AFRICA

Algeria

Algeria is located in North Africa, on the southern shore of the Mediterranean Sea, and covers an area of 2.4 million km^2. Algeria is bordered to the south by Mali and Niger, to the east by Tunisia and Libya, and to the west by Mauritania, Morocco, and Western Sahara. The climate is Mediterranean in the north and arid in the south. This upper-middle-income country has a high Human Development Index. The economy relies on the reserve of hydrocarbons.

The population was 36.0 million in 2010 (Table A.7); it is ethnically mainly Arab-Berber and has increased about 10-fold during the past 100 years. The official languages are Berber and Arabic; French is also widely spoken. Islam is the predominant religion. About 90% of Algerians live in the northern coastal areas, and about 1.5 million (4%) remain nomadic. Children younger than 15 years make up 27% of the population, and people younger than 20 years make up 37% of the population (Table A.6).

The national health system is funded mainly by the government, with a free care system. In the private health-care sector, there are several specialized clinics. Radiotherapy is available at the specialized public or private centres, but many patients with cancer are diagnosed and receive primary therapy at district general hospitals. Cancer health-care services were distributed unequally across the country before 2015. Anti-cancer centres were initially established in Algiers, Constantine, Blida, and Oran. In 2013, the Government of Algeria and the Ministry of Health set up a National Cancer Plan for 2015–2019. Gradually, anti-cancer centres were built in all regions. In 2017, they became operational in the other six covered *wilayas* (provinces): Annaba, Batna, Ouargla, Sétif, Sidi Bel Abbès, and Tlemcen.

POPULATION AT RISK

Population data are provided by the National Office of Statistics (https://www.ons.dz/) and are based on the censuses of 1987, 1998, and 2008 (Table A.7). The population estimates may not accurately and completely reflect internal migration towards large cities, which may affect the calculated rates inconsistently across the provinces.

EDITORS' COMMENTS

Algeria is divided into 48 *wilayas*, five of which are covered by cancer registries contributing to IICC-3. Data from the registries of Algiers, Sétif, and Tlemcen are presented in full standard tables, and data from the smaller registries of Annaba and Batna are presented in abbreviated tables online (Table A.12). The five registries combined cover about 19% of the national childhood population (Table A.6). The Sétif Cancer Registry contributed to IICC-2 (Table A.1).

There are marked differences between the datasets, although the registries exchange data for individual cases as relevant. The rates reported from the Algiers Cancer Registry are almost triple those reported from the Sétif Cancer Registry (Table A.9). The percentage of microscopically verified cases (MV%) ranges from 83.9% to 96.9%. The age-standardized (world) rate (ASR) per million for 0–14 years ranges from 66.3 to 171.8 and for 0–19 years ranges from 81.8 to 172.9 (Table A.9). The percentage of death-certificate-only cases (DCO%) ranges from 0% to 5.3% (Table A.9), but all registries have access to mortality records. The reported differences probably reflect the different levels of availability of therapeutic facilities, access to health care and quality of its provision, and completeness of ascertainment. The age-specific incidence rate is very low for age 0 years. This may be explained in part by the incomplete dates of birth and incidence in the registries and imprecise reporting of age in medical records. An additional explanation may be underdiagnosis in infants. Absence of opportunistic diagnosis of neuroblastoma and possibly late diagnosis of embryonal tumours, such as retinoblastoma, may have contributed to underascertainment. Laterality was not provided by any of the registries. All registries record cases of skin carcinoma, but the incidence is low.

ALGERIA, 5 registries (1996-2014)

Registry	Period	Cases	%	Person-years	%
Algiers	2008-2012	824	31.2	4 798 135	19.8
Annaba	2000-2010	271	10.3	2 318 530	9.6
Batna	2008-2012	211	8.0	2 374 990	9.8
Sétif	1996-2014	992	37.6	11 588 385	47.9
Tlemcen	2006-2014	342	13.0	3 097 265	12.8
ALGERIA	**1996-2014**	**2640**	**100.0**	**24 177 305**	**100.0**

Please consult the quality indicators for this pool and its constituent registries

Algiers Cancer Registry, 2008–2012

Doudja Hammouda, Anissa Bouhadef, Ayad Belarbi, Soraya Maaraf, Chérifa Kadri, Katia Bouzerar, Mohamed Namaoui, Lynda Rezzik, Ounissa Meguerba, Anissa Belaidi, Nacima Khida

Algiers, the capital city of Algeria, is the smallest and the most populous *wilaya* in the country. It covers an area of 1190 km^2. In 2010, the estimated population was 3.2 million (8% of the national population), and people younger than 20 years made up 28% of the population (Table A.6). The population-based cancer registry covers the whole *wilaya* of Algiers and was set up in 1990 (Table A.10). Childhood cancers make up about 3.9% of all registered cancers (5% in males and 2.8% in females). Algiers has 17 hospitals and multiple diagnostic and treatment services.

Data on cancer occurring in people younger than 20 years come from medical centres (cancer centres, paediatric services, and medical oncology departments in university hospital centres and in public and private hospitals), from diagnostic services (pathology departments, haematology laboratories, radiology services, and medical imaging centres), and, if other data sources are not available, from death certificates. Information is collected by active case finding. Data are actively collected from patients' medical records. Central nervous system (CNS) tumours and basal cell carcinomas are registered. Tumours are coded according to the International Classification of Diseases for Oncology, third edition (ICD-O-3), and the date of incidence is defined according to European Network of Cancer Registries (ENCR) recommendations. Data are entered simultaneously using Epi Info and CanReg. Comparisons and exchanges of information with neighbouring registries enable continuous improvement of the completeness and quality of data. Data collected on cancer occurring in the general population are analysed every year and are summarized in annual reports.

POPULATION AT RISK

Population data were provided for each calendar year by sex and 5-year age group. The data for the missing year–age–sex categories were estimated at IARC using the methods described in Chapter 2. See also Algeria, above.

EDITORS' COMMENTS

The proportion of cases with unspecified histology was high even though the MV% was 90%. Some unusual diagnoses are reported, such as oesophageal carcinoma at age 11 years and prostate cancer at age 15 years. The age-specific incidence rates are relatively low for age 0 years, and the proportion of cases aged 19 years in the age group 15–19 years was high (Table A.9). Because of incomplete date of birth in 38% of cases, age was queried in 14% of cases and may be misclassified in part of the cohort (Table A.8). In the age group 0–14 years, the incidence rate per million is 200 for boys and 142 for girls, possibly reflecting that girls receive less medical attention. The high incidence rates, compared with the other registries in Algeria, may suggest registration of non-residents. However, the registry reports due verification of duplicate cases and non-residents and ascribes the comparatively high rates to possible underestimation of the population at risk (resulting from internal migration) and to underascertainment in the other areas that lack large treatment centres. Non-malignant CNS tumours are not systematically registered, but a few were reported. Pilocytic astrocytoma was coded with uncertain behaviour. See also Algeria, above.

Annaba Cancer Registry, 2000–2010

Sabiha Bouzbid, Tarek Bachtarzi, Nadia Bouchair, Mohamed Cherif Yaiche, Ahmed Bastandji, Wided Boutabia, Fatiha Griffi, Amel Djenouni, Abdelaziz Lankar, Fatiha Yassi

The *wilaya* of Annaba is located in north-eastern Algeria, on the coast of the Mediterranean Sea, and covers an area of 1393 km^2. The population was 0.6 million (~2% of the national population) in 2010, and 33% of the population was younger than 20 years (Table A.6). About 72% of the population lives in urban areas. The main economic sectors are the steel industry and agriculture.

General health care in the area of Annaba is provided predominantly by Annaba University Hospital (AUH), anti-cancer centres, and a network of primary and secondary health centres, supplemented by private practitioners. The anti-cancer centre is a new part of AUH; it was opened in 2015 and offers radiotherapy and chemotherapy units. It serves a population of about 3 million. Children with a suspected cancer are referred from primary or secondary care to AUH, which is the main source of information for the Annaba Cancer Registry.

The registry covers the *wilaya* of Annaba and is located in the Annaba anti-cancer centre. It is funded by AUH and research grants and is staffed by a part-time medical officer, two medical doctors, and two health workers. The registry uses CanReg4, developed by IARC/IACR.

Cases were collected by active searches in medical records. Sociodemographic and cancer data (clinical, radiology, and morphology data) were extracted. In addition to medical wards, searches for cases were conducted in the pathology laboratory and haematology laboratory of AUH. Private clinics and pathology laboratories were also visited, and health insurance records were a complementary data source. Death certificates from AUH are actively reviewed to obtain additional information related to the exact date and cause of death. Death certificates from municipalities are not used. It is not possible to estimate how many cancer cases remain undiagnosed, but there may be some in rural areas.

All malignant tumours were reportable. Coding is defined according to the current international guidelines recommended by IARC/IACR (Table A.10).

POPULATION AT RISK

Data were provided by sex and 5-year age group for 1998, 2000, 2001–2005, and 2008–2010. The data for 2000–2007 were estimated at IARC by linear interpolation in the sex and age group categories using the census years 1998 and 2008, to smooth out small variations in the annual figures provided. The data for the remaining missing categories of year, sex, and single year of age were then estimated at IARC using the methods described in Chapter 2. See also Algeria, above.

EDITORS' COMMENTS

The population counts decreased steadily during 2000–2008. No DCO cases were reported (Table A.9). Very low numbers of cancer cases were registered in 2005 and 2010, possibly because of underregistration. Age-specific incidence is relatively low in infants. The sex ratio was high in both children and adolescents. The registry was not able to provide the day or month of birth for almost 78% of cases (Table A.8); this may have affected age-specific rates. Age was queried in 1% of cases. Non-malignant CNS tumours were not recorded. See also Algeria, above.

Batna Cancer Registry, 2008–2012

Bouhidel Mohamed Larbi, Beichi Fayçal, Nourani Imene, Saidi Meriem, Oudjehih Messaouda, Saidi Mahdia, Khedraoui Hechani, Marref Abdelwahab

The *wilaya* of Batna is located in the eastern part of Algeria. With a surface area of 12 039 km^2, the territory lies almost entirely within the geographical assembly formed by the junction of the Tell Atlas and the Saharan Atlas; this location determines the climatic characteristics and the conditions of human life.

The registry covers the *wilaya* of Batna, with an estimated population in 2010 of 1.2 million, of whom 41% were younger than 20 years (Table A.6).

The Batna Cancer Registry was established in 1995 (Table A.10) and has been affiliated with the Ministry of Health since 2014. Active case finding is performed by a senior technician in epidemiology, using a descriptive survey sheet. Data are entered and validated after encoding by the registry team, which includes pathologists and haematologists. Confidentiality is ensured. The registry adopted the recommended coding systems (Table A.10).

POPULATION AT RISK

Data were provided by sex and 5-year age group for each calendar year of the reporting period. The data for the missing year–age–sex categories were estimated at IARC using the methods described in Chapter 2. See also Algeria, above.

EDITORS' COMMENTS

A total of 15% of cases had unspecified histology. No DCO cases were identified during the reporting period (Table A.9). The day and month of birth was not accurate in about 80% of cases (Table A.8); this may result in age misclassification. The sex ratio was high for children aged 0–14 years. Non-malignant CNS tumours were recorded, but none were reported. The incidence rates, based on a small total number of cases, are relatively low for a North African registry; this may be the result of underreporting as a result of patient migration for treatment, because there is no paediatric oncology unit in Batna. See also Algeria, above.

Sétif Cancer Registry, 1996–2014

Mokhtar Hamdi Cherif, Zoubida Zaidi, Abbes Mahnane, Dahbia Charka, Manal Rakeb, Lamia Kara, Asma Ayat, Djamel Abdellouche, Selma Hamdi, Chadia Madjat, Saida Atoui, Imene Merghem

Sétif is one of the north-eastern *wilayas* of Algeria, located 300 km east of the capital, Algiers, and separated from the coast by two other provinces, Béjaïa and Jijel. Sétif covers an area of 6549 km^2, and 48% of the population lives in rural areas. The *wilaya* is an economic, industrial, and commercial hub and also an important agricultural area. The population was 1.5 million in 2010 (~5% of the national population), and people younger than 20 years made up 36% of the total population of the registration area, which covered 4% of the national childhood population (Table A.6).

The Sétif Cancer Registry was founded in 1986 (Table A.10) in collaboration with IARC. The registry is attached to the Health Information and Biostatistics Unit of the Department of Epidemiology and Preventive Medicine, located at the Mother and Child Hospital of Sétif University Hospital and the Sétif Highlands Health and Environment Laboratory of the Faculty of Medicine of the University of Sétif. The registry covers the population of the whole *wilaya*.

Data are actively collected from the university hospital, public health hospitals, pathology laboratories, private hospitals, and death registration offices. Most childhood tumours in Sétif are seen in the paediatric haematology unit at the university hospital; no special hospital for children with cancer existed during the reporting period. Although the death registration system is incomplete, the death certificates are examined and a record is completed for each certificate that mentions cancer or a malignant tumour.

Cancer records are recorded directly at the time of the investigation for some variables, and others are coded centrally. Tumours are coded according to ICD-O, and the records are stored and analysed using CanReg5, developed by IARC. The registry actively follows up registered patients for vital status and participates in CONCORD studies.

PUBLICATIONS

Hamdi Cherif M, Serraino D, Mahnane A, Laouamri S, Zaidi Z, Boukharouba H, et al. (2014). Time trends of cancer incidence in Setif, Algeria, 1986–2010: an observational study. BMC Cancer. 14(1):637. https://doi.org/10.1186/1471-2407-14-637 PMID:25175348

Hamdi Cherif M, Bidoli E, Birri S, Mahnane A, Zaidi Z, Boukharouba H, et al. (2015). Cancer estimation of incidence and survival in Algeria 2014. J Cancer Res Ther. 3(9):100–4. https://doi.org/10.14312/2052-4994.2015-14

POPULATION AT RISK

Data were provided by sex and 5-year age group for each calendar year of the reporting period. The data for the missing year–age–sex categories were estimated at IARC using the methods described in Chapter 2. See also Algeria, above.

EDITORS' COMMENTS

The MV% was very high (97%), although 19% of cases had unspecified histology (Table A.9). In 11% of cases, the code for basis of diagnosis was considered unlikely with respect to histology (Table A.11). Date of birth was incomplete in 72% of cases; this may result in age misclassification (Table A.8). Identification documents are not issued, but mothers are said to know the age of their children in years. Only a few infants were registered, possibly because they were treated outside the Sétif registration area. Non-malignant CNS tumours were not recorded. The incidence rates are the lowest among the five contributing Algerian registries (Table A.9), because of selective underdiagnosis (CNS tumours, germ cell tumours) and underreporting. The low rate of retinoblastoma may be influenced by the difficulty of accessing the files in a specialized ophthalmology clinic outside the registration area (in Algiers). Patient migration for treatment may result in general underreporting. See also Algeria, above.

Tlemcen Cancer Registry, 2006–2014

Kaouel Meguenni, Derbali Regagba, Youcef Snoussaoui, Imene Cherif, Fatima Zohra Benbachir, Aouda Bensalah, Rachid Manaa

The Tlemcen Cancer Registry was implemented in 1997 in collaboration with IARC during the period of a significant decrease in the incidence of infectious diseases and the apparent epidemiological transition in Algeria. The registry covers the *wilaya* of Tlemcen in north-western Algeria. The population covered by the registry was about 1 million in 2010, and 35% were younger than 20 years (Table A.6). The natural population growth rate is about 2.05% per year. Most residents (70%) live in the rural region in the north of the province. The ethnic and racial distribution of the population is homogeneous, according to the 2008 national census.

The Tlemcen Cancer Registry is located in the Department of Epidemiology in Tlemcen University Hospital. Its principal mission is to collect, store, manage, and analyse data on people with cancer, maintain a cancer incidence reporting system, serve as an information resource for cancer research, and provide information to assist public health officials and agencies.

The Tlemcen Cancer Registry has adopted standard methods for cancer registration, and the epidemiological data of patients with cancer were collected by passive reception of notifications from public hospitals and active case finding from private clinics. The registry also exchanges information on patients registered in other cancer registries in Algeria, if necessary.

The data collected were entered using CanReg5 and revised for duplicate records or incompleteness. ICD-O is used to code the histology, behaviour, and grade of tumours (Table A.10).

POPULATION AT RISK

The population data are generated by the Tlemcen Department of Planning and Land Management, and they were provided by sex and single year of age for each calendar year of 2010–2014, and by sex and 5-year age group for the other years. The data for the missing year–age–sex categories were estimated at IARC using the methods described in Chapter 2. See also Algeria, above.

EDITORS' COMMENTS

Although the MV% was 84%, 42% of cases had unspecified histology (Table A.9). Five percent of cases were reported from death records established by forensic medicine at the hospital after death. Date of birth was incomplete in more than 60% of cases, and the provided age did not correspond with the calculated age in 35% of cases (Table A.8). Therefore, age misclassification is likely. Non-malignant CNS tumours were registered, and pilocytic astrocytoma was coded with malignant behaviour. See also Algeria, above.

ALGERIA, 5 registries (1996-2014)

	Age group (years)	Males	Females
Person-years	0	602 703	578 985
	1-4	2 332 765	2 234 113
	5-9	2 811 910	2 704 077
	10-14	3 113 997	3 000 037
	15-19	3 455 082	3 343 636
	0-14	8 861 375	8 517 212
	0-19	12 316 457	11 860 848

Please consult the quality indicators for this pool and its constituent registries

ALGERIA, 5 registries (1996-2014)

		Number of cases							Percentage				Incidence rates per million person-years									MV	DCO
		Age group (years)							0-14		0-19		Age-specific					ASR		Cumulative		%	%
		0	1-4	5-9	10-14	15-19	0-14	0-19	All	Group	All	Group	0	1-4	5-9	10-14	15-19	0-14	0-19	0-14	0-19	0-19	0-19
I	**LEUKAEMIA**	11	152	131	96	129	**390**	**563**	23.5	100.0	19.7	100.0	9.3	33.3	23.7	15.7	19.0	**23.2**	**22.2**	339	434	98.1	1.7
	a. Lymphoid	2	86	63	42	52	**193**	**245**	11.6	49.5	9.3	47.2	1.7	18.8	11.4	6.9	7.6	**11.6**	**10.7**	168	206	99.2	0.8
	b. Acute myeloid	5	24	32	29	42	**90**	**132**	5.4	23.1	5.0	25.4	4.2	5.3	5.8	4.7	6.2	**5.2**	**5.4**	78	109	97.7	1.5
	c. CMD	1	3	1	0	13	**5**	**18**	0.3	1.3	0.7	3.5	0.8	0.7	0.2	-	1.9	**0.3**	**0.7**	4	14	100.0	0.0
	d. MDS & other	0	0	0	0	0	**0**	**0**	-	-	-	-	-	-	-	-	-	**-**	**-**	-	-	-	-
	e. Unspecified	3	39	35	25	22	**102**	**124**	6.2	26.2	4.7	23.9	2.5	8.5	6.3	4.1	3.2	**6.1**	**5.4**	89	105	96.0	4.0
II	**LYMPHOMA & RELATED**	3	72	99	136	253	**310**	**563**	18.7	100.0	21.3	100.0	2.5	15.8	17.9	22.2	37.2	**17.3**	**21.8**	266	452	98.4	1.4
	a. Hodgkin	1	15	42	65	174	**123**	**297**	7.4	39.7	11.3	52.8	0.8	3.3	7.6	10.6	25.6	**6.6**	**10.9**	105	233	99.3	0.7
	b. Non-Hodgkin except BL	2	36	45	48	64	**131**	**195**	7.9	42.3	7.4	34.6	1.7	7.9	8.2	7.9	9.4	**7.5**	**7.9**	113	160	97.9	2.1
	c. Burkitt (BL)	0	10	7	2	4	**19**	**23**	1.1	6.1	0.9	4.1	-	2.2	1.3	0.3	0.6	**1.2**	**1.0**	17	20	95.7	4.3
	d. Lymphoreticular	0	3	0	1	0	**4**	**4**	0.2	1.3	0.2	0.7	-	0.7	-	0.2	-	**0.2**	**0.2**	3	3	100.0	0.0
	e. Unspecified	0	8	5	20	11	**33**	**44**	2.0	10.6	1.7	7.8	-	1.8	0.9	3.3	1.6	**1.8**	**1.7**	28	36	95.5	2.3
III	**CNS NEOPLASMS** †	4	64	79	77	89	**224**	**313**	13.5	100.0	11.9	100.0	3.4	14.0	14.3	12.6	13.1	**12.9**	**12.9**	194	259	70.9	5.4
	a. Ependymoma	0	5	0	1	2	**6**	**8**	0.4	2.7	0.3	2.6	-	1.1	-	0.2	0.3	**0.4**	**0.4**	5	7	100.0	0.0
	b. Astrocytoma	1	10	22	21	25	**54**	**79**	3.3	24.1	3.0	25.2	0.8	2.2	4.0	3.4	3.7	**3.0**	**3.2**	47	65	98.7	1.3
	c. CNS embryonal	0	17	19	21	8	**57**	**65**	3.4	25.4	2.5	20.8	-	3.7	3.4	3.4	1.2	**3.3**	**2.8**	49	55	100.0	0.0
	d. Other gliomas	0	8	9	8	9	**25**	**34**	1.5	11.2	1.3	10.9	-	1.8	1.6	1.3	1.3	**1.4**	**1.4**	22	28	97.1	0.0
	e. Other specified	1	0	1	2	6	**4**	**10**	0.2	1.8	0.4	3.2	0.8	-	0.2	0.3	0.9	**0.2**	**0.4**	3	8	100.0	0.0
	f. Unspecified CNS	2	24	28	24	39	**78**	**117**	4.7	34.8	4.4	37.4	1.7	5.3	5.1	3.9	5.7	**4.5**	**4.8**	68	96	23.9	13.7
IV	**NEUROBLASTOMA**	10	75	18	9	6	**112**	**118**	6.8	100.0	4.5	100.0	8.5	16.4	3.3	1.5	0.9	**7.2**	**5.8**	98	102	89.0	1.7
	a. (Ganglio)neuroblastoma	10	75	18	9	5	**112**	**117**	6.8	100.0	4.4	99.2	8.5	16.4	3.3	1.5	0.7	**7.2**	**5.7**	98	101	88.9	1.7
	b. Peripheral nervous	0	0	0	0	1	**0**	**1**	-	-	0.0	0.8	-	-	-	-	0.1	**-**	**0.0**	-	1	100.0	0.0
V	**RETINOBLASTOMA**	7	15	5	0	1	**27**	**28**	1.6	100.0	1.1	100.0	5.9	3.3	0.9	-	0.1	**1.8**	**1.4**	24	24	71.4	0.0
VI	**RENAL TUMOURS**	4	86	29	12	4	**131**	**135**	7.9	100.0	5.1	100.0	3.4	18.8	5.3	2.0	0.6	**8.3**	**6.6**	114	117	96.3	0.7
	a. Nephroblastoma	4	82	27	11	1	**124**	**125**	7.5	94.7	4.7	92.6	3.4	18.0	4.9	1.8	0.1	**7.9**	**6.1**	108	109	99.2	0.8
	b. Renal carcinoma	0	0	1	0	3	**1**	**4**	0.1	0.8	0.2	3.0	-	-	0.2	-	0.4	**0.1**	**0.1**	1	3	100.0	0.0
	c. Unspecified	0	4	1	1	0	**6**	**6**	0.4	4.6	0.2	4.4	-	0.9	0.2	0.2	-	**0.4**	**0.3**	5	5	33.3	0.0
VII	**HEPATIC TUMOURS**	4	7	1	1	3	**13**	**16**	0.8	100.0	0.6	100.0	3.4	1.5	0.2	0.2	0.4	**0.8**	**0.8**	11	13	68.8	6.3
	a. Hepatoblastoma	2	5	1	1	0	**9**	**9**	0.5	69.2	0.3	56.3	1.7	1.1	0.2	0.2	-	**0.6**	**0.4**	8	8	88.9	11.1
	b. Hepatic carcinoma	0	0	0	0	2	**0**	**2**	-	-	0.1	12.5	-	-	-	-	0.3	**-**	**0.1**	-	1	100.0	0.0
	c. Unspecified	2	2	0	0	1	**4**	**5**	0.2	30.8	0.2	31.3	1.7	0.4	-	-	0.1	**0.3**	**0.2**	3	4	20.0	0.0
VIII	**BONE TUMOURS**	0	13	28	86	120	**127**	**247**	7.7	100.0	9.4	100.0	-	2.8	5.1	14.1	17.7	**6.6**	**9.1**	107	195	96.4	0.8
	a. Osteosarcoma	0	5	15	45	69	**65**	**134**	3.9	51.2	5.1	54.3	-	1.1	2.7	7.4	10.1	**3.4**	**4.9**	55	105	98.5	0.7
	b. Chondrosarcoma	0	0	0	5	5	**5**	**10**	0.3	3.9	0.4	4.0	-	-	-	0.8	0.7	**0.2**	**0.3**	4	8	100.0	0.0
	c. Ewing & related	0	2	8	20	26	**30**	**56**	1.8	23.6	2.1	22.7	-	0.4	1.5	3.3	3.8	**1.6**	**2.1**	25	44	100.0	0.0
	d. Other specified	0	0	0	3	3	**3**	**6**	0.2	2.4	0.2	2.4	-	-	-	0.5	0.4	**0.1**	**0.2**	2	5	100.0	0.0
	e. Unspecified	0	6	5	13	17	**24**	**41**	1.4	18.9	1.6	16.6	-	1.3	0.9	2.1	2.5	**1.3**	**1.6**	20	33	82.9	2.4
IX	**SOFT TISSUE SARCOMA**	2	42	20	25	50	**89**	**139**	5.4	100.0	5.3	100.0	1.7	9.2	3.6	4.1	7.4	**5.3**	**5.8**	77	114	98.6	0.7
	a. Rhabdomyosarcoma	1	34	11	10	10	**56**	**66**	3.4	62.9	2.5	47.5	0.8	7.4	2.0	1.6	1.5	**3.5**	**3.0**	49	56	97.0	1.5
	b. Fibrosarcoma	0	1	1	6	11	**8**	**19**	0.5	9.0	0.7	13.7	-	0.2	0.2	1.0	1.6	**0.4**	**0.7**	7	15	100.0	0.0
	c. Kaposi sarcoma	0	0	0	0	0	**0**	**0**	-	-	-	-	-	-	-	-	-	**-**	**-**	-	-	-	-
	d. Other specified	1	4	3	7	17	**15**	**32**	0.9	16.9	1.2	23.0	0.8	0.9	0.5	1.1	2.5	**0.8**	**1.2**	13	25	100.0	0.0
	e. Unspecified	0	3	5	2	12	**10**	**22**	0.6	11.2	0.8	15.8	-	0.7	0.9	0.3	1.8	**0.6**	**0.9**	9	18	100.0	0.0
X	**GERM CELL TUMOURS**	4	6	4	11	32	**25**	**57**	1.5	100.0	2.2	100.0	3.4	1.3	0.7	1.8	4.7	**1.4**	**2.2**	21	45	93.0	0.0
	a. CNS germ cell	0	0	1	3	0	**4**	**4**	0.2	16.0	0.2	7.0	-	-	0.2	0.5	-	**0.2**	**0.2**	3	3	100.0	0.0
	b. Other extragonadal	1	1	1	2	3	**5**	**8**	0.3	20.0	0.3	14.0	0.8	0.2	0.2	0.3	0.4	**0.3**	**0.3**	4	6	100.0	0.0
	c. Gonadal germ cell	2	2	1	4	15	**9**	**24**	0.5	36.0	0.9	42.1	1.7	0.4	0.2	0.7	2.2	**0.5**	**0.9**	8	19	100.0	0.0
	d. Gonadal carcinoma	0	2	1	0	11	**3**	**14**	0.2	12.0	0.5	24.6	-	0.4	0.2	-	1.6	**0.2**	**0.5**	3	11	100.0	0.0
	e. Unspecified gonadal	1	1	0	2	3	**4**	**7**	0.2	16.0	0.3	12.3	0.8	0.2	-	0.3	0.4	**0.2**	**0.3**	3	6	42.9	0.0
XI	**CARCINOMA & MELANOMA**	2	12	23	76	232	**113**	**345**	6.8	100.0	13.1	100.0	1.7	2.6	4.2	12.4	34.1	**5.9**	**12.2**	95	266	98.8	0.3
	a. Adrenocortical	0	0	0	0	1	**0**	**1**	-	-	0.0	0.3	-	-	-	-	0.1	**-**	**0.0**	-	1	100.0	0.0
	b. Thyroid	0	1	4	13	33	**18**	**51**	1.1	15.9	1.9	14.8	-	0.2	0.7	2.1	4.9	**0.9**	**1.8**	15	39	100.0	0.0
	c. Nasopharyngeal	1	0	4	29	88	**34**	**122**	2.1	30.1	4.6	35.4	0.8	-	0.7	4.7	12.9	**1.7**	**4.2**	28	93	99.2	0.0
	d. Melanoma	0	0	1	0	3	**1**	**4**	0.1	0.9	0.2	1.2	-	-	0.2	-	0.4	**0.1**	**0.1**	1	3	100.0	0.0
	e. Skin carcinoma	0	3	5	6	13	**14**	**27**	0.8	12.4	1.0	7.8	-	0.7	0.9	1.0	1.9	**0.8**	**1.0**	12	22	96.3	0.0
	f. Other & unspecified	1	8	9	28	94	**46**	**140**	2.8	40.7	5.3	40.6	0.8	1.8	1.6	4.6	13.8	**2.5**	**5.0**	39	108	98.6	0.7
XII	**OTHER & UNSPECIFIED**	3	31	26	37	63	**97**	**160**	5.9	100.0	6.1	100.0	2.5	6.8	4.7	6.1	9.3	**5.6**	**6.4**	83	130	60.0	1.9
	a. Other specified	0	2	0	1	0	**3**	**3**	0.2	3.1	0.1	1.9	-	0.4	-	0.2	-	**0.2**	**0.1**	3	3	100.0	0.0
	b. Other unspecified	3	29	26	36	63	**94**	**157**	5.7	96.9	5.9	98.1	2.5	6.4	4.7	5.9	9.3	**5.4**	**6.3**	81	127	59.2	1.9
	TOTAL	54	575	463	566	982	**1658**	**2640**	100.0	100.0	100.0	100.0	45.7	125.9	83.9	92.6	144.4	**96.3**	**107.1**	1430	2152	91.5	1.7

† includes 15 non-malignant

Please consult the quality indicators for this pool and its constituent registries

Botswana

Botswana National Cancer Registry, 1999–2007

Malebogo Kebabonye-Pusoentsi, Heluf Gassess Medhin, Setlogelo Motlogi, Lorato Mogorosakgomo

The Botswana National Cancer Registry (BNCR) is a population-based cancer registry that covers the entire country. The population was more than 2.0 million in 2010 (Table A.7), and about 44% were younger than 20 years (Table A.6). The BNCR was established by the Ministry of Health and Wellness in 1999 (Table A.10), in collaboration with the Cancer Association of Botswana and IARC. At its inception, the BNCR was located at Princess Marina Hospital; it then moved to the National Health Laboratory and finally was established at the Disease Control and Prevention Services Division at the Department of Public Health. The main aim of the registry is to collect, store, and analyse information and produce periodic reports on all cancers in Botswana.

