavailability of services on GBI for what may be considered the more

inaccessible anatomic sites, and would also partly explain the gender difference between cancers diagnosed locally and those abroad.

In a study that spanned three years a decade earlier than this report, Brathwaite (8) identified female breast and cervix uteri as the most frequent histologically diagnosed sites of cancers (29.8%) in all Bahamas. These were followed by cancers of epidermal basal cell, oral cavity, non-basal cell, skin, stomach, reticuloendothelial system, prostate, oesophagus and colon.

In the same study, of cancers diagnosed from autopsies, the leading ones were of the stomach, lung, reticulo-endothelial system, oesophagus, female breast and liver (55.5%). Within that period, the crude cancer mortality of all Bahamas for 1977 was 68 per 100 000 accounting for 14.1% of deaths. Then, and as also noted in this study, the incidence to mortality ratio was greater in women than men because of the larger numerator and perhaps also the better prognoses of the more frequent women's cancers.

Breast and cervical cancers were already known to be the lead incident cancers in Grand Bahama (9). Ganz (10) has also reported that breast cancer is the most common cancer in women, about one third of all incident cancers of women in the USA; but it was not the most common cause of mortality among women (which was cardiovascular disease). In this study, breast cancer in Grand Bahama was also the most common incident cancer of women, about 47% of cancers, and although likewise not the most common cause of death, was responsible for just over 38% of deaths from cancer in females. We can offer no explanation why deaths in groups B and C occurred at a later median age than in group A, even though diagnosed at an earlier age.

Mammography was introduced as a screening investigation at RMH in the latter part of 1996, whereas the cervical smear was known to be available as far back as the 1970s. One cannot state with certainty the effect of these modalities on cancer incidence but there is the apparent increasing and decreasing trends of breast and cervical cancers respectively since their introduction on Grand Bahama. A note of interest is that within this study period, 184 cases of intra-epithelial cervical neoplasias were histologically identified and that none was known to advance to cancer.

It is appreciated that healthcare may be sought elsewhere and independently by residents of Grand Bahama, usually either in Nassau or abroad, particularly in Miami, USA. The statistics presented here cannot therefore be considered to represent the totality for the residents of Grand Bahama. Also, although the laboratory at the RMH is the only one on the island that offers histological services, many persons who enter the health system are referred elsewhere based on the clinical impressions, before full medical investigations partly because of the absence of experts or expertise on the island for the considered problem. This applies particularly to paediatric tumours, tumours of the central nervous system and bones and haematological malignancies. A blood film examination may have suggested a haematological problem but such a record was not usually available in the laboratory ledgers. This however was started in 2000, and from then to the end of 2002, 8 leukaemias were diagnosed.

Overall, we feel more confident that the mortality data are closer to the actual than the incident data, even though the mortality data are likely limited because of the loss to follow-up of residents who, after diagnoses, may have returned to their native countries and also, if a resident had died elsewhere, such information may not have been readily available on Grand Bahama. This latter number was at least 26 for the last two years of this report, based on the obituaries in the newspapers. However, there was no preponderance of any medical condition in these persons. A more major limitation of the incident data stems from the fact that persons not diagnosed in the local laboratory during the study period and who did not die would not have been captured in the incident numbers. Although there is a difference between the groups, using group A as an example where 33% of those diagnosed had died, then by extrapolation, the 214 deaths of groups B and C could have been from possibly 649 diagnoses. The approximate annual incidence (1092 in 15 years) would then be 170 per 100 000 or about twice that noted above.

As much relevant data, such as the staging of cancers, were difficult to obtain from the medical records, the call for a cancer registry or at least the use of a simple form designed for cancer data that can be made a part of the medical records is supported. Finally, it is hoped that the data provided in this study may serve as a template for future comparisons on cancer.

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