Cancer information has been recorded systematically since 2003 using CanReg4, developed by IARC. Patient demographic information (age, sex, and residence) is collected, together with detailed information about the cancer (primary site, morphology, behaviour, and stage) for all cancers occurring in people residing in Botswana at the time of the diagnosis, treatment, or follow-up.

Paediatric oncology services are offered only in Princess Marina Hospital, which is the major referral centre located in the southern part of the country. Through a continuing partnership with Botswana-Baylor Children's Clinical Centre of Excellence (https://botswanabaylor.org/index.html), many experts in the field of paediatric oncology and haematology have contributed significantly to the expansion and improvement of diagnosis and care. Oncology care is free, and a highly subsidized arrangement is available for patients to access care in the private sector that is not offered in the public sector, including cross-border transfer for treatment, notably in South Africa.

Oncology services are improving, but diagnostic capacity (pathology services), treatment capacity (radiotherapy and chemotherapy), and availability of skilled personnel remain challenges. Delayed presentation due to lack of public awareness and limited skills and resources of health-care personnel are recognized as the major obstacles to improved survival of children with cancer.

POPULATION AT RISK

The source of the population is the 2011 Botswana Population and Housing Census (Statistics Botswana, https://www.statsbots.org.bw/); the other censuses relevant to this reporting period were in 1991 and 2001 (Table A.7). Population data were provided by sex and single year of age for each calendar year of 2001–2016. The data for 1999 and 2000 were estimated at IARC by linear extrapolation, as described in Chapter 2.

EDITORS' COMMENTS

The incidence rates were low compared with some other African registries (Table A.9). This could be explained in part by the national coverage, which includes areas with fewer diagnostic facilities and more difficult access to care for inhabitants of remote rural areas. Date of birth was incomplete in 38% of cases (Table A.8); this may result in age misclassification and could partly explain the low age-specific rate in infants. The DCO% was 6%, and 5% of MV cases had unspecified morphology (Table A.9). Non-malignant CNS tumours and laterality are not recorded, but skin carcinomas are recorded.

BOTSWANA (1999-2007)

	Age group (years)	Males	Females
Person-years	0	192 344	191 159
	1-4	785 553	774 797
	5-9	964 671	938 686
	10-14	933 609	919 226
	15-19	892 915	883 755
	0-14	2 876 177	2 823 868
	0-19	3 769 092	3 707 623
Average annual population	0-14	319 575	313 763
	0-19	418 788	411 958

Please consult the quality indicators for this registry

BOTSWANA (1999-2007)

		Number of cases							Percentage				Incidence rates per million person-years									MV	DCO
		Age group (years)							0-14		0-19		Age-specific					ASR		Cumulative		%	%
		0	1-4	5-9	10-14	15-19	0-14	0-19	All	Group	All	Group	0	1-4	5-9	10-14	15-19	0-14	0-19	0-14	0-19	0-19	0-19
I	LEUKAEMIA	1	12	21	16	22	50	72	16.0	100.0	16.0	100.0	2.6	7.7	11.0	8.6	12.4	8.7	9.5	132	194	100.0	0.0
	a. Lymphoid	0	10	14	5	10	29	39	9.3	58.0	8.7	54.2	-	6.4	7.4	2.7	5.6	5.1	5.3	76	104	100.0	0.0
	b. Acute myeloid	1	2	7	6	7	16	23	5.1	32.0	5.1	31.9	2.6	1.3	3.7	3.2	3.9	2.7	3.0	42	62	100.0	0.0
	c. CMD	0	0	0	1	1	1	2	0.3	2.0	0.4	2.8	-	-	-	0.5	0.6	0.2	0.2	3	6	100.0	0.0
	d. MDS & other	0	0	0	1	1	1	2	0.3	2.0	0.4	2.8	-	-	-	0.5	0.6	0.2	0.2	3	6	100.0	0.0
	e. Unspecified	0	0	0	3	3	3	6	1.0	6.0	1.3	8.3	-	-	-	1.6	1.7	0.5	0.7	8	17	100.0	0.0
II	LYMPHOMA & RELATED	0	11	19	15	19	45	64	14.4	100.0	14.2	100.0	-	7.0	10.0	8.1	10.7	7.8	8.4	119	172	100.0	0.0
	a. Hodgkin	0	3	4	8	9	15	24	4.8	33.3	5.3	37.5	-	1.9	2.1	4.3	5.1	2.5	3.1	40	65	100.0	0.0
	b. Non-Hodgkin except BL	0	3	12	5	9	20	29	6.4	44.4	6.4	45.3	-	1.9	6.3	2.7	5.1	3.4	3.8	53	78	100.0	0.0
	c. Burkitt (BL)	0	3	0	0	0	3	3	1.0	6.7	0.7	4.7	-	1.9	-	-	-	0.6	0.5	8	8	100.0	0.0
	d. Lymphoreticular	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	e. Unspecified	0	2	3	2	1	7	8	2.2	15.6	1.8	12.5	-	1.3	1.6	1.1	0.6	1.2	1.1	18	21	100.0	0.0
III	CNS NEOPLASMS	0	3	14	15	6	32	38	10.3	100.0	8.4	100.0	-	1.9	7.4	8.1	3.4	5.3	4.9	85	102	84.2	13.2
	a. Ependymoma	0	0	0	0	1	0	1	-	-	0.2	2.6	-	-	-	-	0.6	-	0.1	-	3	100.0	0.0
	b. Astrocytoma	0	1	3	6	3	10	13	3.2	31.3	2.9	34.2	-	0.6	1.6	3.2	1.7	1.6	1.7	27	35	100.0	0.0
	c. CNS embryonal	0	1	6	4	1	11	12	3.5	34.4	2.7	31.6	-	0.6	3.2	2.2	0.6	1.8	1.6	29	32	100.0	0.0
	d. Other gliomas	0	0	2	2	1	4	5	1.3	12.5	1.1	13.2	-	-	1.1	1.1	0.6	0.7	0.6	11	13	100.0	0.0
	e. Other specified	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	f. Unspecified CNS	0	1	3	3	0	7	7	2.2	21.9	1.6	18.4	-	0.6	1.6	1.6	-	1.2	0.9	19	19	14.3	71.4
IV	NEUROBLASTOMA	0	7	0	0	1	7	8	2.2	100.0	1.8	100.0	-	4.5	-	-	0.6	1.4	1.2	18	21	100.0	0.0
	a. (Ganglio)neuroblastoma	0	7	0	0	0	7	7	2.2	100.0	1.6	87.5	-	4.5	-	-	-	1.4	1.1	18	18	100.0	0.0
	b. Peripheral nervous	0	0	0	0	1	0	1	-	-	0.2	12.5	-	-	-	-	0.6	-	0.1	-	3	100.0	0.0
V	RETINOBLASTOMA	0	21	1	0	0	22	22	7.1	100.0	4.9	100.0	-	13.5	0.5	-	-	4.4	3.4	57	57	100.0	0.0
VI	RENAL TUMOURS	1	13	7	2	2	23	25	7.4	100.0	5.6	100.0	2.6	8.3	3.7	1.1	1.1	4.3	3.6	60	65	96.0	4.0
	a. Nephroblastoma	1	13	7	2	0	23	23	7.4	100.0	5.1	92.0	2.6	8.3	3.7	1.1	-	4.3	3.3	60	60	95.7	4.3
	b. Renal carcinoma	0	0	0	0	2	0	2	-	-	0.4	8.0	-	-	-	-	1.1	-	0.3	-	6	100.0	0.0
	c. Unspecified	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VII	HEPATIC TUMOURS	2	2	0	1	3	5	8	1.6	100.0	1.8	100.0	5.2	1.3	-	0.5	1.7	1.0	1.1	13	21	75.0	12.5
	a. Hepatoblastoma	1	2	0	0	0	3	3	1.0	60.0	0.7	37.5	2.6	1.3	-	-	-	0.6	0.5	8	8	100.0	0.0
	b. Hepatic carcinoma	0	0	0	1	3	1	4	0.3	20.0	0.9	50.0	-	-	-	0.5	1.7	0.2	0.5	3	11	75.0	0.0
	c. Unspecified	1	0	0	0	0	1	1	0.3	20.0	0.2	12.5	2.6	-	-	-	-	0.2	0.2	3	3	0.0	100.0
VIII	BONE TUMOURS	0	1	4	15	21	20	41	6.4	100.0	9.1	100.0	-	0.6	2.1	8.1	11.8	3.2	5.2	54	113	100.0	0.0
	a. Osteosarcoma	0	0	2	9	13	11	24	3.5	55.0	5.3	58.5	-	-	1.1	4.9	7.3	1.7	3.0	30	66	100.0	0.0
	b. Chondrosarcoma	0	0	0	3	0	3	3	1.0	15.0	0.7	7.3	-	-	-	1.6	-	0.5	0.4	8	8	100.0	0.0
	c. Ewing & related	0	0	0	0	4	0	4	-	-	0.9	9.8	-	-	-	-	2.3	-	0.5	-	11	100.0	0.0
	d. Other specified	0	0	1	3	4	4	8	1.3	20.0	1.8	19.5	-	-	0.5	1.6	2.3	0.6	1.0	11	22	100.0	0.0
	e. Unspecified	0	1	1	0	0	2	2	0.6	10.0	0.4	4.9	-	0.6	0.5	-	-	0.4	0.3	5	5	100.0	0.0
IX	SOFT TISSUE SARCOMA	1	13	33	21	27	68	95	21.8	100.0	21.1	100.0	2.6	8.3	17.3	11.3	15.2	11.7	12.5	179	255	60.0	15.8
	a. Rhabdomyosarcoma	0	2	5	5	1	12	13	3.8	17.6	2.9	13.7	-	1.3	2.6	2.7	0.6	2.0	1.7	32	35	100.0	0.0
	b. Fibrosarcoma	1	0	2	0	0	3	3	1.0	4.4	0.7	3.2	2.6	-	1.1	-	-	0.5	0.4	8	8	100.0	0.0
	c. Kaposi sarcoma	0	8	24	13	19	45	64	14.4	66.2	14.2	67.4	-	5.1	12.6	7.0	10.7	7.7	8.4	119	172	40.6	23.4
	d. Other specified	0	3	2	2	5	7	12	2.2	10.3	2.7	12.6	-	1.9	1.1	1.1	2.8	1.2	1.6	18	32	100.0	0.0
	e. Unspecified	0	0	0	1	2	1	3	0.3	1.5	0.7	3.2	-	-	-	0.5	1.1	0.2	0.4	3	8	100.0	0.0
X	GERM CELL TUMOURS	0	3	1	4	6	8	14	2.6	100.0	3.1	100.0	-	1.9	0.5	2.2	3.4	1.4	1.8	21	38	100.0	0.0
	a. CNS germ cell	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	b. Other extragonadal	0	1	0	0	1	1	2	0.3	12.5	0.4	14.3	-	0.6	-	-	0.6	0.2	0.3	3	5	100.0	0.0
	c. Gonadal germ cell	0	2	0	4	4	6	10	1.9	75.0	2.2	71.4	-	1.3	-	2.2	2.3	1.0	1.3	16	27	100.0	0.0
	d. Gonadal carcinoma	0	0	1	0	1	1	2	0.3	12.5	0.4	14.3	-	-	0.5	-	0.6	0.2	0.3	3	5	100.0	0.0
	e. Unspecified gonadal	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
XI	CARCINOMA & MELANOMA	0	6	11	12	29	29	58	9.3	100.0	12.9	100.0	-	3.8	5.8	6.5	16.3	4.9	7.5	77	158	100.0	0.0
	a. Adrenocortical	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	b. Thyroid	0	0	2	0	2	2	4	0.6	6.9	0.9	6.9	-	-	1.1	-	1.1	0.3	0.5	5	11	100.0	0.0
	c. Nasopharyngeal	0	0	1	4	10	5	15	1.6	17.2	3.3	25.9	-	-	0.5	2.2	5.6	0.8	1.9	13	42	100.0	0.0
	d. Melanoma	0	1	1	0	1	2	3	0.6	6.9	0.7	5.2	-	0.6	0.5	-	0.6	0.4	0.4	5	8	100.0	0.0
	e. Skin carcinoma	0	0	1	2	5	3	8	1.0	10.3	1.8	13.8	-	-	0.5	1.1	2.8	0.5	1.0	8	22	100.0	0.0
	f. Other & unspecified	0	5	6	6	11	17	28	5.4	58.6	6.2	48.3	-	3.2	3.2	3.2	6.2	3.0	3.7	45	76	100.0	0.0
XII	OTHER & UNSPECIFIED	1	1	0	1	2	3	5	1.0	100.0	1.1	100.0	2.6	0.6	-	0.5	1.1	0.6	0.7	8	13	0.0	100.0
	a. Other specified	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	b. Other unspecified	1	1	0	1	2	3	5	1.0	100.0	1.1	100.0	2.6	0.6	-	0.5	1.1	0.6	0.7	8	13	0.0	100.0
	TOTAL	6	93	111	102	138	312	450	100.0	100.0	100.0	100.0	15.6	59.6	58.3	55.1	77.7	54.5	59.7	821	1210	88.4	6.0

Please consult the quality indicators for this registry

Cameroon

Yaoundé Cancer Registry, 2004–2006

George Enownchong Enow-Orock, Paul Ndom, Jean Louis Essame-Oyono, Anderson Sama Doh

Cameroon, which is located in west central Africa, had an estimated population of 20.6 million in 2010 (Table A.7) and has a surface area of 475 440 km^2. About 250 ethnic groups live in Cameroon; 60% of the population lives in rural areas, and 54% are younger than 20 years (Table A.6). Yaoundé, the political capital, is located in the Centre Region and had an estimated population of 1.3 million in 2010, of which 63% were younger than 20 years (Table A.6).

The Yaoundé Cancer Registry was established by ministerial decision in 2003, based on consultations between the National Cancer Control Committee and IARC. The registry is located in the pathology service at Yaoundé General Hospital. The registry started with staff consisting of a director, an assistant director, and two trained registrars. The primary duties of the registry staff are to abstract cases from various sources and submit them to the registry office in Yaoundé General Hospital. In January 2004, the registrars started collecting data from the designated sources on all newly diagnosed cases of cancer in the target population (Table A.10). The data were then submitted to the director for verification and subsequent entry into CanReg5, provided by IARC, which enables checking for accuracy, duplication, and quality control of data. A computer analyst assists in data analysis. Other software used includes SPSS, Excel, and Epi Info.

The registry covers all seven council areas of Yaoundé municipalities (Yaoundé I–Yaoundé VII), in which data are collected actively and passively from about 20 sources (referral hospitals, teaching hospitals, general hospitals, pathology laboratories, and some privately owned hospitals and clinics). The registry submits annual reports to the Ministry of Public Health.

Data confidentiality is ensured by excluding names, hospital number, and registry number during analysis. Cases are microscopically verified by the pathologist in Yaoundé and coded using ICD-O (Table A.10). The death registration system is inadequate and incomplete. Except for some death certificates signed at Yaoundé General Hospital and other major hospitals, the cause of death is usually not mentioned or is given simply as cardiorespiratory arrest. It is not possible to estimate how many cancer cases remain undiagnosed. Ensuring ascertainment from patients diagnosed in rural settings remains problematic. However, the registry ensures proper abstraction of cases that enter Yaoundé General Hospital as well as those from other hospitals. The registry faces financial, personnel, material, and logistical challenges. Determination of residence is difficult, because patients migrate to the registration area from other parts of the country, attracted by better cancer care facilities. The registry is a member of IACR.

POPULATION AT RISK

Population censuses were conducted in 1976, 1987, and 2005 by the National Institute of Statistics in Yaoundé. Population data were provided by sex and 5-year age group only for 2011. National data were extracted by IARC from the National Institute of Statistics of Cameroon (https://ins-cameroun.cm/en/) by sex in four 5-year age groups for the census years 1976, 1987, and 2010, and by sex for age 0–14 years in 2005. The total population for Yaoundé was downloaded from the National Institute of Statistics of Cameroon (https://ins-cameroun.cm/en/) for 1976, 1987, and 2005, with no categorization by sex or age. The data for the missing year–age–sex categories were estimated at IARC by first applying the national age–sex patterns to the data for Yaoundé and then proceeding with the other estimates using the methods described in Chapter 2.

EDITORS' COMMENTS

Although the initial submission was for 2004–2012, only 2004–2006 was included in IICC-3 because of probable underregistration in the other years. The staffing, financial, and other constraints were acknowledged by the registry. Because Yaoundé General Hospital is the national referral centre for childhood cancer and the residential address of some rural patients may not be accurately verified, some overregistration cannot be excluded, and this may vary by tumour type. The proportion of cases with unspecified morphology was 11% (Table A.9). The overall MV% of 71% was low (Table A.9), notably for leukaemias (38%) and lymphomas (65%). In 20% of cases, the code for basis of diagnosis was considered unlikely with respect to histology (Table A.11). Date of birth was not provided at all; thus, age may be misclassified. CNS tumours made up only about 1% of cases, probably because of limited access to modern imaging facilities. Non-malignant CNS tumours are reportable, but none were reported and no cases of pilocytic astrocytoma were in the dataset. Information on laterality is not collected. Skin carcinomas are reportable, but they are rare.

CAMEROON, Yaoundé (2004-2006)

	Age group (years)	Males	Females
Person-years	0	88 807	95 704
	1-4	355 228	382 816
	5-9	381 785	402 950
	10-14	328 570	345 820
	15-19	296 060	314 665
	0-14	1 154 390	1 227 290
	0-19	1 450 450	1 541 955
Average annual population	0-14	384 797	409 097
	0-19	483 483	513 985

Please consult the quality indicators for this registry

CAMEROON, Yaoundé (2004-2006)

		Number of cases							Percentage				Incidence rates per million person-years									MV	DCO
		Age group (years)							0-14		0-19		Age-specific					ASR		Cumulative		%	%
		0	1-4	5-9	10-14	15-19	0-14	0-19	All	Group	All	Group	0	1-4	5-9	10-14	15-19	0-14	0-19	0-14	0-19	0-19	0-19
I	LEUKAEMIA	0	7	4	7	3	18	21	6.0	100.0	5.6	100.0	-	9.5	5.1	10.4	4.9	7.6	7.0	115	140	38.1	0.0
	a. Lymphoid	0	1	1	2	0	4	4	1.3	22.2	1.1	19.0	-	1.4	1.3	3.0	-	1.7	1.3	27	27	25.0	0.0
	b. Acute myeloid	0	1	2	1	0	4	4	1.3	22.2	1.1	19.0	-	1.4	2.5	1.5	-	1.7	1.3	26	26	75.0	0.0
	c. CMD	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	d. MDS & other	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	e. Unspecified	0	5	1	4	3	10	13	3.4	55.6	3.5	61.9	-	6.8	1.3	5.9	4.9	4.2	4.4	63	88	30.8	0.0
II	LYMPHOMA & RELATED	3	43	94	62	32	202	234	67.8	100.0	62.7	100.0	16.3	58.3	119.8	91.9	52.4	84.6	77.4	1308	1570	65.4	0.0
	a. Hodgkin	1	1	2	5	2	9	11	3.0	4.5	2.9	4.7	5.4	1.4	2.5	7.4	3.3	3.8	3.7	61	77	100.0	0.0
	b. Non-Hodgkin except BL	0	14	28	25	16	67	83	22.5	33.2	22.3	35.5	-	19.0	35.7	37.1	26.2	28.1	27.7	440	571	84.3	0.0
	c. Burkitt (BL)	2	26	57	27	10	112	122	37.6	55.4	32.7	52.1	10.8	35.2	72.6	40.0	16.4	46.8	40.0	715	797	54.1	0.0
	d. Lymphoreticular	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	e. Unspecified	0	2	7	5	4	14	18	4.7	6.9	4.8	7.7	-	2.7	8.9	7.4	6.5	5.9	6.0	93	125	33.3	0.0
III	CNS NEOPLASMS	0	2	2	0	1	4	5	1.3	100.0	1.3	100.0	-	2.7	2.5	-	1.6	1.7	1.7	24	32	100.0	0.0
	a. Ependymoma	0	0	1	0	0	1	1	0.3	25.0	0.3	20.0	-	-	1.3	-	-	0.4	0.3	6	6	100.0	0.0
	b. Astrocytoma	0	2	1	0	1	3	4	1.0	75.0	1.1	80.0	-	2.7	1.3	-	1.6	1.3	1.3	17	25	100.0	0.0
	c. CNS embryonal	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	d. Other gliomas	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	e. Other specified	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	f. Unspecified CNS	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IV	NEUROBLASTOMA	0	1	0	0	0	1	1	0.3	100.0	0.3	100.0	-	1.4	-	-	-	0.4	0.3	5	5	100.0	0.0
	a. (Ganglio)neuroblastoma	0	1	0	0	0	1	1	0.3	100.0	0.3	100.0	-	1.4	-	-	-	0.4	0.3	5	5	100.0	0.0
	b. Peripheral nervous	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
V	RETINOBLASTOMA	1	10	2	1	0	14	14	4.7	100.0	3.8	100.0	5.4	13.5	2.5	1.5	-	5.9	4.5	80	80	85.7	0.0
VI	RENAL TUMOURS	0	7	4	1	0	12	12	4.0	100.0	3.2	100.0	-	9.5	5.1	1.5	-	5.0	3.9	71	71	75.0	0.0
	a. Nephroblastoma	0	7	4	1	0	12	12	4.0	100.0	3.2	100.0	-	9.5	5.1	1.5	-	5.0	3.9	71	71	75.0	0.0
	b. Renal carcinoma	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	c. Unspecified	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VII	HEPATIC TUMOURS	0	0	2	2	3	4	7	1.3	100.0	1.9	100.0	-	-	2.5	3.0	4.9	1.7	2.4	28	52	0.0	14.3
	a. Hepatoblastoma	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	b. Hepatic carcinoma	0	0	2	2	2	4	6	1.3	100.0	1.6	85.7	-	-	2.5	3.0	3.3	1.7	2.0	28	44	0.0	16.7
	c. Unspecified	0	0	0	0	1	0	1	-	-	0.3	14.3	-	-	-	-	1.6	-	0.4	-	8	0.0	0.0
VIII	BONE TUMOURS	0	0	2	2	9	4	13	1.3	100.0	3.5	100.0	-	-	2.5	3.0	14.7	1.7	4.6	28	101	100.0	0.0
	a. Osteosarcoma	0	0	1	1	5	2	7	0.7	50.0	1.9	53.8	-	-	1.3	1.5	8.2	0.8	2.5	14	55	100.0	0.0
	b. Chondrosarcoma	0	0	0	0	1	0	1	-	-	0.3	7.7	-	-	-	-	1.6	-	0.4	-	8	100.0	0.0
	c. Ewing & related	0	0	1	1	2	2	4	0.7	50.0	1.1	30.8	-	-	1.3	1.5	3.3	0.8	1.4	14	30	100.0	0.0
	d. Other specified	0	0	0	0	1	0	1	-	-	0.3	7.7	-	-	-	-	1.6	-	0.4	-	8	100.0	0.0
	e. Unspecified	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IX	SOFT TISSUE SARCOMA	1	9	7	8	13	25	38	8.4	100.0	10.2	100.0	5.4	12.2	8.9	11.9	21.3	10.5	12.9	158	265	97.4	0.0
	a. Rhabdomyosarcoma	0	6	2	4	0	12	12	4.0	48.0	3.2	31.6	-	8.1	2.5	5.9	-	5.1	3.9	75	75	100.0	0.0
	b. Fibrosarcoma	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	c. Kaposi sarcoma	0	3	4	1	7	8	15	2.7	32.0	4.0	39.5	-	4.1	5.1	1.5	11.5	3.3	5.2	49	106	93.3	0.0
	d. Other specified	1	0	0	3	5	4	9	1.3	16.0	2.4	23.7	5.4	-	-	4.4	8.2	1.7	3.2	28	69	100.0	0.0
	e. Unspecified	0	0	1	0	1	1	2	0.3	4.0	0.5	5.3	-	-	1.3	-	1.6	0.4	0.7	6	15	100.0	0.0
X	GERM CELL TUMOURS	0	0	0	3	1	3	4	1.0	100.0	1.1	100.0	-	-	-	4.4	1.6	1.3	1.4	22	30	100.0	0.0
	a. CNS germ cell	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	b. Other extragonadal	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	c. Gonadal germ cell	0	0	0	1	0	1	1	0.3	33.3	0.3	25.0	-	-	-	1.5	-	0.4	0.3	7	7	100.0	0.0
	d. Gonadal carcinoma	0	0	0	1	1	1	2	0.3	33.3	0.5	50.0	-	-	-	1.5	1.6	0.4	0.7	7	16	100.0	0.0
	e. Unspecified gonadal	0	0	0	1	0	1	1	0.3	33.3	0.3	25.0	-	-	-	1.5	-	0.4	0.3	7	7	100.0	0.0
XI	CARCINOMA & MELANOMA	0	0	2	7	12	9	21	3.0	100.0	5.6	100.0	-	-	2.5	10.4	19.6	3.8	7.4	65	163	100.0	0.0
	a. Adrenocortical	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	b. Thyroid	0	0	0	1	1	1	2	0.3	11.1	0.5	9.5	-	-	-	1.5	1.6	0.4	0.7	7	16	100.0	0.0
	c. Nasopharyngeal	0	0	0	2	4	2	6	0.7	22.2	1.6	28.6	-	-	-	3.0	6.5	0.9	2.1	15	48	100.0	0.0
	d. Melanoma	0	0	1	0	0	1	1	0.3	11.1	0.3	4.8	-	-	1.3	-	-	0.4	0.3	6	6	100.0	0.0
	e. Skin carcinoma	0	0	0	1	0	1	1	0.3	11.1	0.3	4.8	-	-	-	1.5	-	0.4	0.3	7	7	100.0	0.0
	f. Other & unspecified	0	0	1	3	7	4	11	1.3	44.4	2.9	52.4	-	-	1.3	4.4	11.5	1.7	3.9	29	86	100.0	0.0
XII	OTHER & UNSPECIFIED	0	0	1	1	1	2	3	0.7	100.0	0.8	100.0	-	-	1.3	1.5	1.6	0.8	1.0	14	22	0.0	33.3
	a. Other specified	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	b. Other unspecified	0	0	1	1	1	2	3	0.7	100.0	0.8	100.0	-	-	1.3	1.5	1.6	0.8	1.0	14	22	0.0	33.3
	TOTAL	5	79	120	94	75	298	373	100.0	100.0	100.0	100.0	27.1	107.0	152.9	139.4	122.8	125.0	124.5	1917	2531	70.5	0.5

Please consult the quality indicators for this registry

Egypt

Gharbiah Cancer Registry, 1999–2010

Ahmed Hablas, Ibrahim A. Seifeldin, Mohamed Ramadan, Hisham Elhamzawy, Ihab Elsheikh, Hoda Omar

The Gharbiah Population-Based Cancer Registry covers the population of Gharbiah Governorate, which is located in the middle of the Nile Delta region in Egypt, about 90 km north of Cairo. Its surface area is 1943 km^2, which is 0.2% of the area of the country. The Nile Delta has a Mediterranean climate, characterized by little rainfall in winter.

The population density is 2022 per km^2. Gharbiah Governorate is urban (30%) and rural (70%), as defined by the Central Agency for Public Mobilization and Statistics (CAPMAS), and one of its divisions, Elmahalla Elkobra, is the centre of the textile industry of the country. Gharbiah is divided into eight districts (*markaz*), and the capital city is Tanta. Each district has a main city (urban) and multiple villages (rural). Gharbiah has a total of 316 villages. In 2006, according to the census of Egypt prepared by CAPMAS, the population of Gharbiah was 4 million (5.5% of the national population). People younger than 20 years made up 41% of the population in 2007 (Table A.6).

The Gharbiah Population-based Cancer Registry was started in 1999 (Table A.10) under the umbrella of the Egyptian Ministry of Health and Population. It was supported by the United States National Institutes of Health, through the United States National Cancer Institute.

The registry uses active case finding from 63 sources. Most childhood cancers were identified in sites at which paediatric malignancies were diagnosed or treated. Such sites include Tanta Cancer Center, Gharbiah Cancer Society, the paediatric and clinical oncology departments at Tanta University Hospital, insurance hospitals and clinics, private pathology and haematology laboratories, private clinicians, and local death registration offices. Cases treated outside Gharbiah are found mainly in Children's Cancer Hospital Egypt 57357 and the National Cancer Institute in Cairo.

Abstraction and coding are done according to ICD-O-3 (Table A.10), the *SEER Summary Staging Manual 2000*, the American Joint Committee on Cancer (AJCC) tumour–node–metastasis (TNM) staging system, and the Middle East Cancer Consortium (MECC) *Manual of Standards for Cancer Registration*. Data quality was assessed for completeness of coverage and reliability of registration. In addition to computer checks through CanReg and software provided by the Surveillance, Epidemiology, and End Results (SEER) Program and IARC, external auditing was done by staff of Emory University (Atlanta, Georgia, USA). The registration coverage was found to exceed 90%.

Some of the characteristic features of the data collected by the registry are a high incidence of childhood lymphomas and the occurrence of colorectal cancer in the age group 15–19 years.

POPULATION AT RISK

The source of the population data is CAPMAS (https://www.capmas.gov.eg/). The relevant censuses were in 1996 and 2006. Data were provided by sex and age group (0, 1–4, 5–9, 10–14, 15–19 years) for each calendar year of the reporting period. The data for the missing year–age–sex categories were estimated at IARC using the methods described in Chapter 2.

EDITORS' COMMENTS

The proportion of cases with unspecified morphology was 11% (Table A.9). Because of incomplete date of birth in more than half of the cases (Table A.8), age may be somewhat misclassified. Age was inconsistent with the provided dates in 26% of cases. Non-malignant CNS tumours and skin carcinomas are systematically registered. Pilocytic astrocytoma was coded mostly as malignant, although there was a case with uncertain behaviour. Laterality is recorded, but it is unknown in 11% of relevant cases.

EGYPT, Gharbiah (1999-2010)

	Age group (years)	Males	Females
Person-years	0	311 526	295 354
	1-4	2 119 708	2 021 240
	5-9	2 585 435	2 468 415
	10-14	2 776 910	2 640 995
	15-19	2 800 250	2 680 950
	0-14	7 793 579	7 426 004
	0-19	10 593 829	10 106 954
Average annual population	0-14	649 465	618 834
	0-19	882 819	842 246

Please consult the quality indicators for this registry

EGYPT, Gharbiah (1999-2010)

		Number of cases							Percentage				Incidence rates per million person-years									MV	DCO
		Age group (years)							0-14		0-19		Age-specific					ASR		Cumulative		%	%
		0	1-4	5-9	10-14	15-19	0-14	0-19	All	Group	All	Group	0	1-4	5-9	10-14	15-19	0-14	0-19	0-14	0-19	0-19	0-19
I	LEUKAEMIA	13	178	144	139	174	474	648	26.2	100.0	25.0	100.0	21.4	43.0	28.5	25.7	31.7	32.2	32.1	472	631	92.3	7.6
	a. Lymphoid	4	135	100	74	83	313	396	17.3	66.0	15.2	61.1	6.6	32.6	19.8	13.7	15.1	21.7	20.2	314	389	96.7	3.0
	b. Acute myeloid	3	23	23	32	50	81	131	4.5	17.1	5.0	20.2	4.9	5.6	4.6	5.9	9.1	5.3	6.2	80	125	100.0	0.0
	c. CMD	0	0	1	7	16	8	24	0.4	1.7	0.9	3.7	-	-	0.2	1.3	2.9	0.4	1.0	7	22	100.0	0.0
	d. MDS & other	2	5	2	5	6	14	20	0.8	3.0	0.8	3.1	3.3	1.2	0.4	0.9	1.1	1.0	1.0	14	19	95.0	5.0
	e. Unspecified	4	15	18	21	19	58	77	3.2	12.2	3.0	11.9	6.6	3.6	3.6	3.9	3.5	3.8	3.7	57	75	53.2	46.8
II	LYMPHOMA & RELATED	6	149	177	138	203	470	673	25.9	100.0	25.9	100.0	9.9	36.0	35.0	25.5	37.0	31.3	32.6	466	651	96.3	1.3
	a. Hodgkin	0	38	73	62	116	173	289	9.5	36.8	11.1	42.9	-	9.2	14.4	11.4	21.2	11.1	13.3	169	275	100.0	0.0
	b. Non-Hodgkin except BL	3	50	59	54	74	166	240	9.2	35.3	9.2	35.7	4.9	12.1	11.7	10.0	13.5	11.0	11.5	164	232	100.0	0.0
	c. Burkitt (BL)	0	43	30	17	7	90	97	5.0	19.1	3.7	14.4	-	10.4	5.9	3.1	1.3	6.3	5.2	91	97	100.0	0.0
	d. Lymphoreticular	1	6	0	0	1	7	8	0.4	1.5	0.3	1.2	1.6	1.4	-	-	0.2	0.6	0.5	7	8	100.0	0.0
	e. Unspecified	2	12	15	5	5	34	39	1.9	7.2	1.5	5.8	3.3	2.9	3.0	0.9	0.9	2.4	2.0	34	39	35.9	23.1
III	CNS NEOPLASMS †	20	66	104	86	76	276	352	15.2	100.0	13.6	100.0	33.0	15.9	20.6	15.9	13.9	18.3	17.3	273	342	67.6	17.9
	a. Ependymoma	1	9	10	3	6	23	29	1.3	8.3	1.1	8.2	1.6	2.2	2.0	0.6	1.1	1.6	1.5	23	29	100.0	0.0
	b. Astrocytoma	3	17	33	27	37	80	117	4.4	29.0	4.5	33.2	4.9	4.1	6.5	5.0	6.8	5.2	5.5	79	112	97.4	0.0
	c. CNS embryonal	1	15	28	21	12	65	77	3.6	23.6	3.0	21.9	1.6	3.6	5.5	3.9	2.2	4.2	3.8	64	75	90.9	0.0
	d. Other gliomas	0	5	10	7	2	22	24	1.2	8.0	0.9	6.8	-	1.2	2.0	1.3	0.4	1.4	1.2	22	23	37.5	0.0
	e. Other specified	1	5	3	5	4	14	18	0.8	5.1	0.7	5.1	1.6	1.2	0.6	0.9	0.7	0.9	0.9	14	18	88.9	0.0
	f. Unspecified CNS	14	15	20	23	15	72	87	4.0	26.1	3.4	24.7	23.1	3.6	4.0	4.2	2.7	4.9	4.4	72	85	0.0	72.4
IV	NEUROBLASTOMA	20	75	34	9	5	138	143	7.6	100.0	5.5	100.0	33.0	18.1	6.7	1.7	0.9	10.4	8.3	142	147	98.6	0.7
	a. (Ganglio)neuroblastoma	20	75	34	4	2	133	135	7.3	96.4	5.2	94.4	33.0	18.1	6.7	0.7	0.4	10.1	7.9	137	139	98.5	0.7
	b. Peripheral nervous	0	0	0	5	3	5	8	0.3	3.6	0.3	5.6	-	-	-	0.9	0.5	0.3	0.3	5	7	100.0	0.0
V	RETINOBLASTOMA	7	19	1	0	0	27	27	1.5	100.0	1.0	100.0	11.5	4.6	0.2	-	-	2.2	1.7	28	28	63.0	0.0
VI	RENAL TUMOURS	11	47	22	8	6	88	94	4.9	100.0	3.6	100.0	18.1	11.4	4.4	1.5	1.1	6.6	5.3	90	96	89.4	4.3
	a. Nephroblastoma	10	45	21	4	0	80	80	4.4	90.9	3.1	85.1	16.5	10.9	4.2	0.7	-	6.0	4.7	82	82	95.0	0.0
	b. Renal carcinoma	0	0	0	3	4	3	7	0.2	3.4	0.3	7.4	-	-	-	0.6	0.7	0.2	0.3	3	6	100.0	0.0
	c. Unspecified	1	2	1	1	2	5	7	0.3	5.7	0.3	7.4	1.6	0.5	0.2	0.2	0.4	0.4	0.4	5	7	14.3	57.1
VII	HEPATIC TUMOURS	6	8	2	1	3	17	20	0.9	100.0	0.8	100.0	9.9	1.9	0.4	0.2	0.5	1.3	1.1	18	20	70.0	15.0
	a. Hepatoblastoma	5	7	1	1	0	14	14	0.8	82.4	0.5	70.0	8.2	1.7	0.2	0.2	-	1.1	0.8	15	15	92.9	0.0
	b. Hepatic carcinoma	0	0	0	0	2	0	2	-	-	0.1	10.0	-	-	-	-	0.4	-	0.1	-	2	50.0	0.0
	c. Unspecified	1	1	1	0	1	3	4	0.2	17.6	0.2	20.0	1.6	0.2	0.2	-	0.2	0.2	0.2	3	4	0.0	75.0
VIII	BONE TUMOURS	0	7	26	58	81	91	172	5.0	100.0	6.6	100.0	-	1.7	5.1	10.7	14.8	5.3	7.5	87	161	95.3	4.1
	a. Osteosarcoma	0	0	11	34	52	45	97	2.5	49.5	3.7	56.4	-	-	2.2	6.3	9.5	2.5	4.1	42	90	99.0	0.0
	b. Chondrosarcoma	0	0	0	2	7	2	9	0.1	2.2	0.3	5.2	-	-	-	0.4	1.3	0.1	0.4	2	8	100.0	0.0
	c. Ewing & related	0	5	12	20	15	37	52	2.0	40.7	2.0	30.2	-	1.2	2.4	3.7	2.7	2.2	2.4	36	49	100.0	0.0
	d. Other specified	0	0	1	1	3	2	5	0.1	2.2	0.2	2.9	-	-	0.2	0.2	0.5	0.1	0.2	2	5	100.0	0.0
	e. Unspecified	0	2	2	1	4	5	9	0.3	5.5	0.3	5.2	-	0.5	0.4	0.2	0.7	0.3	0.4	5	9	22.2	77.8
IX	SOFT TISSUE SARCOMA	11	29	29	44	84	113	197	6.2	100.0	7.6	100.0	18.1	7.0	5.7	8.1	15.3	7.5	9.2	111	188	99.5	0.0
	a. Rhabdomyosarcoma	4	16	13	16	18	49	67	2.7	43.4	2.6	34.0	6.6	3.9	2.6	3.0	3.3	3.3	3.3	49	65	100.0	0.0
	b. Fibrosarcoma	3	1	6	5	10	15	25	0.8	13.3	1.0	12.7	4.9	0.2	1.2	0.9	1.8	1.0	1.2	15	24	100.0	0.0
	c. Kaposi sarcoma	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	d. Other specified	4	9	7	21	51	41	92	2.3	36.3	3.5	46.7	6.6	2.2	1.4	3.9	9.3	2.6	4.1	40	87	98.9	0.0
	e. Unspecified	0	3	3	2	5	8	13	0.4	7.1	0.5	6.6	-	0.7	0.6	0.4	0.9	0.5	0.6	8	13	100.0	0.0
X	GERM CELL TUMOURS	5	14	6	18	33	43	76	2.4	100.0	2.9	100.0	8.2	3.4	1.2	3.3	6.0	2.9	3.6	43	73	94.7	1.3
	a. CNS germ cell	0	0	0	2	2	2	4	0.1	4.7	0.2	5.3	-	-	-	0.4	0.4	0.1	0.2	2	4	75.0	0.0
	b. Other extragonadal	3	9	3	1	4	16	20	0.9	37.2	0.8	26.3	4.9	2.2	0.6	0.2	0.7	1.2	1.1	17	20	90.0	0.0
	c. Gonadal germ cell	2	5	3	14	13	24	37	1.3	55.8	1.4	48.7	3.3	1.2	0.6	2.6	2.4	1.5	1.7	23	35	100.0	0.0
	d. Gonadal carcinoma	0	0	0	1	11	1	12	0.1	2.3	0.5	15.8	-	-	-	0.2	2.0	0.1	0.5	1	11	100.0	0.0
	e. Unspecified gonadal	0	0	0	0	3	0	3	-	-	0.1	3.9	-	-	-	-	0.5	-	0.1	-	3	66.7	33.3
XI	CARCINOMA & MELANOMA	1	1	9	32	105	43	148	2.4	100.0	5.7	100.0	1.6	0.2	1.8	5.9	19.2	2.5	6.2	41	136	98.0	0.0
	a. Adrenocortical	0	0	0	1	0	1	1	0.1	2.3	0.0	0.7	-	-	-	0.2	-	0.1	0.0	1	1	100.0	0.0
	b. Thyroid	0	0	2	5	32	7	39	0.4	16.3	1.5	26.4	-	-	0.4	0.9	5.8	0.4	1.6	7	36	97.4	0.0
	c. Nasopharyngeal	1	0	2	12	16	15	31	0.8	34.9	1.2	20.9	1.6	-	0.4	2.2	2.9	0.9	1.3	14	29	100.0	0.0
	d. Melanoma	0	0	0	1	3	1	4	0.1	2.3	0.2	2.7	-	-	-	0.2	0.5	0.1	0.2	1	4	100.0	0.0
	e. Skin carcinoma	0	0	3	3	5	6	11	0.3	14.0	0.4	7.4	-	-	0.6	0.6	0.9	0.4	0.5	6	10	90.9	0.0
	f. Other & unspecified	0	1	2	10	49	13	62	0.7	30.2	2.4	41.9	-	0.2	0.4	1.8	8.9	0.7	2.6	12	57	98.4	0.0
XII	OTHER & UNSPECIFIED	5	6	10	11	15	32	47	1.8	100.0	1.8	100.0	8.2	1.4	2.0	2.0	2.7	2.1	2.3	32	45	23.4	61.7
	a. Other specified	0	0	3	0	0	3	3	0.2	9.4	0.1	6.4	-	-	0.6	-	-	0.2	0.1	3	3	100.0	0.0
	b. Other unspecified	5	6	7	11	15	29	44	1.6	90.6	1.7	93.6	8.2	1.4	1.4	2.0	2.7	1.9	2.1	29	42	18.2	65.9
	TOTAL	105	599	564	544	785	1812	2597	100.0	100.0	100.0	100.0	173.0	144.7	111.6	100.4	143.2	122.5	127.2	1801	2518	89.6	6.4

† includes 14 non-malignant

Please consult the quality indicators for this registry

France

Réunion Cancer Registry, 1990–2011

Emmanuel Chirpaz, Stéphanie Maillot, Karine Pierre, Miguel Saint-Lambert

Réunion Island is a French overseas territory with an area of 2500 km^2, located in the Indian Ocean 170 km south-west of Mauritius and 700 km east of Madagascar. The estimated population was 0.8 million in 2010 (Table A.7). It is a diverse and cosmopolitan population that is relatively young for a developed country; 34% of the population is younger than 20 years (Table A.6).

Because it is part of France, Réunion is well developed, with French social and health insurance, three cancer care locations (two public hospitals and one private institution), six pathology laboratories, two radiotherapy units, one positron emission tomography (PET) scanner, and one neurosurgery unit. Cancer care for children and adolescents is provided in the department of paediatric oncology at the Réunion teaching hospital.

The Réunion Cancer Registry was founded in 1988 (Table A.10). It has been managed by the Public Health Department of the Réunion teaching hospital since 2010. It is financed by the Regional Health Agency of Réunion and Mayotte.

The registry covers the whole population of Réunion. Cancer cases are notified to the registry by the four public hospitals and five private clinics, five of the six histopathology laboratories, two haematology laboratories at the teaching hospital, the regional cancer network, and the social security agency. Death certificates are not used as information sources because of the French data protection law.

Each case notified to the registry is actively investigated by the registry staff; the inclusion criteria are checked, and data are collected from medical records. Tumours are coded according to IARC, ENCR, and French Network of Cancer Registries (FRANCIM) guidelines (Table A.10); all malignant tumours are collected as defined in ICD-O-3, except for basal cell carcinomas of the skin.

POPULATION AT RISK

The population data are provided by the National Institute of Statistics and Economic Studies (https://www.insee.fr/fr). The annual estimates (as of 1 January) are based on the 1990, 1999, 2006, and 2011 censuses, and they take into account births and deaths as well as net migration. Data were provided by sex and 5-year age group for each calendar year of 1990–2012, and by sex and single year of age for 2006, 2007, 2009, 2010, 2011, and 2012. The data for the missing year–age–sex categories were estimated at IARC using the methods described in Chapter 2.

EDITORS' COMMENTS

Death certificates were used for case finding until 2004; after that, they were anonymized. The lack of access to this data source may slightly affect the completeness of registration. Although complete dates are collected by the registry, date of birth was not provided at all, and only year was provided for date of incidence (Table A.8), because of data protection restrictions. Therefore, it was not possible to verify the consistency of dates and ages at IARC. The sex ratio was high in adolescents (Table A.9). Non-malignant CNS tumours have been recorded only since 2006; thus, they were not submitted for IICC-3. Laterality is recorded, but it is missing in 15% of relevant cases. Basal cell skin carcinomas are not registered, and registration of other skin carcinomas may be incomplete.

FRANCE, Réunion (1990-2011)

	Age group (years)	Males	Females
Person-years	0	146 693	135 561
	1-4	601 116	578 209
	5-9	751 268	722 944
	10-14	752 879	733 421
	15-19	727 786	711 682
	0-14	2 251 956	2 170 135
	0-19	2 979 742	2 881 817
Average annual population	0-14	102 362	98 643
	0-19	135 443	130 992

Please consult the quality indicators for this registry

FRANCE, Réunion (1990-2011)

		Number of cases							Percentage				Incidence rates per million person-years									MV	DCO
		Age group (years)							0-14		0-19		Age-specific					ASR		Cumulative		%	%
		0	1-4	5-9	10-14	15-19	0-14	0-19	All	Group	All	Group	0	1-4	5-9	10-14	15-19	0-14	0-19	0-14	0-19	0-19	0-19
I	LEUKAEMIA	5	62	41	39	40	147	187	32.0	100.0	28.5	100.0	17.7	52.6	27.8	26.2	27.8	34.3	32.9	499	638	98.4	1.1
	a. Lymphoid	2	50	33	24	17	109	126	23.7	74.1	19.2	67.4	7.1	42.4	22.4	16.1	11.8	25.7	22.6	371	430	99.2	0.0
	b. Acute myeloid	2	7	5	13	9	27	36	5.9	18.4	5.5	19.3	7.1	5.9	3.4	8.7	6.3	6.0	6.1	91	123	100.0	0.0
	c. CMD	0	1	1	2	9	4	13	0.9	2.7	2.0	7.0	-	0.8	0.7	1.3	6.3	0.9	2.1	14	45	100.0	0.0
	d. MDS & other	1	3	0	0	1	4	5	0.9	2.7	0.8	2.7	3.5	2.5	-	-	0.7	1.1	1.0	14	17	100.0	0.0
	e. Unspecified	0	1	2	0	4	3	7	0.7	2.0	1.1	3.7	-	0.8	1.4	-	2.8	0.7	1.2	10	24	71.4	28.6
II	LYMPHOMA & RELATED	1	8	14	29	47	52	99	11.3	100.0	15.1	100.0	3.5	6.8	9.5	19.5	32.7	11.1	16.0	176	339	99.0	0.0
	a. Hodgkin	0	2	6	19	27	27	54	5.9	51.9	8.2	54.5	-	1.7	4.1	12.8	18.8	5.6	8.5	91	185	100.0	0.0
	b. Non-Hodgkin except BL	0	0	5	8	16	13	29	2.8	25.0	4.4	29.3	-	-	3.4	5.4	11.1	2.7	4.6	44	99	100.0	0.0
	c. Burkitt (BL)	0	3	1	1	3	5	8	1.1	9.6	1.2	8.1	-	2.5	0.7	0.7	2.1	1.2	1.4	17	27	100.0	0.0
	d. Lymphoreticular	1	1	0	0	1	2	3	0.4	3.8	0.5	3.0	3.5	0.8	-	-	0.7	0.5	0.6	7	10	100.0	0.0
	e. Unspecified	0	2	2	1	0	5	5	1.1	9.6	0.8	5.1	-	1.7	1.4	0.7	-	1.2	0.9	17	17	80.0	0.0
III	CNS NEOPLASMS	3	23	26	13	15	65	80	14.2	100.0	12.2	100.0	10.6	19.5	17.6	8.7	10.4	15.1	14.1	221	273	66.3	8.8
	a. Ependymoma	1	3	3	1	1	8	9	1.7	12.3	1.4	11.3	3.5	2.5	2.0	0.7	0.7	1.9	1.6	27	31	100.0	0.0
	b. Astrocytoma	1	2	6	3	6	12	18	2.6	18.5	2.7	22.5	3.5	1.7	4.1	2.0	4.2	2.7	3.0	41	62	83.3	0.0
	c. CNS embryonal	0	9	4	1	2	14	16	3.1	21.5	2.4	20.0	-	7.6	2.7	0.7	1.4	3.5	3.0	48	55	93.8	0.0
	d. Other gliomas	1	4	9	6	4	20	24	4.4	30.8	3.7	30.0	3.5	3.4	6.1	4.0	2.8	4.5	4.1	68	82	45.8	4.2
	e. Other specified	0	1	1	0	1	2	3	0.4	3.1	0.5	3.8	-	0.8	0.7	-	0.7	0.5	0.5	7	10	100.0	0.0
	f. Unspecified CNS	0	4	3	2	1	9	10	2.0	13.8	1.5	12.5	-	3.4	2.0	1.3	0.7	2.1	1.8	31	34	0.0	60.0
IV	NEUROBLASTOMA	7	17	5	2	2	31	33	6.8	100.0	5.0	100.0	24.8	14.4	3.4	1.3	1.4	7.8	6.4	106	113	100.0	0.0
	a. (Ganglio)neuroblastoma	7	17	5	1	2	30	32	6.5	96.8	4.9	97.0	24.8	14.4	3.4	0.7	1.4	7.6	6.2	102	109	100.0	0.0
	b. Peripheral nervous	0	0	0	1	0	1	1	0.2	3.2	0.2	3.0	-	-	-	0.7	-	0.2	0.2	3	3	100.0	0.0
V	RETINOBLASTOMA	2	11	0	0	0	13	13	2.8	100.0	2.0	100.0	7.1	9.3	-	-	-	3.4	2.7	44	44	61.5	0.0
VI	RENAL TUMOURS	3	21	12	2	6	38	44	8.3	100.0	6.7	100.0	10.6	17.8	8.1	1.3	4.2	9.4	8.2	130	150	100.0	0.0
	a. Nephroblastoma	3	21	10	1	1	35	36	7.6	92.1	5.5	81.8	10.6	17.8	6.8	0.7	0.7	8.7	6.9	119	123	100.0	0.0
	b. Renal carcinoma	0	0	2	1	5	3	8	0.7	7.9	1.2	18.2	-	-	1.4	0.7	3.5	0.6	1.3	10	28	100.0	0.0
	c. Unspecified	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VII	HEPATIC TUMOURS	4	2	1	2	0	9	9	2.0	100.0	1.4	100.0	14.2	1.7	0.7	1.3	-	2.2	1.7	31	31	100.0	0.0
	a. Hepatoblastoma	4	1	1	2	0	8	8	1.7	88.9	1.2	88.9	14.2	0.8	0.7	1.3	-	1.9	1.5	27	27	100.0	0.0
	b. Hepatic carcinoma	0	1	0	0	0	1	1	0.2	11.1	0.2	11.1	-	0.8	-	-	-	0.3	0.2	3	3	100.0	0.0
	c. Unspecified	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VIII	BONE TUMOURS	0	2	9	16	17	27	44	5.9	100.0	6.7	100.0	-	1.7	6.1	10.8	11.8	5.6	7.0	91	150	95.5	0.0
	a. Osteosarcoma	0	0	3	12	7	15	22	3.3	55.6	3.3	50.0	-	-	2.0	8.1	4.9	3.0	3.4	51	75	100.0	0.0
	b. Chondrosarcoma	0	1	0	0	4	1	5	0.2	3.7	0.8	11.4	-	0.8	-	-	2.8	0.3	0.8	3	17	100.0	0.0
	c. Ewing & related	0	1	5	2	5	8	13	1.7	29.6	2.0	29.5	-	0.8	3.4	1.3	3.5	1.7	2.1	27	44	92.3	0.0
	d. Other specified	0	0	1	0	0	1	1	0.2	3.7	0.2	2.3	-	-	0.7	-	-	0.2	0.2	3	3	100.0	0.0
	e. Unspecified	0	0	0	2	1	2	3	0.4	7.4	0.5	6.8	-	-	-	1.3	0.7	0.4	0.5	7	10	66.7	0.0
IX	SOFT TISSUE SARCOMA	3	10	9	10	19	32	51	7.0	100.0	7.8	100.0	10.6	8.5	6.1	6.7	13.2	7.4	8.7	109	175	96.1	3.9
	a. Rhabdomyosarcoma	2	7	6	5	6	20	26	4.4	62.5	4.0	51.0	7.1	5.9	4.1	3.4	4.2	4.7	4.6	68	89	96.2	3.8
	b. Fibrosarcoma	1	0	1	0	0	2	2	0.4	6.3	0.3	3.9	3.5	-	0.7	-	-	0.5	0.4	7	7	100.0	0.0
	c. Kaposi sarcoma	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	d. Other specified	0	2	2	5	13	9	22	2.0	28.1	3.3	43.1	-	1.7	1.4	3.4	9.0	1.9	3.5	30	76	100.0	0.0
	e. Unspecified	0	1	0	0	0	1	1	0.2	3.1	0.2	2.0	-	0.8	-	-	-	0.3	0.2	3	3	0.0	100.0
X	GERM CELL TUMOURS	2	3	9	5	19	19	38	4.1	100.0	5.8	100.0	7.1	2.5	6.1	3.4	13.2	4.3	6.3	64	130	94.7	2.6
	a. CNS germ cell	0	0	4	2	2	6	8	1.3	31.6	1.2	21.1	-	-	2.7	1.3	1.4	1.3	1.3	20	27	75.0	12.5
	b. Other extragonadal	2	1	0	0	3	3	6	0.7	15.8	0.9	15.8	7.1	0.8	-	-	2.1	0.8	1.1	10	21	100.0	0.0
	c. Gonadal germ cell	0	1	5	2	14	8	22	1.7	42.1	3.3	57.9	-	0.8	3.4	1.3	9.7	1.7	3.5	27	76	100.0	0.0
	d. Gonadal carcinoma	0	1	0	1	0	2	2	0.4	10.5	0.3	5.3	-	0.8	-	0.7	-	0.5	0.4	7	7	100.0	0.0
	e. Unspecified gonadal	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
XI	CARCINOMA & MELANOMA	1	0	7	13	31	21	52	4.6	100.0	7.9	100.0	3.5	-	4.7	8.7	21.5	4.3	8.2	71	179	100.0	0.0
	a. Adrenocortical	0	0	0	1	0	1	1	0.2	4.8	0.2	1.9	-	-	-	0.7	-	0.2	0.2	3	3	100.0	0.0
	b. Thyroid	0	0	1	2	8	3	11	0.7	14.3	1.7	21.2	-	-	0.7	1.3	5.6	0.6	1.7	10	38	100.0	0.0
	c. Nasopharyngeal	0	0	0	4	2	4	6	0.9	19.0	0.9	11.5	-	-	-	2.7	1.4	0.8	0.9	13	20	100.0	0.0
	d. Melanoma	0	0	2	3	7	5	12	1.1	23.8	1.8	23.1	-	-	1.4	2.0	4.9	1.0	1.9	17	41	100.0	0.0
	e. Skin carcinoma	0	0	1	1	3	2	5	0.4	9.5	0.8	9.6	-	-	0.7	0.7	2.1	0.4	0.8	7	17	100.0	0.0
	f. Other & unspecified	1	0	3	2	11	6	17	1.3	28.6	2.6	32.7	3.5	-	2.0	1.3	7.6	1.3	2.7	20	59	100.0	0.0
XII	OTHER & UNSPECIFIED	0	3	0	2	2	5	7	1.1	100.0	1.1	100.0	-	2.5	-	1.3	1.4	1.2	1.2	17	24	28.6	57.1
	a. Other specified	0	1	0	0	1	1	2	0.2	20.0	0.3	28.6	-	0.8	-	-	0.7	0.3	0.4	3	7	100.0	0.0
	b. Other unspecified	0	2	0	2	1	4	5	0.9	80.0	0.8	71.4	-	1.7	-	1.3	0.7	0.9	0.9	14	17	0.0	80.0
	TOTAL	31	162	133	133	198	459	657	100.0	100.0	100.0	100.0	109.8	137.4	90.2	89.5	137.6	106.2	113.3	1559	2247	92.8	2.4

Please consult the quality indicators for this registry

Kenya

Kenya is located in equatorial Africa. It is bordered by the United Republic of Tanzania, Uganda, South Sudan, Ethiopia, and Somalia, and to the east by the Indian Ocean. The country covers an area of 581 309 km^2. The population was about 40.3 million in 2010 (Table A.7); during the previous century, it increased from 2.9 million because of a high birth rate and a declining mortality rate. About 53% of Kenyans are younger than 20 years (Table A.6). There are an estimated 47 different ethnicities, of which Bantus (67%) and Nilotes (30%) make up the majority. Among 70 languages used, the two official languages are English and Swahili, although in many rural areas only native languages may be spoken.

The total yearly health-care expenditure in the country is covered to about 30% by government allocations from the national budget. These are the main source of funding for about 80% of the population, which receives services from the public sector. The other 20% of the population, which is able to access private health-care services, is insured mostly through employee insurance schemes and represents 36% of the total expenditure. The remaining more than 30% comes from donors, mostly for high-burden infectious diseases, including AIDS. The National Hospital Insurance Fund is a state agency whose mandate is to provide contributory health insurance to registered members (who are adults aged 18 years and older) and their dependents. Membership in the National Hospital Insurance Fund is mandatory for all salaried employees and voluntary for people who are self-employed. There are also many established private health insurance companies, which provide various levels of health insurance at different premium levels.

POPULATION AT RISK

The source of the population data is the Kenya National Bureau of Statistics (https://www.knbs.or.ke), from the 2009 National Population and Housing Census. The most recent population censuses were in 1999 and 2009 (Table A.7).

EDITORS' COMMENTS

Two population-based cancer registries contributing to IICC-3 are presented in a combined dataset in the book and individually online (Table A.12). The Eldoret Cancer Registry and the Nairobi Cancer Registry combined cover about 8% of the childhood population of the country (Table A.6). The incidence rates were higher in Eldoret than in Nairobi. The MV% was low, and the DCO% was high. This is consistent with the high proportion of unspecified cancers in both datasets (Table A.9). The age-specific incidence rates in infants were low, possibly in part because of the incomplete date of birth in a large proportion of cases (Table A.8). Skin carcinomas are reportable, but they are rare.

KENYA, 2 registries (2000-2012)

Registry	Period	Cases	%	Person-years	%
Eldoret	2000-2011	721	44.5	5 169 022	37.6
Nairobi	2006-2012	899	55.5	8 581 336	62.4
KENYA	**2000-2012**	**1620**	**100.0**	**13 750 358**	**100.0**

Please consult the quality indicators for this pool and its constituent registries

Eldoret Cancer Registry, 2000–2011

Nathan G. Buziba, Gladys C. Chesumbai, Jane Chepkosgei, Jackline N. Gavana

Uasin Gishu County is one of the 47 counties of Kenya and is located in the former Rift Valley Province. The towns in Uasin Gishu County include Eldoret, Moi's Bridge, Burnt Forest, and Turbo. This cosmopolitan county covers an area of 3345 km^2. Uasin Gishu County had an estimated population of 0.9 million in 2010, based on the 2009 national census. In 2010, 52% of the population was younger than 20 years (Table A.6). The county has a cool and temperate climate; temperatures range between 8 °C and 27 °C annually. The main economic activities are large-scale wheat and maize farming, dairy farming, horticulture, and sports tourism.

The major hospitals are well equipped and attended by paediatricians, surgeons, pathologists, oncologists, and other specialists. Moi Teaching and Referral Hospital is the second largest hospital in Kenya and has a well-managed haemato-oncology department, which provides subsidized chemotherapy and management options to its patients.

The Eldoret Cancer Registry (ECR) is a population-based registry that covers Uasin Gishu County. Established in 1999 (Table A.10), it is located in the Department of Haematology and Blood Transfusion at Moi University College of Health Sciences.

The ECR collects data from the public hospitals (Moi Teaching and Referral Hospital), histopathology and haematology laboratories, haemato-oncology clinics, anatomopathology and satellite clinics, the mortuary register, private hospitals and clinics (Eldoret Hospital, Elgonview Hospital, Mediheal Hospital, surrounding consultant clinics of St. Luke's Orthopaedics and Trauma Hospital, Reale Hospital, Racecourse Hospital, Family Health Options, Fountain of Health, Alexandria Cancer Center, and other private laboratories), the Registrar of Births and Deaths for Uasin Gishu Eldoret East and Eldoret West, and Eldoret Hospice. Case finding is an

active process. The ECR seeks clearance to collect data from the various institutions, and cancer registrars visit these institutions regularly.

Follow-up for vital status is conducted at the Registrar of Births and Deaths in both Eldoret East and Eldoret West as well as in most of the cancer treatment centres. CanReg5, provided by IARC, is used for data management. Tumours are coded according to ICD-O (Table A.10). The completeness of data varies according to the sources. Sometimes a case must be confirmed in various sources to meet the requirement for registration. Data collected by the ECR are used to show the incidence and mortality of various cancers in the region.

POPULATION AT RISK

Data were provided by 5-year age group for 1999 and by single years of age for 2009. The data for the missing year–age–sex categories were estimated at IARC using the methods described in Chapter 2. See also Kenya, above.

EDITORS' COMMENTS

Data were originally provided for 2000–2012, but the data for 2012 were subsequently omitted because of incomplete registration. Despite a satisfactory MV%, 19% of cases had unspecified morphology and the DCO% was almost 8% (Table A.9). Because of incomplete date of birth for almost all cases (only year of birth is collected), age may be misclassified (Table A.8). The very low rate in infants (Table A.9) may reflect the imprecise dates to some extent, because age was inconsistent with the dates in almost 7% of cases (Table A.8). Non-malignant CNS tumours are reportable, but only one case was recorded. No cases of pilocytic astrocytoma were in the dataset. Information on laterality is not collected. See also Kenya, above.

Nairobi Cancer Registry, 2006–2012

Anne Korir Rugut, Nathan Okerosi, Mary Nyanchama, Victor Rono, Rowland Osii

Nairobi County is located at an altitude of 1795 m and has a subtropical highland climate. It is the smallest of the 47 counties of Kenya, with an area of 695 km^2, and includes Nairobi City, Kenya's cosmopolitan capital city. The county had a population of 3 million in 2010, and people younger than 20 years make up 39% of the population (Table A.6). All 42 Indigenous tribes of Kenya are represented, as well as a sizeable population of Asians, many non-Kenyan Africans, and Europeans and Americans.

Nairobi County has Kenyatta National Hospital, the main public teaching and referral hospital in Kenya. Other major private hospitals that offer paediatric oncology services include the Nairobi Hospital, Aga Khan University Hospital, Mater Hospital, M.P. Shah Hospital, and Gertrude's Children's Hospital. These major referral hospitals have pathology laboratories and cancer specialty clinics for paediatric oncology.

The Nairobi Cancer Registry (NCR) covers Nairobi County and is based in the Centre for Clinical Research at Kenya Medical Research Institute. The registry has two permanent staff and three contract staff. Case finding is conducted mostly by volunteers, who are often engaged on short contracts when funds are available. Data are collected from public and private hospitals, the Registrar of Births and Deaths, Nairobi Hospice, and private laboratories in Nairobi County. Cancer registrars visit the data sources to abstract information into case registration forms. Completed forms are then submitted to the NCR office, where a senior cancer registrar and the registry supervisor review the forms for coding. Quality checks are based on standards provided by IARC and ICD-O. Annual reports are prepared for the Ministry of Health, and the collected data are made available to researchers, students, and civil society to support cancer control activities and policies.

PUBLICATIONS

Korir A, Okerosi N, Ronoh V, Mutuma G, Parkin M (2015). Incidence of cancer in Nairobi, Kenya (2004–2008). Int J Cancer. 137(9):2053–9. https://doi.org/10.1002/ijc.29674 PMID:26139540

POPULATION AT RISK

Data were provided by sex and 5-year age group for each calendar year of the reporting period. The decimal numbers provided for some counts were rounded to the nearest integer, and the data for the missing year–age–sex categories were estimated at IARC using the methods described in Chapter 2. See also Kenya, above.

EDITORS' COMMENTS

Data were originally provided for 2003–2012, but the period was reduced to 2006–2012 because of the low number of cases and rates in the early years. Over this shorter period, the rates decreased slightly. The proportion of cases with unspecified morphology was high (Table A.9). Because of incomplete date of birth for 66% of cases, age may be misclassified, and age was inconsistent with the dates in almost 3% of cases (Table A.8). The low rates in infants may reflect late diagnosis, the imprecise ages, and a larger percentage of underdiagnosis than in the other age groups. The sex ratio was high in adolescents (Table A.9). Non-malignant CNS tumours are not reportable. Laterality was complete for about 40% of cases of interest. Also notable are a high rate of rhabdomyosarcoma and one osteosarcoma case in an infant. See also Kenya, above.

KENYA, 2 registries (2000-2012)

	Age group (years)	Males	Females
Person-years	0	504 076	496 249
	1-4	1 663 020	1 646 947
	5-9	1 761 608	1 770 191
	10-14	1 451 350	1 501 818
	15-19	1 332 724	1 622 375
	0-14	5 380 054	5 415 205
	0-19	6 712 778	7 037 580

Please consult the quality indicators for this pool and its constituent registries

KENYA, 2 registries (2000-2012)

		Number of cases							Percentage				Incidence rates per million person-years									MV	DCO
		Age group (years)							0-14		0-19		Age-specific					ASR		Cumulative		%	%
		0	1-4	5-9	10-14	15-19	0-14	0-19	All	Group	All	Group	0	1-4	5-9	10-14	15-19	0-14	0-19	0-14	0-19	0-19	0-19
I	LEUKAEMIA	3	64	78	71	48	**216**	**264**	18.5	100.0	16.3	100.0	3.0	19.3	22.1	24.0	16.2	**20.1**	**19.2**	308	390	94.3	3.0
	a. Lymphoid	3	48	55	42	18	**148**	**166**	12.7	68.5	10.2	62.9	3.0	14.5	15.6	14.2	6.1	**13.7**	**12.0**	208	239	97.0	0.6
	b. Acute myeloid	0	7	9	14	17	**30**	**47**	2.6	13.9	2.9	17.8	-	2.1	2.5	4.7	5.8	**2.8**	**3.5**	45	73	95.7	0.0
	c. CMD	0	1	3	5	8	**9**	**17**	0.8	4.2	1.0	6.4	-	0.3	0.8	1.7	2.7	**0.9**	**1.3**	14	27	94.1	0.0
	d. MDS & other	0	1	0	0	0	**1**	**1**	0.1	0.5	0.1	0.4	-	0.3	-	-	-	**0.1**	**0.1**	1	1	100.0	0.0
	e. Unspecified	0	7	11	10	5	**28**	**33**	2.4	13.0	2.0	12.5	-	2.1	3.1	3.4	1.7	**2.6**	**2.4**	41	49	78.8	21.2
II	LYMPHOMA & RELATED	1	73	129	101	84	**304**	**388**	26.1	100.0	24.0	100.0	1.0	22.1	36.5	34.2	28.4	**28.4**	**28.4**	439	582	91.2	3.6
	a. Hodgkin	0	6	32	29	27	**67**	**94**	5.8	22.0	5.8	24.2	-	1.8	9.1	9.8	9.1	**6.3**	**6.9**	101	147	100.0	0.0
	b. Non-Hodgkin except BL	1	38	50	39	37	**128**	**165**	11.0	42.1	10.2	42.5	1.0	11.5	14.2	13.2	12.5	**11.9**	**12.0**	182	245	93.9	0.6
	c. Burkitt (BL)	0	17	30	14	2	**61**	**63**	5.2	20.1	3.9	16.2	-	5.1	8.5	4.7	0.7	**5.6**	**4.5**	86	89	95.2	1.6
	d. Lymphoreticular	0	0	0	0	0	**0**	**0**	-	-	-	-	-	-	-	-	-	**-**	**-**	-	-	-	-
	e. Unspecified	0	12	17	19	18	**48**	**66**	4.1	15.8	4.1	17.0	-	3.6	4.8	6.4	6.1	**4.5**	**4.9**	70	101	68.2	18.2
III	CNS NEOPLASMS †	0	22	23	26	18	**71**	**89**	6.1	100.0	5.5	100.0	-	6.6	6.5	8.8	6.1	**6.6**	**6.5**	102	133	57.3	9.0
	a. Ependymoma	0	3	0	0	0	**3**	**3**	0.3	4.2	0.2	3.4	-	0.9	-	-	-	**0.3**	**0.2**	3	3	100.0	0.0
	b. Astrocytoma	0	2	7	6	6	**15**	**21**	1.3	21.1	1.3	23.6	-	0.6	2.0	2.0	2.0	**1.4**	**1.5**	22	33	95.2	0.0
	c. CNS embryonal	0	6	7	4	5	**17**	**22**	1.5	23.9	1.4	24.7	-	1.8	2.0	1.4	1.7	**1.6**	**1.6**	24	32	86.4	4.5
	d. Other gliomas	0	3	2	5	0	**10**	**10**	0.9	14.1	0.6	11.2	-	0.9	0.6	1.7	-	**0.9**	**0.7**	15	15	60.0	20.0
	e. Other specified	0	0	1	0	1	**1**	**2**	0.1	1.4	0.1	2.2	-	-	0.3	-	0.3	**0.1**	**0.1**	1	3	100.0	0.0
	f. Unspecified CNS	0	8	6	11	6	**25**	**31**	2.1	35.2	1.9	34.8	-	2.4	1.7	3.7	2.0	**2.3**	**2.3**	36	47	3.2	16.1
IV	NEUROBLASTOMA	1	12	7	2	0	**22**	**22**	1.9	100.0	1.4	100.0	1.0	3.6	2.0	0.7	-	**2.0**	**1.6**	28	28	95.5	0.0
	a. (Ganglio)neuroblastoma	1	12	7	2	0	**22**	**22**	1.9	100.0	1.4	100.0	1.0	3.6	2.0	0.7	-	**2.0**	**1.6**	28	28	95.5	0.0
	b. Peripheral nervous	0	0	0	0	0	**0**	**0**	-	-	-	-	-	-	-	-	-	**-**	**-**	-	-	-	-
V	RETINOBLASTOMA	6	63	8	1	0	**78**	**78**	6.7	100.0	4.8	100.0	6.0	19.0	2.3	0.3	-	**7.0**	**5.4**	93	93	91.0	1.3
VI	RENAL TUMOURS	3	63	32	5	3	**103**	**106**	8.8	100.0	6.5	100.0	3.0	19.0	9.1	1.7	1.0	**9.3**	**7.5**	130	135	84.9	5.7
	a. Nephroblastoma	3	62	31	4	2	**100**	**102**	8.6	97.1	6.3	96.2	3.0	18.7	8.8	1.4	0.7	**9.1**	**7.2**	126	129	88.2	4.9
	b. Renal carcinoma	0	0	0	0	0	**0**	**0**	-	-	-	-	-	-	-	-	-	**-**	**-**	-	-	-	-
	c. Unspecified	0	1	1	1	1	**3**	**4**	0.3	2.9	0.2	3.8	-	0.3	0.3	0.3	0.3	**0.3**	**0.3**	4	6	0.0	25.0
VII	HEPATIC TUMOURS	0	1	0	5	8	**6**	**14**	0.5	100.0	0.9	100.0	-	0.3	-	1.7	2.7	**0.6**	**1.1**	10	23	64.3	14.3
	a. Hepatoblastoma	0	0	0	0	0	**0**	**0**	-	-	-	-	-	-	-	-	-	**-**	**-**	-	-	-	-
	b. Hepatic carcinoma	0	1	0	5	6	**6**	**12**	0.5	100.0	0.7	85.7	-	0.3	-	1.7	2.0	**0.6**	**0.9**	10	20	75.0	8.3
	c. Unspecified	0	0	0	0	2	**0**	**2**	-	-	0.1	14.3	-	-	-	-	0.7	**-**	**0.2**	-	3	0.0	50.0
VIII	BONE TUMOURS	1	2	12	40	76	**55**	**131**	4.7	100.0	8.1	100.0	1.0	0.6	3.4	13.5	25.7	**5.3**	**9.9**	88	217	88.5	3.1
	a. Osteosarcoma	1	1	6	30	56	**38**	**94**	3.3	69.1	5.8	71.8	1.0	0.3	1.7	10.2	19.0	**3.7**	**7.1**	62	156	88.3	2.1
	b. Chondrosarcoma	0	0	0	0	5	**0**	**5**	-	-	0.3	3.8	-	-	-	-	1.7	**-**	**0.4**	-	8	100.0	0.0
	c. Ewing & related	0	1	0	2	3	**3**	**6**	0.3	5.5	0.4	4.6	-	0.3	-	0.7	1.0	**0.3**	**0.5**	5	10	100.0	0.0
	d. Other specified	0	0	6	4	9	**10**	**19**	0.9	18.2	1.2	14.5	-	-	1.7	1.4	3.0	**0.9**	**1.4**	15	30	100.0	0.0
	e. Unspecified	0	0	0	4	3	**4**	**7**	0.3	7.3	0.4	5.3	-	-	-	1.4	1.0	**0.4**	**0.5**	7	12	42.9	28.6
IX	SOFT TISSUE SARCOMA	5	45	40	58	44	**148**	**192**	12.7	100.0	11.9	100.0	5.0	13.6	11.3	19.6	14.9	**13.8**	**14.1**	213	287	93.8	2.6
	a. Rhabdomyosarcoma	5	31	19	21	11	**76**	**87**	6.5	51.4	5.4	45.3	5.0	9.4	5.4	7.1	3.7	**7.0**	**6.3**	104	123	94.3	2.3
	b. Fibrosarcoma	0	0	4	3	10	**7**	**17**	0.6	4.7	1.0	8.9	-	-	1.1	1.0	3.4	**0.7**	**1.3**	11	28	94.1	0.0
	c. Kaposi sarcoma	0	7	12	18	8	**37**	**45**	3.2	25.0	2.8	23.4	-	2.1	3.4	6.1	2.7	**3.5**	**3.3**	56	69	91.1	4.4
	d. Other specified	0	5	1	6	4	**12**	**16**	1.0	8.1	1.0	8.3	-	1.5	0.3	2.0	1.4	**1.1**	**1.2**	17	24	93.8	0.0
	e. Unspecified	0	2	4	10	11	**16**	**27**	1.4	10.8	1.7	14.1	-	0.6	1.1	3.4	3.7	**1.5**	**2.0**	25	44	96.3	3.7
X	GERM CELL TUMOURS	0	5	3	2	12	**10**	**22**	0.9	100.0	1.4	100.0	-	1.5	0.8	0.7	4.1	**0.9**	**1.6**	13	34	90.9	4.5
	a. CNS germ cell	0	0	0	0	1	**0**	**1**	-	-	0.1	4.5	-	-	-	-	0.3	**-**	**0.1**	-	2	100.0	0.0
	b. Other extragonadal	0	4	0	0	3	**4**	**7**	0.3	40.0	0.4	31.8	-	1.2	-	-	1.0	**0.4**	**0.5**	5	10	100.0	0.0
	c. Gonadal germ cell	0	1	2	1	0	**4**	**4**	0.3	40.0	0.2	18.2	-	0.3	0.6	0.3	-	**0.4**	**0.3**	6	6	100.0	0.0
	d. Gonadal carcinoma	0	0	1	0	4	**1**	**5**	0.1	10.0	0.3	22.7	-	-	0.3	-	1.4	**0.1**	**0.4**	1	8	100.0	0.0
	e. Unspecified gonadal	0	0	0	1	4	**1**	**5**	0.1	10.0	0.3	22.7	-	-	-	0.3	1.4	**0.1**	**0.4**	2	8	60.0	20.0
XI	CARCINOMA & MELANOMA	5	9	21	46	114	**81**	**195**	7.0	100.0	12.0	100.0	5.0	2.7	5.9	15.6	38.6	**7.7**	**14.6**	124	317	98.5	0.0
	a. Adrenocortical	0	0	0	0	0	**0**	**0**	-	-	-	-	-	-	-	-	-	**-**	**-**	-	-	-	-
	b. Thyroid	0	0	0	0	6	**0**	**6**	-	-	0.4	3.1	-	-	-	-	2.0	**-**	**0.5**	-	10	100.0	0.0
	c. Nasopharyngeal	1	1	3	22	43	**27**	**70**	2.3	33.3	4.3	35.9	1.0	0.3	0.8	7.4	14.6	**2.6**	**5.3**	44	117	98.6	0.0
	d. Melanoma	0	1	2	1	1	**4**	**5**	0.3	4.9	0.3	2.6	-	0.3	0.6	0.3	0.3	**0.4**	**0.4**	6	7	100.0	0.0
	e. Skin carcinoma	2	1	6	3	9	**12**	**21**	1.0	14.8	1.3	10.8	2.0	0.3	1.7	1.0	3.0	**1.1**	**1.5**	17	32	100.0	0.0
	f. Other & unspecified	2	6	10	20	55	**38**	**93**	3.3	46.9	5.7	47.7	2.0	1.8	2.8	6.8	18.6	**3.6**	**7.0**	57	150	97.8	0.0
XII	OTHER & UNSPECIFIED	0	16	29	26	48	**71**	**119**	6.1	100.0	7.3	100.0	-	4.8	8.2	8.8	16.2	**6.6**	**8.8**	104	185	14.3	47.9
	a. Other specified	0	0	1	0	4	**1**	**5**	0.1	1.4	0.3	4.2	-	-	0.3	-	1.4	**0.1**	**0.4**	1	8	100.0	0.0
	b. Other unspecified	0	16	28	26	44	**70**	**114**	6.0	98.6	7.0	95.8	-	4.8	7.9	8.8	14.9	**6.6**	**8.4**	102	177	10.5	50.0
	TOTAL	25	375	382	383	455	**1165**	**1620**	100.0	100.0	100.0	100.0	25.0	113.3	108.2	129.7	154.0	**108.5**	**118.7**	1653	2423	84.6	6.5

† includes 1 non-malignant

Please consult the quality indicators for this pool and its constituent registries

Libya

Benghazi Cancer Registry, 2003–2008

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Libya is located in North Africa and is bordered by the Mediterranean Sea to the north, Egypt to the east, Sudan to the south-east, Chad and Niger to the south, and Algeria and Tunisia to the west. The country covers an area of almost 1.8 million km^2. The Benghazi Cancer Registry (BCR) was established in 2003 (Table A.10) and covers the area of the eastern administrative region in Libya, which includes the governorates of Tobruk, Derna, Bayda, Marj, Benghazi, Ajdabiya, and Al Jawf. The population of the eastern region of Libya at the most recent census (in 2006) was 1.6 million (28% of the national population), and 43% of people were younger than 20 years in 2010 (Table A.6). About 70% of the population lives in urban areas.

In 2003–2005, cancer care services in the region were provided predominantly by the oncology and haematology units at Aljumhuriah Hospital, by the radiotherapy unit at the Radiodiagnostic and Therapeutic Centre, and by the paediatric oncology and haematology unit at the Children's Hospital, all in Benghazi. All patients with cancer in the eastern region were referred to these units.

The BCR was located in the Medical School of Benghazi University and steered by the Scientific Board. The staff of the BCR consisted of a principal investigator, five co-investigators and field supervisors, one data entry staff, and four part-time registrars. The BCR used active case finding from different data sources. These included cancer service units, general and regional hospitals, university hospitals, private hospitals and clinics, specialized hospitals and centres outside the region, pathology and haematology laboratories, and district death registration offices. The death registration system was adequate but not complete in all parts of the eastern region of Libya, especially for 2003. Reporting the cause of death from cancer was mandatory in all hospitals. The registry staff routinely visited the above-mentioned sources. It was not possible to estimate how many cancer cases were missed by the registry.

The registry prepared annual reports of cancer incidence, highlighting trends and changes. These data were made available to the Ministry of Health to help guide planning for cancer services. Some of the BCR data will be used further in research. The BCR provided the first Libyan report on cancer incidence.

POPULATION AT RISK

The official estimates based on the 2006 census were generated by the National Centre for Information and Documentation in Tripoli and provided by sex and 5-year age group for 2003–2006. The data for the missing year–age–sex categories were estimated at IARC using the methods described in Chapter 2.

EDITORS' COMMENTS

Despite the MV% of 88%, the proportion of unspecified tumours was almost 28% (Table A.9). Date and month of birth were available for less than one third of cases; thus, age may be misclassified, and age was inconsistent with the dates in 2% of cases (Table A.8). The age-specific incidence rate in infants was low. In 10% of cases, the site was considered unlikely with respect to morphology, and some unspecified carcinomas were reported in infants (Table A.11). Non-malignant CNS tumours were not systematically registered; the cases of pilocytic astrocytoma in the dataset were coded with uncertain behaviour. No skin carcinomas were included in the dataset. Laterality was not recorded.

LIBYA, Benghazi (2003-2008)

	Age group (years)	Males	Females
Person-years	0	103 658	99 518
	1-4	414 632	398 072
	5-9	485 875	468 500
	10-14	502 365	484 395
	15-19	515 220	489 975
	0-14	1 506 530	1 450 485
	0-19	2 021 750	1 940 460
Average annual population	0-14	251 088	241 748
	0-19	336 958	323 410

Please consult the quality indicators for this registry

LIBYA, Benghazi (2003-2008)

		Number of cases							Percentage				Incidence rates per million person-years									MV	DCO
		Age group (years)							0-14		0-19		Age-specific					ASR		Cumulative		%	%
		0	1-4	5-9	10-14	15-19	0-14	0-19	All	Group	All	Group	0	1-4	5-9	10-14	15-19	0-14	0-19	0-14	0-19	0-19	0-19
I	LEUKAEMIA	2	45	29	21	19	**97**	**116**	30.5	100.0	27.6	100.0	9.8	55.4	30.4	21.3	18.9	**33.9**	**30.5**	490	584	98.3	1.7
	a. Lymphoid	0	11	9	4	8	**24**	**32**	7.5	24.7	7.6	27.6	-	13.5	9.4	4.1	8.0	**8.4**	**8.3**	122	161	100.0	0.0
	b. Acute myeloid	0	10	3	2	8	**15**	**23**	4.7	15.5	5.5	19.8	-	12.3	3.1	2.0	8.0	**5.4**	**6.0**	75	115	95.7	4.3
	c. CMD	0	2	0	2	0	**4**	**4**	1.3	4.1	1.0	3.4	-	2.5	-	2.0	-	**1.4**	**1.0**	20	20	100.0	0.0
	d. MDS & other	0	0	2	2	0	**4**	**4**	1.3	4.1	1.0	3.4	-	-	2.1	2.0	-	**1.3**	**1.0**	21	21	100.0	0.0
	e. Unspecified	2	22	15	11	3	**50**	**53**	15.7	51.5	12.6	45.7	9.8	27.1	15.7	11.1	3.0	**17.5**	**14.2**	252	267	98.1	1.9
II	LYMPHOMA & RELATED	1	11	24	17	27	**53**	**80**	16.7	100.0	19.0	100.0	4.9	13.5	25.1	17.2	26.9	**17.7**	**19.8**	271	405	100.0	0.0
	a. Hodgkin	0	1	9	11	20	**21**	**41**	6.6	39.6	9.8	51.2	-	1.2	9.4	11.1	19.9	**6.7**	**9.6**	108	207	100.0	0.0
	b. Non-Hodgkin except BL	1	3	2	3	5	**9**	**14**	2.8	17.0	3.3	17.5	4.9	3.7	2.1	3.0	5.0	**3.1**	**3.5**	45	70	100.0	0.0
	c. Burkitt (BL)	0	6	8	3	0	**17**	**17**	5.3	32.1	4.0	21.3	-	7.4	8.4	3.0	-	**5.9**	**4.6**	87	87	100.0	0.0
	d. Lymphoreticular	0	1	3	0	0	**4**	**4**	1.3	7.5	1.0	5.0	-	1.2	3.1	-	-	**1.4**	**1.1**	21	21	100.0	0.0
	e. Unspecified	0	0	2	0	2	**2**	**4**	0.6	3.8	1.0	5.0	-	-	2.1	-	2.0	**0.7**	**1.0**	10	20	100.0	0.0
III	CNS NEOPLASMS †	1	16	14	16	9	**47**	**56**	14.8	100.0	13.3	100.0	4.9	19.7	14.7	16.2	9.0	**15.9**	**14.4**	238	283	64.3	7.1
	a. Ependymoma	0	1	0	2	0	**3**	**3**	0.9	6.4	0.7	5.4	-	1.2	-	2.0	-	**1.0**	**0.8**	15	15	100.0	0.0
	b. Astrocytoma	0	6	5	5	4	**16**	**20**	5.0	34.0	4.8	35.7	-	7.4	5.2	5.1	4.0	**5.4**	**5.1**	81	101	95.0	0.0
	c. CNS embryonal	1	4	3	3	1	**11**	**12**	3.5	23.4	2.9	21.4	4.9	4.9	3.1	3.0	1.0	**3.8**	**3.2**	56	61	100.0	0.0
	d. Other gliomas	0	0	1	2	0	**3**	**3**	0.9	6.4	0.7	5.4	-	-	1.0	2.0	-	**0.9**	**0.7**	15	15	66.7	0.0
	e. Other specified	0	0	1	0	0	**1**	**1**	0.3	2.1	0.2	1.8	-	-	1.0	-	-	**0.3**	**0.3**	5	5	0.0	0.0
	f. Unspecified CNS	0	5	4	4	4	**13**	**17**	4.1	27.7	4.0	30.4	-	6.2	4.2	4.1	4.0	**4.4**	**4.3**	66	86	0.0	23.5
IV	NEUROBLASTOMA	1	15	5	1	2	**22**	**24**	6.9	100.0	5.7	100.0	4.9	18.5	5.2	1.0	2.0	**8.1**	**6.7**	110	120	100.0	0.0
	a. (Ganglio)neuroblastoma	1	15	5	1	2	**22**	**24**	6.9	100.0	5.7	100.0	4.9	18.5	5.2	1.0	2.0	**8.1**	**6.7**	110	120	100.0	0.0
	b. Peripheral nervous	0	0	0	0	0	**0**	**0**	-	-	-	-	-	-	-	-	-	**-**	**-**	-	-	-	-
V	RETINOBLASTOMA	1	11	2	0	0	**14**	**14**	4.4	100.0	3.3	100.0	4.9	13.5	2.1	-	-	**5.2**	**4.1**	70	70	50.0	0.0
VI	RENAL TUMOURS	2	12	6	0	2	**20**	**22**	6.3	100.0	5.2	100.0	9.8	14.8	6.3	-	2.0	**7.4**	**6.2**	100	110	77.3	9.1
	a. Nephroblastoma	1	6	2	0	0	**9**	**9**	2.8	45.0	2.1	40.9	4.9	7.4	2.1	-	-	**3.3**	**2.6**	45	45	77.8	22.2
	b. Renal carcinoma	1	5	3	0	2	**9**	**11**	2.8	45.0	2.6	50.0	4.9	6.2	3.1	-	2.0	**3.3**	**3.0**	45	55	81.8	0.0
	c. Unspecified	0	1	1	0	0	**2**	**2**	0.6	10.0	0.5	9.1	-	1.2	1.0	-	-	**0.7**	**0.6**	10	10	50.0	0.0
VII	HEPATIC TUMOURS	1	3	0	1	0	**5**	**5**	1.6	100.0	1.2	100.0	4.9	3.7	-	1.0	-	**1.8**	**1.4**	25	25	40.0	0.0
	a. Hepatoblastoma	0	2	0	0	0	**2**	**2**	0.6	40.0	0.5	40.0	-	2.5	-	-	-	**0.8**	**0.6**	10	10	50.0	0.0
	b. Hepatic carcinoma	0	1	0	0	0	**1**	**1**	0.3	20.0	0.2	20.0	-	1.2	-	-	-	**0.4**	**0.3**	5	5	100.0	0.0
	c. Unspecified	1	0	0	1	0	**2**	**2**	0.6	40.0	0.5	40.0	4.9	-	-	1.0	-	**0.7**	**0.5**	10	10	0.0	0.0
VIII	BONE TUMOURS	0	2	3	11	6	**16**	**22**	5.0	100.0	5.2	100.0	-	2.5	3.1	11.1	6.0	**5.0**	**5.2**	81	111	81.8	0.0
	a. Osteosarcoma	0	0	1	4	1	**5**	**6**	1.6	31.3	1.4	27.3	-	-	1.0	4.1	1.0	**1.5**	**1.4**	26	30	100.0	0.0
	b. Chondrosarcoma	0	0	0	1	0	**1**	**1**	0.3	6.3	0.2	4.5	-	-	-	1.0	-	**0.3**	**0.2**	5	5	100.0	0.0
	c. Ewing & related	0	1	2	4	2	**7**	**9**	2.2	43.8	2.1	40.9	-	1.2	2.1	4.1	2.0	**2.2**	**2.2**	36	46	100.0	0.0
	d. Other specified	0	1	0	0	0	**1**	**1**	0.3	6.3	0.2	4.5	-	1.2	-	-	-	**0.4**	**0.3**	5	5	100.0	0.0
	e. Unspecified	0	0	0	2	3	**2**	**5**	0.6	12.5	1.2	22.7	-	-	-	2.0	3.0	**0.6**	**1.1**	10	25	20.0	0.0
IX	SOFT TISSUE SARCOMA	0	7	5	5	11	**17**	**28**	5.3	100.0	6.7	100.0	-	8.6	5.2	5.1	10.9	**5.8**	**7.0**	86	141	96.4	0.0
	a. Rhabdomyosarcoma	0	2	2	0	1	**4**	**5**	1.3	23.5	1.2	17.9	-	2.5	2.1	-	1.0	**1.4**	**1.3**	20	25	100.0	0.0
	b. Fibrosarcoma	0	0	0	0	0	**0**	**0**	-	-	-	-	-	-	-	-	-	**-**	**-**	-	-	-	-
	c. Kaposi sarcoma	0	0	0	0	0	**0**	**0**	-	-	-	-	-	-	-	-	-	**-**	**-**	-	-	-	-
	d. Other specified	0	1	0	1	2	**2**	**4**	0.6	11.8	1.0	14.3	-	1.2	-	1.0	2.0	**0.7**	**1.0**	10	20	100.0	0.0
	e. Unspecified	0	4	3	4	8	**11**	**19**	3.5	64.7	4.5	67.9	-	4.9	3.1	4.1	8.0	**3.7**	**4.7**	56	95	94.7	0.0
X	GERM CELL TUMOURS	0	2	0	1	3	**3**	**6**	0.9	100.0	1.4	100.0	-	2.5	-	1.0	3.0	**1.1**	**1.5**	15	30	83.3	0.0
	a. CNS germ cell	0	0	0	0	0	**0**	**0**	-	-	-	-	-	-	-	-	-	**-**	**-**	-	-	-	-
	b. Other extragonadal	0	0	0	0	0	**0**	**0**	-	-	-	-	-	-	-	-	-	**-**	**-**	-	-	-	-
	c. Gonadal germ cell	0	2	0	1	3	**3**	**6**	0.9	100.0	1.4	100.0	-	2.5	-	1.0	3.0	**1.1**	**1.5**	15	30	83.3	0.0
	d. Gonadal carcinoma	0	0	0	0	0	**0**	**0**	-	-	-	-	-	-	-	-	-	**-**	**-**	-	-	-	-
	e. Unspecified gonadal	0	0	0	0	0	**0**	**0**	-	-	-	-	-	-	-	-	-	**-**	**-**	-	-	-	-
XI	CARCINOMA & MELANOMA	3	2	6	6	19	**17**	**36**	5.3	100.0	8.6	100.0	14.8	2.5	6.3	6.1	18.9	**5.7**	**8.7**	86	181	88.9	0.0
	a. Adrenocortical	0	0	0	0	0	**0**	**0**	-	-	-	-	-	-	-	-	-	**-**	**-**	-	-	-	-
	b. Thyroid	0	0	1	0	1	**1**	**2**	0.3	5.9	0.5	5.6	-	-	1.0	-	1.0	**0.3**	**0.5**	5	10	100.0	0.0
	c. Nasopharyngeal	0	0	0	3	6	**3**	**9**	0.9	17.6	2.1	25.0	-	-	-	3.0	6.0	**0.9**	**2.0**	15	45	100.0	0.0
	d. Melanoma	0	0	0	0	1	**0**	**1**	-	-	0.2	2.8	-	-	-	-	1.0	**-**	**0.2**	-	5	100.0	0.0
	e. Skin carcinoma	0	0	0	0	0	**0**	**0**	-	-	-	-	-	-	-	-	-	**-**	**-**	-	-	-	-
	f. Other & unspecified	3	2	5	3	11	**13**	**24**	4.1	76.5	5.7	66.7	14.8	2.5	5.2	3.0	10.9	**4.5**	**5.9**	66	121	83.3	0.0
XII	OTHER & UNSPECIFIED	1	3	2	1	4	**7**	**11**	2.2	100.0	2.6	100.0	4.9	3.7	2.1	1.0	4.0	**2.5**	**2.8**	35	55	54.5	9.1
	a. Other specified	0	0	0	0	1	**0**	**1**	-	-	0.2	9.1	-	-	-	-	1.0	**-**	**0.2**	-	5	100.0	0.0
	b. Other unspecified	1	3	2	1	3	**7**	**10**	2.2	100.0	2.4	90.9	4.9	3.7	2.1	1.0	3.0	**2.5**	**2.6**	35	50	50.0	10.0
	TOTAL	13	129	96	80	102	**318**	**420**	100.0	100.0	100.0	100.0	64.0	158.7	100.6	81.1	101.5	**110.1**	**108.2**	1607	2115	87.6	2.1

† includes 5 non-malignant

Please consult the quality indicators for this registry

Mali

Bamako, Cancer Registry of Mali, 2005–2014

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Mali is located in the centre of West Africa. The surface area of 1.24 million km^2 consists mostly of savannah and lateritic plains, merging into the sandy desert of the Sahara in the north. Highland and forested regions are in the western and south-western parts, and the two great rivers of West Africa, the Senegal and the Niger, cross the southern and western parts of the country.

Mali has several ethnic groups: Mande, 50% (Bambara, Malinke, Sarakole); Peul, 17%; Mowsi, 12%; Songhai, 6%; Tuareg and Moor, 10%; and Other, 5%. Most people are Muslim, and 83% of the population is rural, engaged in agriculture. Two thirds of the workforce is involved in agriculture, mainly growing cotton, and engaged in stock-rearing and fishing. There is very little industry in Mali.

The health-care infrastructure is far from adequate. Hospitals, clinics, and other health facilities are concentrated in the capital city of Bamako. Three major hospitals provide tertiary care: Hôpital Gabriel Touré, Hôpital de Point G, and Hôpital du Mali. The only histopathology laboratory in Mali is located in Hôpital de Point G.

The registry was started in 1986 (Table A.10) and covers the population of Bamako and its immediate surroundings. People younger than 20 years made up 53% of the population in 2010 (Table A.6). Active case finding is performed by a cancer registrar, who regularly visits the principal health-care facilities, consisting of the three public hospitals in the city and Hôpital Kati, which is 15 km away. Visits are also made to three specialized institutes (dermatology, stomatology, and ophthalmology) and to two centres of maternal and child health. In each unit visited, there is a contact person for the registry, usually the head nurse, who, under the supervision of the consulting physician, records information on all cancer diagnoses using forms provided by the registry. During the regular visits, the registrar checks these forms for completeness and verifies the information obtained from other sources, such as ward books and operation lists, and with the medical and nursing staff. The frequency of visits is determined by the average number of cases ascertained. Death registration is incomplete in Mali and covers only the city of Bamako, where a death certificate is required to obtain a burial permit. Copies of death certificates are obtained, and the death register is scanned by the registry as a source of information on new cancer cases. Registration is confined to "usual residents", i.e. people who have lived in Bamako for at least 6 months or who intend to stay for 6 months. The registry uses IARC/IACR CanReg software for data management.

POPULATION AT RISK

The data were estimated based on the 1998 and 2009 censuses (General Population and Housing Census 1998) and on official intercensal estimates (https://www.instat-mali.org/). Population data were provided by sex and 5-year age group. The data for the missing year–age–sex categories were estimated at IARC using the methods described in Chapter 2.

EDITORS' COMMENTS

The registry participated in IICC-2 (Table A.1). There was a marked increase in the number of cases over the IICC-3 reporting period. The local definition of "usual residents" implies a potential mismatch between the population subjected to registration and the official estimates; this could influence the incidence rates. The high proportion and high rates of unspecified tumours are consistent with a low MV% (70%) (Table A.9). Because of incomplete dates (only year of birth and year of incidence are available for most cases), age may be misclassified, and age was inconsistent with the dates in 1% of cases (Table A.8). The low rates in infants and in the age group 15–19 years can be explained to some extent by imprecise recording of age. It is unclear whether the high rate in age group 1–4 years reflects inclusion of non-residents. Incidence rates of leukaemia and CNS tumours are very low, which may reflect diagnostic limitations. Cancers that may be easier to diagnose clinically, such as retinoblastoma and renal tumours, are excessively common in the dataset, and non-residents may be included. The sex ratio was high in adolescents (Table A.9). Information on non-malignant CNS tumours was not collected systematically, but one case was included (Table A.9). Laterality was not reported.

MALI, Bamako (2005-2014)

	Age group (years)	Males	Females
Person-years	0	245 916	241 492
	1-4	1 167 702	1 139 187
	5-9	1 182 898	1 197 648
	10-14	964 443	1 130 503
	15-19	1 084 346	1 475 318
	0-14	3 560 959	3 708 830
	0-19	4 645 305	5 184 148
Average annual population	0-14	356 096	370 883
	0-19	464 531	518 415

Please consult the quality indicators for this registry

MALI, Bamako (2005-2014)

		Number of cases							Percentage				Incidence rates per million person-years									MV	DCO
		Age group (years)							0-14		0-19		Age-specific					ASR		Cumulative		%	%
		0	1-4	5-9	10-14	15-19	0-14	0-19	All	Group	All	Group	0	1-4	5-9	10-14	15-19	0-14	0-19	0-14	0-19	0-19	0-19
I	LEUKAEMIA	0	8	36	27	15	71	86	6.1	100.0	5.9	100.0	-	3.5	15.1	12.9	5.9	9.7	8.9	154	184	79.1	2.3
	a. Lymphoid	0	4	25	16	4	45	49	3.9	63.4	3.3	57.0	-	1.7	10.5	7.6	1.6	6.2	5.1	98	106	69.4	0.0
	b. Acute myeloid	0	1	5	4	3	10	13	0.9	14.1	0.9	15.1	-	0.4	2.1	1.9	1.2	1.4	1.3	22	28	100.0	0.0
	c. CMD	0	0	0	0	2	0	2	-	-	0.1	2.3	-	-	-	-	0.8	-	0.2	-	4	100.0	0.0
	d. MDS & other	0	0	0	1	0	1	1	0.1	1.4	0.1	1.2	-	-	-	0.5	-	0.1	0.1	2	2	100.0	0.0
	e. Unspecified	0	3	6	6	6	15	21	1.3	21.1	1.4	24.4	-	1.3	2.5	2.9	2.3	2.1	2.1	32	44	85.7	9.5
II	LYMPHOMA & RELATED	0	28	97	107	53	232	285	20.0	100.0	19.4	100.0	-	12.1	40.7	51.1	20.7	31.9	29.3	509	613	98.2	0.4
	a. Hodgkin	0	3	17	28	18	48	66	4.1	20.7	4.5	23.2	-	1.3	7.1	13.4	7.0	6.6	6.7	108	143	100.0	0.0
	b. Non-Hodgkin except BL	0	5	15	27	16	47	63	4.1	20.3	4.3	22.1	-	2.2	6.3	12.9	6.3	6.5	6.4	105	136	96.8	1.6
	c. Burkitt (BL)	0	13	50	33	3	96	99	8.3	41.4	6.7	34.7	-	5.6	21.0	15.8	1.2	13.1	10.5	207	213	100.0	0.0
	d. Lymphoreticular	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	e. Unspecified	0	7	15	19	16	41	57	3.5	17.7	3.9	20.0	-	3.0	6.3	9.1	6.3	5.6	5.8	89	121	94.7	0.0
III	CNS NEOPLASMS †	0	8	9	5	5	22	27	1.9	100.0	1.8	100.0	-	3.5	3.8	2.4	2.0	3.0	2.8	45	55	40.7	11.1
	a. Ependymoma	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	b. Astrocytoma	0	1	2	0	2	3	5	0.3	13.6	0.3	18.5	-	0.4	0.8	-	0.8	0.4	0.5	6	10	80.0	0.0
	c. CNS embryonal	0	0	1	0	0	1	1	0.1	4.5	0.1	3.7	-	-	0.4	-	-	0.1	0.1	2	2	100.0	0.0
	d. Other gliomas	0	1	1	0	2	2	4	0.2	9.1	0.3	14.8	-	0.4	0.4	-	0.8	0.3	0.4	4	8	75.0	0.0
	e. Other specified	0	0	1	0	0	1	1	0.1	4.5	0.1	3.7	-	-	0.4	-	-	0.1	0.1	2	2	100.0	0.0
	f. Unspecified CNS	0	6	4	5	1	15	16	1.3	68.2	1.1	59.3	-	2.6	1.7	2.4	0.4	2.1	1.7	31	33	12.5	18.8
IV	NEUROBLASTOMA	0	14	6	2	0	22	22	1.9	100.0	1.5	100.0	-	6.1	2.5	1.0	-	3.0	2.3	42	42	77.3	0.0
	a. (Ganglio)neuroblastoma	0	13	6	2	0	21	21	1.8	95.5	1.4	95.5	-	5.6	2.5	1.0	-	2.9	2.2	41	41	76.2	0.0
	b. Peripheral nervous	0	1	0	0	0	1	1	0.1	4.5	0.1	4.5	-	0.4	-	-	-	0.1	0.1	2	2	100.0	0.0
V	RETINOBLASTOMA	7	156	36	9	0	208	208	18.0	100.0	14.1	100.0	14.4	67.6	15.1	4.3	-	28.7	22.2	389	389	81.7	0.0
VI	RENAL TUMOURS	2	108	64	17	9	191	200	16.5	100.0	13.6	100.0	4.1	46.8	26.9	8.1	3.5	26.3	21.1	372	389	71.5	1.0
	a. Nephroblastoma	2	86	56	10	4	154	158	13.3	80.6	10.7	79.0	4.1	37.3	23.5	4.8	1.6	21.2	16.8	299	307	88.6	1.3
	b. Renal carcinoma	0	0	0	1	1	1	2	0.1	0.5	0.1	1.0	-	-	-	0.5	0.4	0.1	0.2	2	4	50.0	0.0
	c. Unspecified	0	22	8	6	4	36	40	3.1	18.8	2.7	20.0	-	9.5	3.4	2.9	1.6	5.0	4.2	70	78	5.0	0.0
VII	HEPATIC TUMOURS	1	10	3	6	15	20	35	1.7	100.0	2.4	100.0	2.1	4.3	1.3	2.9	5.9	2.8	3.5	40	70	51.4	2.9
	a. Hepatoblastoma	1	7	1	1	1	10	11	0.9	50.0	0.7	31.4	2.1	3.0	0.4	0.5	0.4	1.4	1.2	19	21	63.6	0.0
	b. Hepatic carcinoma	0	0	1	3	9	4	13	0.3	20.0	0.9	37.1	-	-	0.4	1.4	3.5	0.6	1.2	9	27	76.9	0.0
	c. Unspecified	0	3	1	2	5	6	11	0.5	30.0	0.7	31.4	-	1.3	0.4	1.0	2.0	0.8	1.1	12	22	9.1	9.1
VIII	BONE TUMOURS	1	13	12	35	36	61	97	5.3	100.0	6.6	100.0	2.1	5.6	5.0	16.7	14.1	8.4	9.7	134	204	58.8	0.0
	a. Osteosarcoma	0	2	4	10	13	16	29	1.4	26.2	2.0	29.9	-	0.9	1.7	4.8	5.1	2.2	2.9	36	61	89.7	0.0
	b. Chondrosarcoma	0	0	0	6	9	6	15	0.5	9.8	1.0	15.5	-	-	-	2.9	3.5	0.8	1.4	14	32	100.0	0.0
	c. Ewing & related	1	0	1	0	1	2	3	0.2	3.3	0.2	3.1	2.1	-	0.4	-	0.4	0.3	0.3	4	6	100.0	0.0
	d. Other specified	0	2	0	3	3	5	8	0.4	8.2	0.5	8.2	-	0.9	-	1.4	1.2	0.7	0.8	11	17	75.0	0.0
	e. Unspecified	0	9	7	16	10	32	42	2.8	52.5	2.9	43.3	-	3.9	2.9	7.6	3.9	4.4	4.3	69	89	16.7	0.0
IX	SOFT TISSUE SARCOMA	1	21	16	26	24	64	88	5.5	100.0	6.0	100.0	2.1	9.1	6.7	12.4	9.4	8.8	8.9	135	182	90.9	0.0
	a. Rhabdomyosarcoma	0	14	6	6	5	26	31	2.2	40.6	2.1	35.2	-	6.1	2.5	2.9	2.0	3.6	3.2	52	62	80.6	0.0
	b. Fibrosarcoma	0	1	2	5	5	8	13	0.7	12.5	0.9	14.8	-	0.4	0.8	2.4	2.0	1.1	1.3	18	28	100.0	0.0
	c. Kaposi sarcoma	0	0	1	1	3	2	5	0.2	3.1	0.3	5.7	-	-	0.4	0.5	1.2	0.3	0.5	4	10	100.0	0.0
	d. Other specified	1	6	3	9	5	19	24	1.6	29.7	1.6	27.3	2.1	2.6	1.3	4.3	2.0	2.6	2.5	40	50	91.7	0.0
	e. Unspecified	0	0	4	5	6	9	15	0.8	14.1	1.0	17.0	-	-	1.7	2.4	2.3	1.2	1.5	20	32	100.0	0.0
X	GERM CELL TUMOURS	0	9	6	7	27	22	49	1.9	100.0	3.3	100.0	-	3.9	2.5	3.3	10.5	3.0	4.7	45	98	77.6	0.0
	a. CNS germ cell	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	b. Other extragonadal	0	8	1	0	16	9	25	0.8	40.9	1.7	51.0	-	3.5	0.4	-	6.3	1.2	2.4	16	48	96.0	0.0
	c. Gonadal germ cell	0	0	4	3	3	7	10	0.6	31.8	0.7	20.4	-	-	1.7	1.4	1.2	1.0	1.0	16	21	100.0	0.0
	d. Gonadal carcinoma	0	0	0	0	3	0	3	-	-	0.2	6.1	-	-	-	-	1.2	-	0.3	-	6	100.0	0.0
	e. Unspecified gonadal	0	1	1	4	5	6	11	0.5	27.3	0.7	22.4	-	0.4	0.4	1.9	2.0	0.8	1.1	13	23	9.1	0.0
XI	CARCINOMA & MELANOMA	2	4	14	20	62	40	102	3.5	100.0	6.9	100.0	4.1	1.7	5.9	9.5	24.2	5.5	9.7	88	209	98.0	1.0
	a. Adrenocortical	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	b. Thyroid	0	0	0	2	6	2	8	0.2	5.0	0.5	7.8	-	-	-	1.0	2.3	0.3	0.7	5	16	100.0	0.0
	c. Nasopharyngeal	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	d. Melanoma	0	0	1	1	0	2	2	0.2	5.0	0.1	2.0	-	-	0.4	0.5	-	0.3	0.2	4	4	100.0	0.0
	e. Skin carcinoma	0	0	1	4	10	5	15	0.4	12.5	1.0	14.7	-	-	0.4	1.9	3.9	0.7	1.4	12	31	100.0	0.0
	f. Other & unspecified	2	4	12	13	46	31	77	2.7	77.5	5.2	75.5	4.1	1.7	5.0	6.2	18.0	4.3	7.3	67	157	97.4	1.3
XII	OTHER & UNSPECIFIED	2	87	61	55	66	205	271	17.7	100.0	18.4	100.0	4.1	37.7	25.6	26.3	25.8	28.2	27.7	419	548	19.6	1.8
	a. Other specified	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	b. Other unspecified	2	87	61	55	66	205	271	17.7	100.0	18.4	100.0	4.1	37.7	25.6	26.3	25.8	28.2	27.7	419	548	19.6	1.8
	TOTAL	16	466	360	316	312	1158	1470	100.0	100.0	100.0	100.0	32.8	202.0	151.2	150.8	121.9	159.3	150.9	2373	2982	70.4	1.0

† includes 1 non-malignant

Please consult the quality indicators for this registry

Mauritius

Mauritius National Cancer Registry, 2001–2013

Shyam Shunker Manraj, Marvin Koon Sun Pat, Nilufer Jasmine Selimah Fauzee

Mauritius is an island nation in the Indian Ocean, located about 2000 km off the south-eastern coast of Africa. It comprises mainly the islands of Mauritius and Rodrigues and is classified as a middle-income, diversified economy. Its population was 1.3 million in 2010 (Table A.7), and 30% of people were younger than 20 years (Table A.6). The different ethnic groups are Indo-Mauritians (Indian subcontinent descent, 68%), Creoles (African descent, 27%), Sino-Mauritians (Chinese descent, 3%), and Franco-Mauritians (French descent, 2%).

Access to health care is free of charge in public hospitals. The country's health-care workforce includes 46 paediatricians, two medical oncologists, eight radiation and clinical oncologists, and 20 pathologists. Bone marrow aspiration and biopsy are regularly conducted in 10 practices. Victoria Hospital has a dedicated paediatric cancer ward with six beds. The nuclear medicine department has one linear accelerator and two cobalt machines. A memorandum of understanding exists with Réunion for diagnosis and treatment of leukaemia. Children with leukaemia are referred to Réunion for immunophenotyping, medical advice, and initiation of chemotherapy protocols.

The Mauritius National Cancer Registry started operating in the early 1990s and reached population-based coverage in 2000 (Table A.10). The registry has multiple data sources, including a unique Radiotherapy Department patient register at Victoria Hospital, regional hospital health records (cancer summary discharge listings), pathology and haematology laboratory archives, an overseas treatment unit (mainly for patients with brain neoplasms seeking financial assistance to travel abroad for specialized treatment), private laboratories, private clinics, and death registration at the Civil Status Division.

Data are collected annually, retrospectively and semi-actively. The information is coded using ICD-10 and ICD-O-3 (Table A.10); local variables are used to code for districts and ethnic groups. Validity of data processed is checked using IARC and ENCR programs. Since 2005, patients have been followed up for vital status.

PUBLICATIONS

Manraj SS, Mustun H, Ghurhurrun P, Laniece C, Salamon R (1997). Incidence des cancers à l'île Maurice (1989–1993). Rev Epidemiol Sante Publique. 45(3):257–9. PMID:9280989

Manraj S, Poorun S, Eddoo R, Jeebun N, Moussa L, Burhoo P (2007). Cancer incidence in the Republic of Mauritius – 5 years review 1997 to 2001. Internet J Med Update. 1(1):7–12. https://doi.org/10.4314/ijmu.v1i1.39828

POPULATION AT RISK

The population census of 2011 (Table A.7) counted all people present on census night in all households and communal establishments, as well as usual residents. Population data were estimated by the Ministry of Health and Quality of Life and published in the Health Statistics Report 2013. Data were provided by sex and age group (0, 1–4, 5–9, 10–14, 15–19 years) for each calendar year of the reporting period. The data for the missing year–age–sex categories were estimated at IARC using the methods described in Chapter 2.

EDITORS' COMMENTS

The childhood population decreased by about 10% between 2001 and 2013. The registry has access to the national mortality database, but no DCO cases were recorded during the reporting period (Table A.9). Despite a satisfactory MV%, a large proportion of cases had unspecified histology (39%), including among the MV cases (Table A.9). Because of incomplete date of birth for two thirds of cases, age may be somewhat misclassified; age was inconsistent with the dates in almost 11% of cases (Table A.8). The extremely low rates in infants may reflect the imprecise dates to some extent; late diagnosis or other reasons may also be applicable. The sex ratio was high in adolescents (Table A.9). Non-malignant CNS tumours were not recorded, but skin carcinomas were reportable. Laterality was unknown in one half of cases of interest. Some patients with retinoblastoma, bone tumours, and germ cell tumours may be referred or treated abroad and missed by the registry, which may explain their relative deficit in the dataset.

MAURITIUS (2001-2013)

	Age group (years)	Males	Females
Person-years	0	112 357	109 457
	1-4	475 728	462 888
	5-9	646 369	627 805
	10-14	677 730	659 807
	15-19	667 196	652 252
	0-14	1 912 184	1 859 957
	0-19	2 579 380	2 512 209
Average annual population	0-14	147 091	143 074
	0-19	198 414	193 247

Please consult the quality indicators for this registry

MAURITIUS (2001-2013)

		Number of cases							Percentage				Incidence rates per million person-years									MV	DCO
		Age group (years)							0-14		0-19		Age-specific					ASR		Cumulative		%	%
		0	1-4	5-9	10-14	15-19	0-14	0-19	All	Group	All	Group	0	1-4	5-9	10-14	15-19	0-14	0-19	0-14	0-19	0-19	0-19
I	LEUKAEMIA	1	56	38	31	45	126	171	34.1	100.0	31.0	100.0	4.5	59.7	29.8	23.2	34.1	35.4	35.1	511	681	99.4	0.0
	a. Lymphoid	0	17	15	10	8	42	50	11.4	33.3	9.1	29.2	-	18.1	11.8	7.5	6.1	11.6	10.4	169	200	100.0	0.0
	b. Acute myeloid	0	7	3	4	10	14	24	3.8	11.1	4.4	14.0	-	7.5	2.4	3.0	7.6	4.0	4.8	57	95	100.0	0.0
	c. CMD	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	d. MDS & other	0	1	0	0	0	1	1	0.3	0.8	0.2	0.6	-	1.1	-	-	-	0.3	0.3	4	4	100.0	0.0
	e. Unspecified	1	31	20	17	27	69	96	18.7	54.8	17.4	56.1	4.5	33.0	15.7	12.7	20.5	19.4	19.7	280	382	99.0	0.0
II	LYMPHOMA & RELATED	0	8	15	19	32	42	74	11.4	100.0	13.4	100.0	-	8.5	11.8	14.2	24.3	10.6	13.7	164	286	100.0	0.0
	a. Hodgkin	0	1	7	8	19	16	35	4.3	38.1	6.4	47.3	-	1.1	5.5	6.0	14.4	3.8	6.2	62	134	100.0	0.0
	b. Non-Hodgkin except BL	0	6	2	4	12	12	24	3.3	28.6	4.4	32.4	-	6.4	1.6	3.0	9.1	3.4	4.7	49	94	100.0	0.0
	c. Burkitt (BL)	0	0	2	1	0	3	3	0.8	7.1	0.5	4.1	-	-	1.6	0.7	-	0.7	0.6	12	12	100.0	0.0
	d. Lymphoreticular	0	0	1	1	0	2	2	0.5	4.8	0.4	2.7	-	-	0.8	0.7	-	0.5	0.4	8	8	100.0	0.0
	e. Unspecified	0	1	3	5	1	9	10	2.4	21.4	1.8	13.5	-	1.1	2.4	3.7	0.8	2.2	1.9	35	39	100.0	0.0
III	CNS NEOPLASMS	2	13	16	11	19	42	61	11.4	100.0	11.1	100.0	9.0	13.9	12.6	8.2	14.4	11.4	12.1	169	241	68.9	0.0
	a. Ependymoma	0	0	0	0	2	0	2	-	-	0.4	3.3	-	-	-	-	1.5	-	0.3	-	8	100.0	0.0
	b. Astrocytoma	0	4	3	5	4	12	16	3.3	28.6	2.9	26.2	-	4.3	2.4	3.7	3.0	3.2	3.1	48	63	100.0	0.0
	c. CNS embryonal	0	7	4	1	2	12	14	3.3	28.6	2.5	23.0	-	7.5	3.1	0.7	1.5	3.6	3.1	50	57	100.0	0.0
	d. Other gliomas	0	1	2	2	2	5	7	1.4	11.9	1.3	11.5	-	1.1	1.6	1.5	1.5	1.3	1.3	20	27	100.0	0.0
	e. Other specified	0	0	0	0	2	0	2	-	-	0.4	3.3	-	-	-	-	1.5	-	0.3	-	8	100.0	0.0
	f. Unspecified CNS	2	1	7	3	7	13	20	3.5	31.0	3.6	32.8	9.0	1.1	5.5	2.2	5.3	3.4	3.8	52	78	5.0	0.0
IV	NEUROBLASTOMA	1	10	4	0	1	15	16	4.1	100.0	2.9	100.0	4.5	10.7	3.1	-	0.8	4.7	3.8	63	67	100.0	0.0
	a. (Ganglio)neuroblastoma	1	10	4	0	0	15	15	4.1	100.0	2.7	93.8	4.5	10.7	3.1	-	-	4.7	3.6	63	63	100.0	0.0
	b. Peripheral nervous	0	0	0	0	1	0	1	-	-	0.2	6.3	-	-	-	-	0.8	-	0.2	-	4	100.0	0.0
V	RETINOBLASTOMA	0	10	0	0	0	10	10	2.7	100.0	1.8	100.0	-	10.7	-	-	-	3.3	2.6	43	43	100.0	0.0
VI	RENAL TUMOURS	0	16	2	1	0	19	19	5.1	100.0	3.4	100.0	-	17.0	1.6	0.7	-	6.1	4.7	81	81	78.9	0.0
	a. Nephroblastoma	0	13	2	0	0	15	15	4.1	78.9	2.7	78.9	-	13.9	1.6	-	-	4.8	3.8	64	64	100.0	0.0
	b. Renal carcinoma	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	c. Unspecified	0	3	0	1	0	4	4	1.1	21.1	0.7	21.1	-	3.2	-	0.7	-	1.2	0.9	17	17	0.0	0.0
VII	HEPATIC TUMOURS	0	2	0	0	0	2	2	0.5	100.0	0.4	100.0	-	2.1	-	-	-	0.7	0.5	9	9	100.0	0.0
	a. Hepatoblastoma	0	2	0	0	0	2	2	0.5	100.0	0.4	100.0	-	2.1	-	-	-	0.7	0.5	9	9	100.0	0.0
	b. Hepatic carcinoma	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	c. Unspecified	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VIII	BONE TUMOURS	0	1	8	10	8	19	27	5.1	100.0	4.9	100.0	-	1.1	6.3	7.5	6.1	4.5	4.9	73	103	81.5	0.0
	a. Osteosarcoma	0	0	4	8	3	12	15	3.3	63.2	2.7	55.6	-	-	3.1	6.0	2.3	2.7	2.6	46	57	100.0	0.0
	b. Chondrosarcoma	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	c. Ewing & related	0	0	2	1	0	3	3	0.8	15.8	0.5	11.1	-	-	1.6	0.7	-	0.7	0.6	12	12	100.0	0.0
	d. Other specified	0	0	0	0	3	0	3	-	-	0.5	11.1	-	-	-	-	2.3	-	0.5	-	11	100.0	0.0
	e. Unspecified	0	1	2	1	2	4	6	1.1	21.1	1.1	22.2	-	1.1	1.6	0.7	1.5	1.1	1.2	16	23	16.7	0.0
IX	SOFT TISSUE SARCOMA	0	11	6	13	14	30	44	8.1	100.0	8.0	100.0	-	11.7	4.7	9.7	10.6	8.0	8.6	120	173	100.0	0.0
	a. Rhabdomyosarcoma	0	7	1	3	1	11	12	3.0	36.7	2.2	27.3	-	7.5	0.8	2.2	0.8	3.2	2.7	45	49	100.0	0.0
	b. Fibrosarcoma	0	0	0	0	1	0	1	-	-	0.2	2.3	-	-	-	-	0.8	-	0.2	-	4	100.0	0.0
	c. Kaposi sarcoma	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	d. Other specified	0	3	3	8	7	14	21	3.8	46.7	3.8	47.7	-	3.2	2.4	6.0	5.3	3.5	3.9	55	81	100.0	0.0
	e. Unspecified	0	1	2	2	5	5	10	1.4	16.7	1.8	22.7	-	1.1	1.6	1.5	3.8	1.3	1.8	20	39	100.0	0.0
X	GERM CELL TUMOURS	0	7	2	9	16	18	34	4.9	100.0	6.2	100.0	-	7.5	1.6	6.7	12.1	4.8	6.4	72	132	88.2	0.0
	a. CNS germ cell	0	0	1	1	0	2	2	0.5	11.1	0.4	5.9	-	-	0.8	0.7	-	0.5	0.4	8	8	100.0	0.0
	b. Other extragonadal	0	2	0	1	3	3	6	0.8	16.7	1.1	17.6	-	2.1	-	0.7	2.3	0.9	1.2	12	24	100.0	0.0
	c. Gonadal germ cell	0	4	0	5	7	9	16	2.4	50.0	2.9	47.1	-	4.3	-	3.7	5.3	2.4	3.1	36	62	100.0	0.0
	d. Gonadal carcinoma	0	0	0	0	4	0	4	-	-	0.7	11.8	-	-	-	-	3.0	-	0.7	-	15	100.0	0.0
	e. Unspecified gonadal	0	1	1	2	2	4	6	1.1	22.2	1.1	17.6	-	1.1	0.8	1.5	1.5	1.0	1.1	16	23	33.3	0.0
XI	CARCINOMA & MELANOMA	0	0	3	12	20	15	35	4.1	100.0	6.4	100.0	-	-	2.4	9.0	15.2	3.4	6.0	57	132	100.0	0.0
	a. Adrenocortical	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	b. Thyroid	0	0	1	1	2	2	4	0.5	13.3	0.7	11.4	-	-	0.8	0.7	1.5	0.5	0.7	8	15	100.0	0.0
	c. Nasopharyngeal	0	0	0	1	1	1	2	0.3	6.7	0.4	5.7	-	-	-	0.7	0.8	0.2	0.3	4	8	100.0	0.0
	d. Melanoma	0	0	0	0	2	0	2	-	-	0.4	5.7	-	-	-	-	1.5	-	0.3	-	8	100.0	0.0
	e. Skin carcinoma	0	0	0	1	1	1	2	0.3	6.7	0.4	5.7	-	-	-	0.7	0.8	0.2	0.3	4	8	100.0	0.0
	f. Other & unspecified	0	0	2	9	14	11	25	3.0	73.3	4.5	71.4	-	-	1.6	6.7	10.6	2.5	4.3	41	95	100.0	0.0
XII	OTHER & UNSPECIFIED	0	10	9	12	27	31	58	8.4	100.0	10.5	100.0	-	10.7	7.1	9.0	20.5	8.2	11.0	123	226	19.0	0.0
	a. Other specified	0	0	0	1	1	1	2	0.3	3.2	0.4	3.4	-	-	-	0.7	0.8	0.2	0.3	4	8	100.0	0.0
	b. Other unspecified	0	10	9	11	26	30	56	8.1	96.8	10.2	96.6	-	10.7	7.1	8.2	19.7	8.0	10.6	120	218	16.1	0.0
	TOTAL	4	144	103	118	182	369	551	100.0	100.0	100.0	100.0	18.0	153.4	80.8	88.2	137.9	101.1	109.4	1483	2173	85.5	0.0

Please consult the quality indicators for this registry

Morocco

Morocco is located in the north-west of the African continent and covers an area of 710 850 km^2. Morocco is characterized by a rugged mountainous interior, large tracts of desert, and a long coastline along the Atlantic Ocean and the Mediterranean Sea. The population was 32.1 million in 2010 (Table A.7), and 38% of people were younger than 20 years (Table A.6). Almost all residents are Arab-Berber, and the predominant religion is Islam. The official languages are Arabic and Berber; French is also widely spoken.

Morocco is one of the leading economies in Africa. The service sector accounts for just more than half of gross domestic product (GDP), and industry, made up of mining, construction, and manufacturing, accounts for one quarter. The flourishing industries are tourism, telecommunications, information technology, and textiles.

The health-care system is supported by Mandatory Health Insurance, which is divided into private and public. About 35% of Moroccans are covered by Mandatory Health Insurance. A specific health insurance programme is designed for people with low socioeconomic status.

In 2001, the principal causes of mortality in the urban population were circulatory system (20%), perinatal (9%), neoplastic (9%), metabolic (8%), respiratory (7%), and infectious (5%) diseases. Morocco had eradicated a variety of childhood diseases by 2004, specifically diphtheria, polio, tetanus, and malaria; however, the infant mortality rate is still relatively high, at 23.7 deaths per 1000 live births. A small proportion of young people are HIV-positive. Morocco was the first country from the African continent to become an IARC Participating State.

POPULATION AT RISK

Population data were provided by the Centre for Demographic Studies and Research in the High Commission for Planning (http://rgphentableaux.hcp.ma/). The relevant censuses were in 2004 and 2014 (Table A.7) (https://www.hcp.ma/downloads/RGPH-2014_t17441.html).

EDITORS' COMMENTS

Morocco was represented in IICC-1 by a hospital-based dataset (Table A.1). In the IICC-3 book, a combined Moroccan dataset is composed of the data collected by two registries, in Casablanca and Rabat. Together, these registries cover a population of about 5 million people, including 13% of the national population aged 0–19 years (Table A.6). The full table for the Casablanca Cancer Registry and an abbreviated table for the smaller Rabat Cancer Registry are available online (Table A.12).

The two registries share several registration practices. Information on laterality is collected, but it is incomplete. Date of birth is incomplete in more than half of the cases in both registries (Table A.8); thus, age may be somewhat misclassified. Both registries have very high rates of retinoblastoma, which may be due to inclusion of some non-residents with this tumour. Skin carcinomas are reportable. The dissimilar features of the two registries are described below.

MOROCCO, 2 registries (2005-2012)

Registry	Period	Cases	%	Person-years	%
Casablanca	2005-2012	1496	88.6	10 809 860	88.5
Rabat	2005-2012	192	11.4	1 400 468	11.5
MOROCCO	**2005-2012**	**1688**	**100.0**	**12 210 328**	**100.0**

Please consult the quality indicators for this pool and its constituent registries

Casablanca Cancer Registry, 2005–2012

Benider Abdellatif, Bouchbika Zineb, Haddad Houssam, Benchakroun Nadia, Eddakaoui Hoda, Kotbi Souad, Megrini Anis, Harif Mhamed, Sahraoui Souha

Greater Casablanca, which is one of the 16 administrative regions of Morocco, is located on the Atlantic coast in the west central part of the country. The region, which covers an area of 1115 km^2, is divided into two provinces, Nouaceur and Mediouna, and two prefectures, Mohammedia and Casablanca (the city). Greater Casablanca is the most densely populated region of the country, with the highest concentration in the city of Casablanca. The population was 4 million in 2010, and 35% of people were younger than 20 years (Table A.6). The urban population (92%) predominates. The population of the Casablanca region doubled in 30 years to make up 12% of the national population in 2014. The city of Casablanca has 45% of the national industrial enterprises.

Access to the health-care system is facilitated by the presence of primary health-care centres, which are free of charge and are located in different areas of the region. Paediatric cancers are managed at the tertiary level of the Moroccan health system, in university hospitals.

The population-based Casablanca Cancer Registry covers the entire Casablanca region. Active case finding covers many sources, including hospitals and paediatric services. Tumours are coded according to ICD-O-3 (Table A.10).

POPULATION AT RISK

Population data were provided by 5-year age group for each calendar year of the reporting period. The data for the missing year–age–sex categories were estimated at IARC using the methods described in Chapter 2. See also Morocco, above.

EDITORS' COMMENTS

The MV% was 100%, and DCO cases were not ascertained (Table A.9); this may suggest that some cases were missed, as further suggested by the lower rates in Casablanca than in Rabat. Among the MV cases, 9% had unspecified morphology. Infants are underrepresented (Table A.9). Unlikely records include 11 unspecified carcinomas in infants (Table A.11). Although all non-malignant CNS tumours are eligible for registration, their proportion is lower than in Rabat, where benign tumours are excluded from registration. Pilocytic astrocytoma was coded with either uncertain or malignant behaviour. See also Morocco, above.

Rabat Cancer Registry, 2005–2012

Mohammed Adnane Tazi, Abdelouahed Er-Raki, Noureddine Benjaafar

Rabat, the capital of Morocco, is located in the north-western region along the Atlantic Ocean coast and has a Mediterranean climate. Rabat is an administrative centre, which benefits from structuring and reorganization of public administration and facilitates the establishment of foreign companies and the creation of offshore areas. The city is gradually transforming into a business centre.

The Rabat Cancer Registry covers the population of Rabat (0.6 million in 2010; 1.7% of the national population), which had decreased by 0.79% in 2014 compared with the national census in 2004. The proportion of people younger than 20 years was 28% (Table A.6). Care for children with cancer is provided mostly by university hospitals, the National Institute of Oncology, Rabat Children's Hospital (which has a paediatric oncology unit), and two private cancer clinics.

The Rabat Cancer Registry, which is supervised and sponsored by a Registry Council, is located in the National Institute of Oncology and serves as a tool for epidemiological surveillance and oncology research. Data are collected by active case finding from public hospitals, including Rabat Children's Hospital, private clinics, and pathology laboratories. DCO cases are identified from the Death Register of the municipality of Rabat, which records all deaths in residents of Rabat. Tumours are coded according to ICD-O-3 (Table A.10). The Rabat Cancer Registry follows up registered patients for cause of death and vital status.

PUBLICATIONS

Tazi MA, Er-Raki A, Benjaafar N (2013). Cancer incidence in Rabat, Morocco: 2006–2008. Ecancermedicalscience. 7:338. PMID:23940493

POPULATION AT RISK

In Rabat, the officially estimated population at risk is based on the weight method, given the lack of information about demographic events between the two censuses. Population data for this study were provided by the registry in all requested detail. See also Morocco, above.

EDITORS' COMMENTS

The DCO% was 10% (Table A.9). In addition to the missing date of birth in about 50% of cases, date of incidence is incomplete in 11% of cases; this may affect the age-specific rates and contribute to explaining the unexpected age distribution of the cases (Table A.9). The high sex ratio of 1.7 in the age group 0–14 years may indicate that cancer in girls may be underdiagnosed, although according to the registry boys and girls have equal opportunities for medical care. The registry collects CNS tumours with uncertain and malignant behaviour but does not collect benign tumours. Cases of pilocytic astrocytoma are coded with uncertain behaviour. See also Morocco, above.

MOROCCO, 2 registries (2005-2012)

	Age group (years)	Males	Females
Person-years	0	303 085	292 361
	1-4	1 212 240	1 168 058
	5-9	1 473 705	1 436 238
	10-14	1 544 486	1 534 718
	15-19	1 613 842	1 631 595
	0-14	4 533 516	4 431 375
	0-19	6 147 358	6 062 970
Average annual population	0-14	566 690	553 922
	0-19	768 420	757 871

Please consult the quality indicators for this registry

MOROCCO, 2 registries (2005-2012)

		Number of cases							Percentage				Incidence rates per million person-years									MV	DCO
		Age group (years)							0-14		0-19		Age-specific					ASR		Cumulative		%	%
		0	1-4	5-9	10-14	15-19	0-14	0-19	All	Group	All	Group	0	1-4	5-9	10-14	15-19	0-14	0-19	0-14	0-19	0-19	0-19
I	**LEUKAEMIA**	5	62	64	55	82	**186**	**268**	16.2	100.0	15.9	100.0	8.4	26.0	22.0	17.9	25.3	**21.0**	**22.0**	312	438	96.6	3.4
	a. Lymphoid	2	49	43	34	40	**128**	**168**	11.2	68.8	10.0	62.7	3.4	20.6	14.8	11.0	12.3	**14.6**	**14.1**	215	276	95.8	4.2
	b. Acute myeloid	2	11	13	14	33	**40**	**73**	3.5	21.5	4.3	27.2	3.4	4.6	4.5	4.5	10.2	**4.5**	**5.7**	67	118	100.0	0.0
	c. CMD	0	0	2	5	6	**7**	**13**	0.6	3.8	0.8	4.9	-	-	0.7	1.6	1.8	**0.7**	**1.0**	12	21	100.0	0.0
	d. MDS & other	0	0	2	0	1	**2**	**3**	0.2	1.1	0.2	1.1	-	-	0.7	-	0.3	**0.2**	**0.2**	3	5	66.7	33.3
	e. Unspecified	1	2	4	2	2	**9**	**11**	0.8	4.8	0.7	4.1	1.7	0.8	1.4	0.6	0.6	**1.0**	**0.9**	15	18	90.9	9.1
II	**LYMPHOMA & RELATED**	4	33	75	75	151	**187**	**338**	16.3	100.0	20.0	100.0	6.7	13.9	25.8	24.4	46.5	**20.2**	**26.1**	313	545	99.4	0.6
	a. Hodgkin	0	10	31	38	86	**79**	**165**	6.9	42.2	9.8	48.8	-	4.2	10.7	12.3	26.5	**8.3**	**12.4**	132	264	99.4	0.6
	b. Non-Hodgkin except BL	3	7	18	22	51	**50**	**101**	4.4	26.7	6.0	29.9	5.0	2.9	6.2	7.1	15.7	**5.4**	**7.7**	83	162	100.0	0.0
	c. Burkitt (BL)	1	13	24	13	9	**51**	**60**	4.5	27.3	3.6	17.8	1.7	5.5	8.2	4.2	2.8	**5.7**	**5.0**	86	100	98.3	1.7
	d. Lymphoreticular	0	2	1	0	0	**3**	**3**	0.3	1.6	0.2	0.9	-	0.8	0.3	-	-	**0.4**	**0.3**	5	5	100.0	0.0
	e. Unspecified	0	1	1	2	5	**4**	**9**	0.3	2.1	0.5	2.7	-	0.4	0.3	0.6	1.5	**0.4**	**0.7**	7	14	100.0	0.0
III	**CNS NEOPLASMS** †	6	45	71	51	34	**173**	**207**	15.1	100.0	12.3	100.0	10.1	18.9	24.4	16.6	10.5	**19.3**	**17.3**	291	343	94.7	2.9
	a. Ependymoma	0	13	11	5	5	**29**	**34**	2.5	16.8	2.0	16.4	-	5.5	3.8	1.6	1.5	**3.4**	**3.0**	49	57	97.1	2.9
	b. Astrocytoma	1	6	20	17	14	**44**	**58**	3.8	25.4	3.4	28.0	1.7	2.5	6.9	5.5	4.3	**4.7**	**4.6**	74	95	100.0	0.0
	c. CNS embryonal	2	15	28	13	6	**58**	**64**	5.1	33.5	3.8	30.9	3.4	6.3	9.6	4.2	1.8	**6.5**	**5.5**	98	107	98.4	1.6
	d. Other gliomas	0	5	4	3	3	**12**	**15**	1.0	6.9	0.9	7.2	-	2.1	1.4	1.0	0.9	**1.4**	**1.3**	20	25	66.7	0.0
	e. Other specified	0	1	1	9	5	**11**	**16**	1.0	6.4	0.9	7.7	-	0.4	0.3	2.9	1.5	**1.1**	**1.2**	18	26	100.0	0.0
	f. Unspecified CNS	3	5	7	4	1	**19**	**20**	1.7	11.0	1.2	9.7	5.0	2.1	2.4	1.3	0.3	**2.2**	**1.8**	32	34	80.0	20.0
IV	**NEUROBLASTOMA**	6	45	19	9	4	**79**	**83**	6.9	100.0	4.9	100.0	10.1	18.9	6.5	2.9	1.2	**9.6**	**7.7**	133	139	96.4	0.0
	a. (Ganglio)neuroblastoma	6	45	19	9	4	**79**	**83**	6.9	100.0	4.9	100.0	10.1	18.9	6.5	2.9	1.2	**9.6**	**7.7**	133	139	96.4	0.0
	b. Peripheral nervous	0	0	0	0	0	**0**	**0**	-	-	-	-	-	-	-	-	-	**-**	**-**	-	-	-	-
V	**RETINOBLASTOMA**	5	60	6	1	0	**72**	**72**	6.3	100.0	4.3	100.0	8.4	25.2	2.1	0.3	-	**9.2**	**7.1**	121	121	97.2	0.0
VI	**RENAL TUMOURS**	4	60	33	5	3	**102**	**105**	8.9	100.0	6.2	100.0	6.7	25.2	11.3	1.6	0.9	**12.5**	**9.9**	172	177	100.0	0.0
	a. Nephroblastoma	3	55	30	5	2	**93**	**95**	8.1	91.2	5.6	90.5	5.0	23.1	10.3	1.6	0.6	**11.3**	**8.9**	157	160	100.0	0.0
	b. Renal carcinoma	1	4	2	0	1	**7**	**8**	0.6	6.9	0.5	7.6	1.7	1.7	0.7	-	0.3	**0.9**	**0.7**	12	13	100.0	0.0
	c. Unspecified	0	1	1	0	0	**2**	**2**	0.2	2.0	0.1	1.9	-	0.4	0.3	-	-	**0.2**	**0.2**	3	3	100.0	0.0
VII	**HEPATIC TUMOURS**	2	6	0	3	0	**11**	**11**	1.0	100.0	0.7	100.0	3.4	2.5	-	1.0	-	**1.3**	**1.0**	18	18	90.9	9.1
	a. Hepatoblastoma	2	6	0	0	0	**8**	**8**	0.7	72.7	0.5	72.7	3.4	2.5	-	-	-	**1.0**	**0.8**	13	13	87.5	12.5
	b. Hepatic carcinoma	0	0	0	3	0	**3**	**3**	0.3	27.3	0.2	27.3	-	-	-	1.0	-	**0.3**	**0.2**	5	5	100.0	0.0
	c. Unspecified	0	0	0	0	0	**0**	**0**	-	-	-	-	-	-	-	-	-	**-**	**-**	-	-	-	-
VIII	**BONE TUMOURS**	2	7	24	52	78	**85**	**163**	7.4	100.0	9.7	100.0	3.4	2.9	8.2	16.9	24.0	**8.7**	**12.2**	141	261	100.0	0.0
	a. Osteosarcoma	0	3	6	23	52	**32**	**84**	2.8	37.6	5.0	51.5	-	1.3	2.1	7.5	16.0	**3.2**	**6.1**	53	133	100.0	0.0
	b. Chondrosarcoma	0	0	0	0	1	**0**	**1**	-	-	0.1	0.6	-	-	-	-	0.3	**-**	**0.1**	-	2	100.0	0.0
	c. Ewing & related	2	3	17	23	20	**45**	**65**	3.9	52.9	3.9	39.9	3.4	1.3	5.8	7.5	6.2	**4.7**	**5.0**	75	106	100.0	0.0
	d. Other specified	0	1	1	0	2	**2**	**4**	0.2	2.4	0.2	2.5	-	0.4	0.3	-	0.6	**0.2**	**0.3**	3	6	100.0	0.0
	e. Unspecified	0	0	0	6	3	**6**	**9**	0.5	7.1	0.5	5.5	-	-	-	1.9	0.9	**0.6**	**0.6**	10	14	100.0	0.0
IX	**SOFT TISSUE SARCOMA**	1	35	20	30	47	**86**	**133**	7.5	100.0	7.9	100.0	1.7	14.7	6.9	9.7	14.5	**9.7**	**10.8**	144	216	100.0	0.0
	a. Rhabdomyosarcoma	1	25	16	15	6	**57**	**63**	5.0	66.3	3.7	47.4	1.7	10.5	5.5	4.9	1.8	**6.6**	**5.5**	96	105	100.0	0.0
	b. Fibrosarcoma	0	2	0	2	6	**4**	**10**	0.3	4.7	0.6	7.5	-	0.8	-	0.6	1.8	**0.4**	**0.8**	7	16	100.0	0.0
	c. Kaposi sarcoma	0	0	0	0	1	**0**	**1**	-	-	0.1	0.8	-	-	-	-	0.3	**-**	**0.1**	-	2	100.0	0.0
	d. Other specified	0	3	2	9	24	**14**	**38**	1.2	16.3	2.3	28.6	-	1.3	0.7	2.9	7.4	**1.5**	**2.8**	23	60	100.0	0.0
	e. Unspecified	0	5	2	4	10	**11**	**21**	1.0	12.8	1.2	15.8	-	2.1	0.7	1.3	3.1	**1.2**	**1.7**	18	34	100.0	0.0
X	**GERM CELL TUMOURS**	2	12	0	5	15	**19**	**34**	1.7	100.0	2.0	100.0	3.4	5.0	-	1.6	4.6	**2.3**	**2.8**	32	55	100.0	0.0
	a. CNS germ cell ‡	0	1	0	2	1	**3**	**4**	0.3	15.8	0.2	11.8	-	0.4	-	0.6	0.3	**0.3**	**0.3**	5	6	100.0	0.0
	b. Other extragonadal	1	5	0	1	3	**7**	**10**	0.6	36.8	0.6	29.4	1.7	2.1	-	0.3	0.9	**0.9**	**0.9**	12	16	100.0	0.0
	c. Gonadal germ cell	0	6	0	2	3	**8**	**11**	0.7	42.1	0.7	32.4	-	2.5	-	0.6	0.9	**1.0**	**1.0**	13	18	100.0	0.0
	d. Gonadal carcinoma	0	0	0	0	4	**0**	**4**	-	-	0.2	11.8	-	-	-	-	1.2	**-**	**0.3**	-	6	100.0	0.0
	e. Unspecified gonadal	1	0	0	0	4	**1**	**5**	0.1	5.3	0.3	14.7	1.7	-	-	-	1.2	**0.1**	**0.4**	2	8	100.0	0.0
XI	**CARCINOMA & MELANOMA**	12	6	16	63	111	**97**	**208**	8.5	100.0	12.3	100.0	20.2	2.5	5.5	20.5	34.2	**10.1**	**15.5**	160	331	100.0	0.0
	a. Adrenocortical	0	0	0	1	0	**1**	**1**	0.1	1.0	0.1	0.5	-	-	-	0.3	-	**0.1**	**0.1**	2	2	100.0	0.0
	b. Thyroid	0	1	3	4	23	**8**	**31**	0.7	8.2	1.8	14.9	-	0.4	1.0	1.3	7.1	**0.8**	**2.2**	13	49	100.0	0.0
	c. Nasopharyngeal	1	0	1	27	36	**29**	**65**	2.5	29.9	3.9	31.3	1.7	-	0.3	8.8	11.1	**2.8**	**4.7**	47	103	100.0	0.0
	d. Melanoma	0	0	0	0	5	**0**	**5**	-	-	0.3	2.4	-	-	-	-	1.5	**-**	**0.3**	-	8	100.0	0.0
	e. Skin carcinoma	1	4	10	23	19	**38**	**57**	3.3	39.2	3.4	27.4	1.7	1.7	3.4	7.5	5.9	**3.9**	**4.4**	63	92	100.0	0.0
	f. Other & unspecified	10	1	2	8	28	**21**	**49**	1.8	21.6	2.9	23.6	16.8	0.4	0.7	2.6	8.6	**2.4**	**3.8**	35	78	100.0	0.0
XII	**OTHER & UNSPECIFIED**	5	13	9	22	17	**49**	**66**	4.3	100.0	3.9	100.0	8.4	5.5	3.1	7.1	5.2	**5.4**	**5.4**	81	108	97.0	3.0
	a. Other specified	0	0	0	1	0	**1**	**1**	0.1	2.0	0.1	1.5	-	-	-	0.3	-	**0.1**	**0.1**	2	2	100.0	0.0
	b. Other unspecified	5	13	9	21	17	**48**	**65**	4.2	98.0	3.9	98.5	8.4	5.5	3.1	6.8	5.2	**5.3**	**5.3**	80	106	96.9	3.1
	TOTAL	54	384	337	371	542	**1146**	**1688**	100.0	100.0	100.0	100.0	90.7	161.3	115.8	120.5	167.0	**129.3**	**137.8**	1917	2752	98.2	1.2

† includes 31 non-malignant ‡ includes 1 non-malignant

Please consult the quality indicators for this registry

South Africa

South African Children's Tumour Registry, 1998–2012

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South Africa is located at the southern tip of Africa and has a surface area of 1 220 813 km^2. In 1994, 10 ethnic homelands, each with its own health service, were incorporated into four provinces to create nine provinces under a national health service: Western Cape, Northern Cape, Eastern Cape, Free State, Gauteng, Mpumalanga, Limpopo, KwaZulu-Natal, and North West. The population of about 51.6 million in 2010 included the following ethnic groups: Black African (79%), Coloured (9%), White (9%), and Asian or Indian (2.5%). About 30% of people were younger than 15 years (Table A.6). Although South Africa is classified as an upper-middle-income country, the average income of Black and Coloured households was significantly lower than that of White households. The economy is based largely on mining, industry, and agriculture.

Treatment at provincial tertiary academic paediatric oncology units was free for children younger than 5 years and was dependent on parental income for older children. For many low-income patients, access to medical care was at a primary health-care clinic. Lack of knowledge of guardians and primary health-care workers about childhood cancer as well as financial constraints as a barrier to attending clinics may have contributed to missed diagnoses. Patients suspected to have cancer were referred to a regional hospital and from there to the nearest paediatric oncology unit.

The South African Children's Cancer Study Group started a cancer registry in 1987 (Table A.10). Data are collected on all residents younger than 15 years, mainly from paediatric oncology units in tertiary academic hospitals and from some private clinics. Resident children were defined as those who had lived in South Africa for at least 1 year or whose parents had lived in South Africa for at least 6 months. Most cases were recorded at paediatric oncology units located throughout South Africa, at Tygerberg Children's Hospital and Red Cross War Memorial Children's Hospital in Cape Town; Universitas Hospital and Pelonomi Hospital in Bloemfontein; Dr George Mukhari Hospital and Ga-Rankuwa Hospital in Limpopo; Kalafong Hospital and Steve Biko Academic Hospital (formerly known as H.F. Verwoerd Hospital) in Pretoria; Chris Hani Baragwanath Hospital and Charlotte Maxeke Johannesburg Academic Hospital in Johannesburg; King Edward VIII Hospital, Inkosi Albert Luthuli Central Hospital, and Parklands Hospital in Durban; and Frere Hospital in East London.

Death certificates were not used for case ascertainment, and cancer data were not correlated with the National Health Laboratory Service records or the National Cancer Registry records. Children treated in private practice and at smaller local or secondary regional hospitals may not have been registered. The AIDS pandemic caused early deaths in large numbers of children younger than 5 years, especially before 2004, when no antiretroviral therapy was provided. These factors account in part for the low incidence rates in some ethnic groups and provinces.

All malignant tumours, including skin carcinomas, were recorded, and non-malignant CNS tumours were recorded. Laterality was recorded for retinoblastoma, nephroblastoma, and gonadal tumours. Histology was coded according to ICD-O-3 (Table A.10). Data collected in the paediatric oncology units were submitted to the central registry and managed with CanReg4, provided by IARC.

PUBLICATIONS

Stefan DC, Stones DK, Wainwright RD, Kruger M, Davidson A, Poole J, et al. (2015). Childhood cancer incidence in South Africa, 1987–2007. S Afr Med J. 105(11):939–47. https://doi.org/10.7196/SAMJ.2015.v105i11.9780 PMID:26632323

POPULATION AT RISK

Population figures are based on the national population censuses in 1996, 2001, and 2011 (Table A.7) and were extracted from Statistics South Africa (http://www.statssa.gov.za). The data were provided by sex and single year of age for 1991 and 1996 and by sex, 5-year age group, and ethnic group (Black, White, Coloured, Asian) for 1996, 2001, 2003–2007, and 2011. The data for the missing year–age–sex–ethnicity combinations were estimated at IARC using the methods described in Chapter 2, assuming a linear population growth in the sex–age categories and a stable proportion of ethnic groups in the sex–age categories.

EDITORS' COMMENTS

In this paediatric cancer registry, registration focused on the age range 0–14 years during the reporting period. Therefore, data for ages 15–19 years and 0–19 years are not shown in the tables. The incidence rates were low, notably in the Black population (Table A.9). This may be accounted for in part by the national coverage of this registry, which includes rural areas with low rates, unlike in most other African datasets. Other reasons, including underdiagnosis, underregistration, and possibly the accuracy of the population estimates, may also play a role (see Stefan et al., 2015). Cancer cases were not ascertained from mortality data, which were believed to have insufficient completeness and accuracy (Table A.9). Date of birth was incomplete in a small proportion of the cases, most often in those of Asian ethnicity (Table A.8). Non-malignant CNS tumours were recorded, but no cases of pilocytic astrocytoma were in the dataset. Laterality was almost complete for retinoblastomas and nephroblastoma, and the dataset is included in the relevant comparative tables. The high proportions of bilateral cases for retinoblastoma (26%; 167 of 643), nephroblastoma (19%; 183 of 973), ovarian tumours (15%; 12 of 82), and testicular tumours (19%; 6 of 31) suggest late diagnosis of these tumours.

SOUTH AFRICA, paediatric (1998-2012)

	Age group (years)	Males	Females
Person-years	0	6 814 930	6 837 838
	1-4	30 782 104	30 460 123
	5-9	36 272 256	36 086 158
	10-14	36 379 204	35 977 762
	0-14	110 248 494	109 361 881
Average annual population	0-14	7 349 900	7 290 792

Please consult the quality indicators for this registry

SOUTH AFRICA, paediatric, Asian (1998-2012)

	Age group (years)	Males	Females
Person-years	0	114 107	111 944
	1-4	515 200	498 492
	5-9	654 389	642 108
	10-14	717 035	686 870
	0-14	2 000 731	1 939 414
Average annual population	0-14	133 382	129 294

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SOUTH AFRICA, paediatric, Black (1998-2012)

	Age group (years)	Males	Females
Person-years	0	5 748 180	5 786 877
	1-4	25 965 355	25 779 908
	5-9	30 383 877	30 367 552
	10-14	30 128 241	29 939 536
	0-14	92 225 653	91 873 873
Average annual population	0-14	6 148 377	6 124 925

Please consult the quality indicators for this registry

SOUTH AFRICA, paediatric, Coloured (1998-2012)

	Age group (years)	Males	Females
Person-years	0	584 139	581 683
	1-4	2 637 805	2 590 595
	5-9	3 132 761	3 081 036
	10-14	3 197 190	3 139 938
	0-14	9 551 895	9 393 252
Average annual population	0-14	636 793	626 217

Please consult the quality indicators for this registry

SOUTH AFRICA, paediatric, White (1998-2012)

	Age group (years)	Males	Females
Person-years	0	347 264	336 675
	1-4	1 567 626	1 498 960
	5-9	2 018 547	1 913 645
	10-14	2 264 298	2 141 132
	0-14	6 197 735	5 890 412
Average annual population	0-14	413 182	392 694

Please consult the quality indicators for this registry

SOUTH AFRICA, paediatric (1998-2012)

		Number of cases					Percentage		Incidence rates per million person-years						MV	DCO
		Age group (years)					0-14		Age-specific				ASR	Cumulative	%	%
		0	1-4	5-9	10-14	0-14	All	Group	0	1-4	5-9	10-14	0-14	0-14	0-14	0-14
I	LEUKAEMIA	150	903	791	604	**2448**	25.3	100.0	11.0	14.7	10.9	8.3	**11.4**	167	100.0	0.0
	a. Lymphoid	67	672	541	358	**1638**	16.9	66.9	4.9	11.0	7.5	4.9	**7.7**	111	100.0	0.0
	b. Acute myeloid	66	202	208	208	**684**	7.1	27.9	4.8	3.3	2.9	2.9	**3.1**	47	100.0	0.0
	c. CMD	1	8	27	32	**68**	0.7	2.8	0.1	0.1	0.4	0.4	**0.3**	5	100.0	0.0
	d. MDS & other	10	9	1	2	**22**	0.2	0.9	0.7	0.1	0.0	0.0	**0.1**	1	100.0	0.0
	e. Unspecified	6	12	14	4	**36**	0.4	1.5	0.4	0.2	0.2	0.1	**0.2**	2	100.0	0.0
II	LYMPHOMA & RELATED	9	346	560	442	**1357**	14.0	100.0	0.7	5.6	7.7	6.1	**6.1**	93	99.9	0.0
	a. Hodgkin	0	59	209	202	**470**	4.8	34.6	-	1.0	2.9	2.8	**2.0**	32	99.8	0.0
	b. Non-Hodgkin except BL	7	119	214	179	**519**	5.4	38.2	0.5	1.9	3.0	2.5	**2.3**	36	99.8	0.0
	c. Burkitt (BL)	1	163	131	59	**354**	3.7	26.1	0.1	2.7	1.8	0.8	**1.7**	24	100.0	0.0
	d. Lymphoreticular	1	2	2	0	**5**	0.1	0.4	0.1	0.0	0.0	-	**0.0**	0	100.0	0.0
	e. Unspecified	0	3	4	2	**9**	0.1	0.7	-	0.0	0.1	0.0	**0.0**	1	100.0	0.0
III	CNS NEOPLASMS †	75	439	515	271	**1300**	13.4	100.0	5.5	7.2	7.1	3.7	**6.0**	89	69.5	0.0
	a. Ependymoma	13	55	47	16	**131**	1.4	10.1	1.0	0.9	0.6	0.2	**0.6**	9	100.0	0.0
	b. Astrocytoma	15	104	137	79	**335**	3.5	25.8	1.1	1.7	1.9	1.1	**1.5**	23	98.2	0.0
	c. CNS embryonal	21	126	97	55	**299**	3.1	23.0	1.5	2.1	1.3	0.8	**1.4**	20	100.0	0.0
	d. Other gliomas	4	86	122	48	**260**	2.7	20.0	0.3	1.4	1.7	0.7	**1.2**	18	25.8	0.0
	e. Other specified	2	15	33	30	**80**	0.8	6.2	0.1	0.2	0.5	0.4	**0.4**	5	97.5	0.0
	f. Unspecified CNS	20	53	79	43	**195**	2.0	15.0	1.5	0.9	1.1	0.6	**0.9**	13	0.0	0.0
IV	NEUROBLASTOMA	121	303	82	27	**533**	5.5	100.0	8.9	4.9	1.1	0.4	**2.7**	36	92.1	0.0
	a. (Ganglio)neuroblastoma	121	303	79	21	**524**	5.4	98.3	8.9	4.9	1.1	0.3	**2.6**	35	92.0	0.0
	b. Peripheral nervous	0	0	3	6	**9**	0.1	1.7	-	-	0.0	0.1	**0.0**	1	100.0	0.0
V	RETINOBLASTOMA	110	468	56	9	**643**	6.6	100.0	8.1	7.6	0.8	0.1	**3.3**	43	68.6	0.0
VI	RENAL TUMOURS	127	803	261	56	**1247**	12.9	100.0	9.3	13.1	3.6	0.8	**6.2**	84	93.7	0.0
	a. Nephroblastoma	127	802	256	49	**1234**	12.7	99.0	9.3	13.1	3.5	0.7	**6.1**	83	93.7	0.0
	b. Renal carcinoma	0	1	5	7	**13**	0.1	1.0	-	0.0	0.1	0.1	**0.1**	1	100.0	0.0
	c. Unspecified	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
VII	HEPATIC TUMOURS	39	84	33	38	**194**	2.0	100.0	2.9	1.4	0.5	0.5	**0.9**	13	92.8	0.0
	a. Hepatoblastoma	35	77	15	3	**130**	1.3	67.0	2.6	1.3	0.2	0.0	**0.7**	9	99.2	0.0
	b. Hepatic carcinoma	1	5	16	34	**56**	0.6	28.9	0.1	0.1	0.2	0.5	**0.2**	4	91.1	0.0
	c. Unspecified	3	2	2	1	**8**	0.1	4.1	0.2	0.0	0.0	0.0	**0.0**	1	0.0	0.0
VIII	BONE TUMOURS	3	26	102	259	**390**	4.0	100.0	0.2	0.4	1.4	3.6	**1.6**	27	99.5	0.0
	a. Osteosarcoma	0	7	72	210	**289**	3.0	74.1	-	0.1	1.0	2.9	**1.2**	20	100.0	0.0
	b. Chondrosarcoma	1	0	0	5	**6**	0.1	1.5	0.1	-	-	0.1	**0.0**	0	100.0	0.0
	c. Ewing & related	2	17	27	39	**85**	0.9	21.8	0.1	0.3	0.4	0.5	**0.4**	6	100.0	0.0
	d. Other specified	0	2	2	1	**5**	0.1	1.3	-	0.0	0.0	0.0	**0.0**	0	100.0	0.0
	e. Unspecified	0	0	1	4	**5**	0.1	1.3	-	-	0.0	0.1	**0.0**	0	60.0	0.0
IX	SOFT TISSUE SARCOMA	78	349	316	234	**977**	10.1	100.0	5.7	5.7	4.4	3.2	**4.6**	67	95.0	0.0
	a. Rhabdomyosarcoma	36	223	164	106	**529**	5.5	54.1	2.6	3.6	2.3	1.5	**2.5**	36	100.0	0.0
	b. Fibrosarcoma	20	19	4	13	**56**	0.6	5.7	1.5	0.3	0.1	0.2	**0.3**	4	100.0	0.0
	c. Kaposi sarcoma	3	71	109	57	**240**	2.5	24.6	0.2	1.2	1.5	0.8	**1.1**	16	80.0	0.0
	d. Other specified	14	28	30	45	**117**	1.2	12.0	1.0	0.5	0.4	0.6	**0.5**	8	100.0	0.0
	e. Unspecified	5	8	9	13	**35**	0.4	3.6	0.4	0.1	0.1	0.2	**0.2**	2	97.1	0.0
X	GERM CELL TUMOURS	85	102	67	87	**341**	3.5	100.0	6.2	1.7	0.9	1.2	**1.6**	23	99.1	0.0
	a. CNS germ cell	0	3	4	9	**16**	0.2	4.7	-	0.0	0.1	0.1	**0.1**	1	93.8	0.0
	b. Other extragonadal	76	73	27	32	**208**	2.1	61.0	5.6	1.2	0.4	0.4	**1.0**	14	100.0	0.0
	c. Gonadal germ cell	8	20	34	39	**101**	1.0	29.6	0.6	0.3	0.5	0.5	**0.5**	7	100.0	0.0
	d. Gonadal carcinoma	0	1	0	1	**2**	0.0	0.6	-	0.0	-	0.0	**0.0**	0	100.0	0.0
	e. Unspecified gonadal	1	5	2	6	**14**	0.1	4.1	0.1	0.1	0.0	0.1	**0.1**	1	85.7	0.0
XI	CARCINOMA & MELANOMA	3	36	53	124	**216**	2.2	100.0	0.2	0.6	0.7	1.7	**0.9**	15	99.5	0.0
	a. Adrenocortical	1	5	3	1	**10**	0.1	4.6	0.1	0.1	0.0	0.0	**0.0**	1	100.0	0.0
	b. Thyroid	0	1	6	7	**14**	0.1	6.5	-	0.0	0.1	0.1	**0.1**	1	100.0	0.0
	c. Nasopharyngeal	0	2	5	39	**46**	0.5	21.3	-	0.0	0.1	0.5	**0.2**	3	100.0	0.0
	d. Melanoma	0	13	7	14	**34**	0.4	15.7	-	0.2	0.1	0.2	**0.2**	2	100.0	0.0
	e. Skin carcinoma	1	9	8	12	**30**	0.3	13.9	0.1	0.1	0.1	0.2	**0.1**	2	96.7	0.0
	f. Other & unspecified	1	6	24	51	**82**	0.8	38.0	0.1	0.1	0.3	0.7	**0.3**	6	100.0	0.0
XII	OTHER & UNSPECIFIED	9	15	14	10	**48**	0.5	100.0	0.7	0.2	0.2	0.1	**0.2**	3	35.4	0.0
	a. Other specified	2	6	5	3	**16**	0.2	33.3	0.1	0.1	0.1	0.0	**0.1**	1	100.0	0.0
	b. Other unspecified	7	9	9	7	**32**	0.3	66.7	0.5	0.1	0.1	0.1	**0.2**	2	3.1	0.0
	TOTAL	809	3874	2850	2161	**9694**	100.0	100.0	59.3	63.3	39.4	29.9	**45.6**	659	91.5	0.0

† includes 86 non-malignant

Please consult the quality indicators for this registry

SOUTH AFRICA, paediatric, Asian (1998-2012)

		Number of cases					Percentage		Incidence rates per million person-years						MV	DCO
		Age group (years)					0-14		Age-specific				ASR	Cumulative	%	%
		0	1-4	5-9	10-14	0-14	All	Group	0	1-4	5-9	10-14	0-14	0-14	0-14	0-14
I	LEUKAEMIA	3	77	39	14	**133**	46.7	100.0	13.3	76.0	30.1	10.0	**37.6**	523	100.0	0.0
	a. Lymphoid	1	69	35	8	**113**	39.6	85.0	4.4	68.1	27.0	5.7	**32.2**	446	100.0	0.0
	b. Acute myeloid	2	8	4	6	**20**	7.0	15.0	8.8	7.9	3.1	4.3	**5.4**	77	100.0	0.0
	c. CMD	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
	d. MDS & other	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
	e. Unspecified	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
II	LYMPHOMA & RELATED	0	6	13	15	**34**	11.9	100.0	-	5.9	10.0	10.7	**8.2**	128	100.0	0.0
	a. Hodgkin	0	1	5	9	**15**	5.3	44.1	-	1.0	3.9	6.4	**3.4**	55	100.0	0.0
	b. Non-Hodgkin except BL	0	1	7	4	**12**	4.2	35.3	-	1.0	5.4	2.8	**2.9**	45	100.0	0.0
	c. Burkitt (BL)	0	4	1	2	**7**	2.5	20.6	-	3.9	0.8	1.4	**1.9**	27	100.0	0.0
	d. Lymphoreticular	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
	e. Unspecified	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
III	CNS NEOPLASMS †	1	10	12	11	**34**	11.9	100.0	4.4	9.9	9.3	7.8	**8.7**	130	82.4	0.0
	a. Ependymoma	0	0	1	0	**1**	0.4	2.9	-	-	0.8	-	**0.2**	4	100.0	0.0
	b. Astrocytoma	0	4	5	1	**10**	3.5	29.4	-	3.9	3.9	0.7	**2.7**	39	100.0	0.0
	c. CNS embryonal	1	2	3	4	**10**	3.5	29.4	4.4	2.0	2.3	2.8	**2.5**	38	100.0	0.0
	d. Other gliomas	0	1	3	1	**5**	1.8	14.7	-	1.0	2.3	0.7	**1.3**	19	40.0	0.0
	e. Other specified	0	1	0	4	**5**	1.8	14.7	-	1.0	-	2.8	**1.1**	18	100.0	0.0
	f. Unspecified CNS	0	2	0	1	**3**	1.1	8.8	-	2.0	-	0.7	**0.8**	12	0.0	0.0
IV	NEUROBLASTOMA	5	9	3	0	**17**	6.0	100.0	22.1	8.9	2.3	-	**5.1**	68	88.2	0.0
	a. (Ganglio)neuroblastoma	5	9	3	0	**17**	6.0	100.0	22.1	8.9	2.3	-	**5.1**	68	88.2	0.0
	b. Peripheral nervous	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
V	RETINOBLASTOMA	3	4	0	0	**7**	2.5	100.0	13.3	3.9	-	-	**2.2**	28	71.4	0.0
VI	RENAL TUMOURS	3	11	1	1	**16**	5.6	100.0	13.3	10.9	0.8	0.7	**4.8**	64	100.0	0.0
	a. Nephroblastoma	3	11	1	1	**16**	5.6	100.0	13.3	10.9	0.8	0.7	**4.8**	64	100.0	0.0
	b. Renal carcinoma	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
	c. Unspecified	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
VII	HEPATIC TUMOURS	1	4	1	1	**7**	2.5	100.0	4.4	3.9	0.8	0.7	**2.0**	28	100.0	0.0
	a. Hepatoblastoma	1	4	1	1	**7**	2.5	100.0	4.4	3.9	0.8	0.7	**2.0**	28	100.0	0.0
	b. Hepatic carcinoma	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
	c. Unspecified	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
VIII	BONE TUMOURS	0	0	3	10	**13**	4.6	100.0	-	-	2.3	7.1	**2.8**	47	100.0	0.0
	a. Osteosarcoma	0	0	2	6	**8**	2.8	61.5	-	-	1.5	4.3	**1.7**	29	100.0	0.0
	b. Chondrosarcoma	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
	c. Ewing & related	0	0	1	4	**5**	1.8	38.5	-	-	0.8	2.8	**1.1**	18	100.0	0.0
	d. Other specified	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
	e. Unspecified	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
IX	SOFT TISSUE SARCOMA	2	9	3	0	**14**	4.9	100.0	8.8	8.9	2.3	-	**4.2**	56	100.0	0.0
	a. Rhabdomyosarcoma	2	7	2	0	**11**	3.9	78.6	8.8	6.9	1.5	-	**3.3**	44	100.0	0.0
	b. Fibrosarcoma	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
	c. Kaposi sarcoma	0	1	0	0	**1**	0.4	7.1	-	1.0	-	-	**0.3**	4	100.0	0.0
	d. Other specified	0	1	1	0	**2**	0.7	14.3	-	1.0	0.8	-	**0.6**	8	100.0	0.0
	e. Unspecified	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
X	GERM CELL TUMOURS	0	5	0	3	**8**	2.8	100.0	-	4.9	-	2.1	**2.2**	31	100.0	0.0
	a. CNS germ cell	0	1	0	1	**2**	0.7	25.0	-	1.0	-	0.7	**0.5**	8	100.0	0.0
	b. Other extragonadal	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
	c. Gonadal germ cell	0	4	0	2	**6**	2.1	75.0	-	3.9	-	1.4	**1.7**	23	100.0	0.0
	d. Gonadal carcinoma	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
	e. Unspecified gonadal	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
XI	CARCINOMA & MELANOMA	0	0	2	0	**2**	0.7	100.0	-	-	1.5	-	**0.5**	8	100.0	0.0
	a. Adrenocortical	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
	b. Thyroid	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
	c. Nasopharyngeal	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
	d. Melanoma	0	0	1	0	**1**	0.4	50.0	-	-	0.8	-	**0.2**	4	100.0	0.0
	e. Skin carcinoma	0	0	1	0	**1**	0.4	50.0	-	-	0.8	-	**0.2**	4	100.0	0.0
	f. Other & unspecified	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
XII	OTHER & UNSPECIFIED	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
	a. Other specified	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
	b. Other unspecified	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
	TOTAL	18	135	77	55	**285**	100.0	100.0	79.6	133.2	59.4	39.2	**78.3**	1110	96.5	0.0

† includes 3 non-malignant

Please consult the quality indicators for this registry

SOUTH AFRICA, paediatric, Black (1998-2012)

		Number of cases					Percentage		Incidence rates per million person-years						MV	DCO
		Age group (years)					0-14		Age-specific				ASR	Cumulative	%	%
		0	1-4	5-9	10-14	0-14	All	Group	0	1-4	5-9	10-14	0-14	0-14	0-14	0-14
I	LEUKAEMIA	97	467	539	437	**1540**	22.1	100.0	8.4	9.0	8.9	7.3	**8.4**	125	100.0	0.0
	a. Lymphoid	43	303	333	244	**923**	13.2	59.9	3.7	5.9	5.5	4.1	**5.1**	75	100.0	0.0
	b. Acute myeloid	42	142	171	164	**519**	7.4	33.7	3.6	2.7	2.8	2.7	**2.8**	42	100.0	0.0
	c. CMD	0	6	23	25	**54**	0.8	3.5	-	0.1	0.4	0.4	**0.3**	4	100.0	0.0
	d. MDS & other	7	6	0	1	**14**	0.2	0.9	0.6	0.1	-	0.0	**0.1**	1	100.0	0.0
	e. Unspecified	5	10	12	3	**30**	0.4	1.9	0.4	0.2	0.2	0.0	**0.2**	2	100.0	0.0
II	LYMPHOMA & RELATED	7	278	413	319	**1017**	14.6	100.0	0.6	5.4	6.8	5.3	**5.5**	83	99.8	0.0
	a. Hodgkin	0	50	159	147	**356**	5.1	35.0	-	1.0	2.6	2.4	**1.9**	29	99.7	0.0
	b. Non-Hodgkin except BL	5	99	154	137	**395**	5.7	38.8	0.4	1.9	2.5	2.3	**2.1**	32	99.7	0.0
	c. Burkitt (BL)	1	124	94	33	**252**	3.6	24.8	0.1	2.4	1.5	0.5	**1.4**	20	100.0	0.0
	d. Lymphoreticular	1	2	2	0	**5**	0.1	0.5	0.1	0.0	0.0	-	**0.0**	0	100.0	0.0
	e. Unspecified	0	3	4	2	**9**	0.1	0.9	-	0.1	0.1	0.0	**0.0**	1	100.0	0.0
III	CNS NEOPLASMS †	51	273	340	186	**850**	12.2	100.0	4.4	5.3	5.6	3.1	**4.7**	69	64.2	0.0
	a. Ependymoma	9	29	26	11	**75**	1.1	8.8	0.8	0.6	0.4	0.2	**0.4**	6	100.0	0.0
	b. Astrocytoma	8	58	82	46	**194**	2.8	22.8	0.7	1.1	1.3	0.8	**1.1**	16	97.9	0.0
	c. CNS embryonal	14	79	57	36	**186**	2.7	21.9	1.2	1.5	0.9	0.6	**1.0**	15	100.0	0.0
	d. Other gliomas	2	59	91	35	**187**	2.7	22.0	0.2	1.1	1.5	0.6	**1.0**	15	20.9	0.0
	e. Other specified	2	9	25	22	**58**	0.8	6.8	0.2	0.2	0.4	0.4	**0.3**	5	96.6	0.0
	f. Unspecified CNS	16	39	59	36	**150**	2.1	17.6	1.4	0.8	1.0	0.6	**0.8**	12	0.0	0.0
IV	NEUROBLASTOMA	73	195	60	21	**349**	5.0	100.0	6.3	3.8	1.0	0.3	**2.1**	28	90.0	0.0
	a. (Ganglio)neuroblastoma	73	195	58	18	**344**	4.9	98.6	6.3	3.8	1.0	0.3	**2.0**	27	89.8	0.0
	b. Peripheral nervous	0	0	2	3	**5**	0.1	1.4	-	-	0.0	0.0	**0.0**	0	100.0	0.0
V	RETINOBLASTOMA	78	408	55	8	**549**	7.9	100.0	6.8	7.9	0.9	0.1	**3.3**	44	68.1	0.0
VI	RENAL TUMOURS	93	654	221	49	**1017**	14.6	100.0	8.1	12.6	3.6	0.8	**6.0**	81	92.8	0.0
	a. Nephroblastoma	93	653	218	42	**1006**	14.4	98.9	8.1	12.6	3.6	0.7	**5.9**	80	92.7	0.0
	b. Renal carcinoma	0	1	3	7	**11**	0.2	1.1	-	0.0	0.0	0.1	**0.1**	1	100.0	0.0
	c. Unspecified	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
VII	HEPATIC TUMOURS	24	59	25	35	**143**	2.0	100.0	2.1	1.1	0.4	0.6	**0.8**	12	90.2	0.0
	a. Hepatoblastoma	21	53	11	2	**87**	1.2	60.8	1.8	1.0	0.2	0.0	**0.5**	7	98.9	0.0
	b. Hepatic carcinoma	0	4	12	32	**48**	0.7	33.6	-	0.1	0.2	0.5	**0.2**	4	89.6	0.0
	c. Unspecified	3	2	2	1	**8**	0.1	5.6	0.3	0.0	0.0	0.0	**0.0**	1	0.0	0.0
VIII	BONE TUMOURS	3	17	67	182	**269**	3.9	100.0	0.3	0.3	1.1	3.0	**1.4**	22	99.3	0.0
	a. Osteosarcoma	0	4	50	159	**213**	3.0	79.2	-	0.1	0.8	2.6	**1.1**	18	100.0	0.0
	b. Chondrosarcoma	1	0	0	5	**6**	0.1	2.2	0.1	-	-	0.1	**0.0**	0	100.0	0.0
	c. Ewing & related	2	12	14	14	**42**	0.6	15.6	0.2	0.2	0.2	0.2	**0.2**	3	100.0	0.0
	d. Other specified	0	1	2	0	**3**	0.0	1.1	-	0.0	0.0	-	**0.0**	0	100.0	0.0
	e. Unspecified	0	0	1	4	**5**	0.1	1.9	-	-	0.0	0.1	**0.0**	0	60.0	0.0
IX	SOFT TISSUE SARCOMA	61	281	287	183	**812**	11.6	100.0	5.3	5.4	4.7	3.0	**4.5**	66	94.0	0.0
	a. Rhabdomyosarcoma	28	166	143	81	**418**	6.0	51.5	2.4	3.2	2.4	1.3	**2.3**	34	100.0	0.0
	b. Fibrosarcoma	16	14	4	9	**43**	0.6	5.3	1.4	0.3	0.1	0.1	**0.2**	3	100.0	0.0
	c. Kaposi sarcoma	3	68	107	54	**232**	3.3	28.6	0.3	1.3	1.8	0.9	**1.3**	19	79.3	0.0
	d. Other specified	11	25	27	29	**92**	1.3	11.3	1.0	0.5	0.4	0.5	**0.5**	7	100.0	0.0
	e. Unspecified	3	8	6	10	**27**	0.4	3.3	0.3	0.2	0.1	0.2	**0.1**	2	96.3	0.0
X	GERM CELL TUMOURS	62	67	50	66	**245**	3.5	100.0	5.4	1.3	0.8	1.1	**1.4**	20	99.2	0.0
	a. CNS germ cell	0	2	1	3	**6**	0.1	2.4	-	0.0	0.0	0.0	**0.0**	0	83.3	0.0
	b. Other extragonadal	61	54	23	29	**167**	2.4	68.2	5.3	1.0	0.4	0.5	**1.0**	13	100.0	0.0
	c. Gonadal germ cell	1	7	26	29	**63**	0.9	25.7	0.1	0.1	0.4	0.5	**0.3**	5	100.0	0.0
	d. Gonadal carcinoma	0	1	0	1	**2**	0.0	0.8	-	0.0	-	0.0	**0.0**	0	100.0	0.0
	e. Unspecified gonadal	0	3	0	4	**7**	0.1	2.9	-	0.1	-	0.1	**0.0**	1	85.7	0.0
XI	CARCINOMA & MELANOMA	3	23	36	91	**153**	2.2	100.0	0.3	0.4	0.6	1.5	**0.8**	13	99.3	0.0
	a. Adrenocortical	1	1	3	1	**6**	0.1	3.9	0.1	0.0	0.0	0.0	**0.0**	0	100.0	0.0
	b. Thyroid	0	1	3	4	**8**	0.1	5.2	-	0.0	0.0	0.1	**0.0**	1	100.0	0.0
	c. Nasopharyngeal	0	1	3	36	**40**	0.6	26.1	-	0.0	0.0	0.6	**0.2**	3	100.0	0.0
	d. Melanoma	0	7	1	5	**13**	0.2	8.5	-	0.1	0.0	0.1	**0.1**	1	100.0	0.0
	e. Skin carcinoma	1	9	4	6	**20**	0.3	13.1	0.1	0.2	0.1	0.1	**0.1**	2	95.0	0.0
	f. Other & unspecified	1	4	22	39	**66**	0.9	43.1	0.1	0.1	0.4	0.6	**0.3**	5	100.0	0.0
XII	OTHER & UNSPECIFIED	8	12	10	10	**40**	0.6	100.0	0.7	0.2	0.2	0.2	**0.2**	3	30.0	0.0
	a. Other specified	2	3	3	3	**11**	0.2	27.5	0.2	0.1	0.0	0.0	**0.1**	1	100.0	0.0
	b. Other unspecified	6	9	7	7	**29**	0.4	72.5	0.5	0.2	0.1	0.1	**0.2**	2	3.4	0.0
	TOTAL	560	2734	2103	1587	**6984**	100.0	100.0	48.5	52.8	34.6	26.4	**39.0**	565	90.2	0.0

† includes 63 non-malignant

Please consult the quality indicators for this registry

SOUTH AFRICA, paediatric, Coloured (1998-2012)

		Number of cases					Percentage		Incidence rates per million person-years						MV	DCO
		Age group (years)					0-14		Age-specific				ASR	Cumulative	%	%
		0	1-4	5-9	10-14	0-14	All	Group	0	1-4	5-9	10-14	0-14	0-14	0-14	0-14
I	LEUKAEMIA	25	166	114	84	**389**	29.9	100.0	21.4	31.7	18.3	13.3	**21.3**	307	100.0	0.0
	a. Lymphoid	9	136	89	53	**287**	22.0	73.8	7.7	26.0	14.3	8.4	**15.8**	227	100.0	0.0
	b. Acute myeloid	14	26	22	26	**88**	6.8	22.6	12.0	5.0	3.5	4.1	**4.8**	69	100.0	0.0
	c. CMD	1	1	2	4	**8**	0.6	2.1	0.9	0.2	0.3	0.6	**0.4**	6	100.0	0.0
	d. MDS & other	1	2	1	1	**5**	0.4	1.3	0.9	0.4	0.2	0.2	**0.3**	4	100.0	0.0
	e. Unspecified	0	1	0	0	**1**	0.1	0.3	-	0.2	-	-	**0.1**	1	100.0	0.0
II	LYMPHOMA & RELATED	1	43	78	50	**172**	13.2	100.0	0.9	8.2	12.6	7.9	**9.0**	137	100.0	0.0
	a. Hodgkin	0	6	26	23	**55**	4.2	32.0	-	1.1	4.2	3.6	**2.8**	44	100.0	0.0
	b. Non-Hodgkin except BL	1	8	34	13	**56**	4.3	32.6	0.9	1.5	5.5	2.1	**2.9**	45	100.0	0.0
	c. Burkitt (BL)	0	29	18	14	**61**	4.7	35.5	-	5.5	2.9	2.2	**3.3**	48	100.0	0.0
	d. Lymphoreticular	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
	e. Unspecified	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
III	CNS NEOPLASMS †	10	82	107	46	**245**	18.8	100.0	8.6	15.7	17.2	7.3	**13.2**	194	75.9	0.0
	a. Ependymoma	3	17	11	3	**34**	2.6	13.9	2.6	3.3	1.8	0.5	**1.9**	27	100.0	0.0
	b. Astrocytoma	2	19	29	22	**72**	5.5	29.4	1.7	3.6	4.7	3.5	**3.8**	57	98.6	0.0
	c. CNS embryonal	2	21	24	10	**57**	4.4	23.3	1.7	4.0	3.9	1.6	**3.1**	45	100.0	0.0
	d. Other gliomas	1	13	22	7	**43**	3.3	17.6	0.9	2.5	3.5	1.1	**2.3**	34	32.6	0.0
	e. Other specified	0	2	7	1	**10**	0.8	4.1	-	0.4	1.1	0.2	**0.5**	8	100.0	0.0
	f. Unspecified CNS	2	10	14	3	**29**	2.2	11.8	1.7	1.9	2.3	0.5	**1.6**	23	0.0	0.0
IV	NEUROBLASTOMA	21	48	8	5	**82**	6.3	100.0	18.0	9.2	1.3	0.8	**4.8**	64	95.1	0.0
	a. (Ganglio)neuroblastoma	21	48	7	3	**79**	6.1	96.3	18.0	9.2	1.1	0.5	**4.7**	62	94.9	0.0
	b. Peripheral nervous	0	0	1	2	**3**	0.2	3.7	-	-	0.2	0.3	**0.1**	2	100.0	0.0
V	RETINOBLASTOMA	17	36	1	0	**54**	4.1	100.0	14.6	6.9	0.2	-	**3.3**	42	75.9	0.0
VI	RENAL TUMOURS	23	77	22	5	**127**	9.8	100.0	19.7	14.7	3.5	0.8	**7.4**	100	97.6	0.0
	a. Nephroblastoma	23	77	20	5	**125**	9.6	98.4	19.7	14.7	3.2	0.8	**7.3**	98	97.6	0.0
	b. Renal carcinoma	0	0	2	0	**2**	0.2	1.6	-	-	0.3	-	**0.1**	2	100.0	0.0
	c. Unspecified	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
VII	HEPATIC TUMOURS	6	13	5	1	**25**	1.9	100.0	5.1	2.5	0.8	0.2	**1.5**	20	100.0	0.0
	a. Hepatoblastoma	6	12	1	0	**19**	1.5	76.0	5.1	2.3	0.2	-	**1.1**	15	100.0	0.0
	b. Hepatic carcinoma	0	1	4	1	**6**	0.5	24.0	-	0.2	0.6	0.2	**0.3**	5	100.0	0.0
	c. Unspecified	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
VIII	BONE TUMOURS	0	2	12	27	**41**	3.1	100.0	-	0.4	1.9	4.3	**2.0**	33	100.0	0.0
	a. Osteosarcoma	0	1	10	23	**34**	2.6	82.9	-	0.2	1.6	3.6	**1.6**	27	100.0	0.0
	b. Chondrosarcoma	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
	c. Ewing & related	0	0	2	3	**5**	0.4	12.2	-	-	0.3	0.5	**0.2**	4	100.0	0.0
	d. Other specified	0	1	0	1	**2**	0.2	4.9	-	0.2	-	0.2	**0.1**	2	100.0	0.0
	e. Unspecified	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
IX	SOFT TISSUE SARCOMA	10	26	18	34	**88**	6.8	100.0	8.6	5.0	2.9	5.4	**4.7**	69	100.0	0.0
	a. Rhabdomyosarcoma	3	20	11	16	**50**	3.8	56.8	2.6	3.8	1.8	2.5	**2.7**	39	100.0	0.0
	b. Fibrosarcoma	3	4	0	3	**10**	0.8	11.4	2.6	0.8	-	0.5	**0.6**	8	100.0	0.0
	c. Kaposi sarcoma	0	2	2	3	**7**	0.5	8.0	-	0.4	0.3	0.5	**0.4**	6	100.0	0.0
	d. Other specified	2	0	2	9	**13**	1.0	14.8	1.7	-	0.3	1.4	**0.6**	10	100.0	0.0
	e. Unspecified	2	0	3	3	**8**	0.6	9.1	1.7	-	0.5	0.5	**0.4**	6	100.0	0.0
X	GERM CELL TUMOURS	14	20	8	7	**49**	3.8	100.0	12.0	3.8	1.3	1.1	**2.8**	39	98.0	0.0
	a. CNS germ cell	0	0	0	1	**1**	0.1	2.0	-	-	-	0.2	**0.0**	1	100.0	0.0
	b. Other extragonadal	9	11	1	1	**22**	1.7	44.9	7.7	2.1	0.2	0.2	**1.3**	17	100.0	0.0
	c. Gonadal germ cell	4	7	5	3	**19**	1.5	38.8	3.4	1.3	0.8	0.5	**1.1**	15	100.0	0.0
	d. Gonadal carcinoma	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
	e. Unspecified gonadal	1	2	2	2	**7**	0.5	14.3	0.9	0.4	0.3	0.3	**0.4**	6	85.7	0.0
XI	CARCINOMA & MELANOMA	0	3	4	16	**23**	1.8	100.0	-	0.6	0.6	2.5	**1.1**	18	100.0	0.0
	a. Adrenocortical	0	1	0	0	**1**	0.1	4.3	-	0.2	-	-	**0.1**	1	100.0	0.0
	b. Thyroid	0	0	1	2	**3**	0.2	13.0	-	-	0.2	0.3	**0.1**	2	100.0	0.0
	c. Nasopharyngeal	0	1	1	3	**5**	0.4	21.7	-	0.2	0.2	0.5	**0.2**	4	100.0	0.0
	d. Melanoma	0	0	1	0	**1**	0.1	4.3	-	-	0.2	-	**0.1**	1	100.0	0.0
	e. Skin carcinoma	0	0	0	1	**1**	0.1	4.3	-	-	-	0.2	**0.0**	1	100.0	0.0
	f. Other & unspecified	0	1	1	10	**12**	0.9	52.2	-	0.2	0.2	1.6	**0.6**	9	100.0	0.0
XII	OTHER & UNSPECIFIED	1	2	4	0	**7**	0.5	100.0	0.9	0.4	0.6	-	**0.4**	6	57.1	0.0
	a. Other specified	0	2	2	0	**4**	0.3	57.1	-	0.4	0.3	-	**0.2**	3	100.0	0.0
	b. Other unspecified	1	0	2	0	**3**	0.2	42.9	0.9	-	0.3	-	**0.2**	2	0.0	0.0
	TOTAL	128	518	381	275	**1302**	100.0	100.0	109.8	99.1	61.3	43.4	**71.5**	1029	93.6	0.0

† includes 12 non-malignant

Please consult the quality indicators for this registry

SOUTH AFRICA, paediatric, White (1998-2012)

		Number of cases					Percentage		Incidence rates per million person-years						MV	DCO
		Age group (years)					0-14		Age-specific				ASR	Cumulative	%	%
		0	1-4	5-9	10-14	0-14	All	Group	0	1-4	5-9	10-14	0-14	0-14	0-14	0-14
I	LEUKAEMIA	25	193	99	69	**386**	34.4	100.0	36.6	62.9	25.2	15.7	**35.2**	495	100.0	0.0
	a. Lymphoid	14	164	84	53	**315**	28.1	81.6	20.5	53.5	21.4	12.0	**28.8**	404	100.0	0.0
	b. Acute myeloid	8	26	11	12	**57**	5.1	14.8	11.7	8.5	2.8	2.7	**5.2**	73	100.0	0.0
	c. CMD	0	1	2	3	**6**	0.5	1.6	-	0.3	0.5	0.7	**0.5**	7	100.0	0.0
	d. MDS & other	2	1	0	0	**3**	0.3	0.8	2.9	0.3	-	-	**0.3**	4	100.0	0.0
	e. Unspecified	1	1	2	1	**5**	0.4	1.3	1.5	0.3	0.5	0.2	**0.4**	6	100.0	0.0
II	LYMPHOMA & RELATED	1	19	56	58	**134**	11.9	100.0	1.5	6.2	14.2	13.2	**10.5**	164	100.0	0.0
	a. Hodgkin	0	2	19	23	**44**	3.9	32.8	-	0.7	4.8	5.2	**3.3**	53	100.0	0.0
	b. Non-Hodgkin except BL	1	11	19	25	**56**	5.0	41.8	1.5	3.6	4.8	5.7	**4.4**	69	100.0	0.0
	c. Burkitt (BL)	0	6	18	10	**34**	3.0	25.4	-	2.0	4.6	2.3	**2.8**	42	100.0	0.0
	d. Lymphoreticular	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
	e. Unspecified	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
III	CNS NEOPLASMS †	13	74	56	28	**171**	15.2	100.0	19.0	24.1	14.2	6.4	**15.4**	219	84.2	0.0
	a. Ependymoma	1	9	9	2	**21**	1.9	12.3	1.5	2.9	2.3	0.5	**1.9**	27	100.0	0.0
	b. Astrocytoma	5	23	21	10	**59**	5.3	34.5	7.3	7.5	5.3	2.3	**5.3**	75	98.3	0.0
	c. CNS embryonal	4	24	13	5	**46**	4.1	26.9	5.8	7.8	3.3	1.1	**4.3**	60	100.0	0.0
	d. Other gliomas	1	13	6	5	**25**	2.2	14.6	1.5	4.2	1.5	1.1	**2.3**	32	48.0	0.0
	e. Other specified	0	3	1	3	**7**	0.6	4.1	-	1.0	0.3	0.7	**0.6**	9	100.0	0.0
	f. Unspecified CNS	2	2	6	3	**13**	1.2	7.6	2.9	0.7	1.5	0.7	**1.1**	16	0.0	0.0
IV	NEUROBLASTOMA	22	51	11	1	**85**	7.6	100.0	32.2	16.6	2.8	0.2	**8.5**	112	98.8	0.0
	a. (Ganglio)neuroblastoma	22	51	11	0	**84**	7.5	98.8	32.2	16.6	2.8	-	**8.4**	111	98.8	0.0
	b. Peripheral nervous	0	0	0	1	**1**	0.1	1.2	-	-	-	0.2	**0.1**	1	100.0	0.0
V	RETINOBLASTOMA	12	20	0	1	**33**	2.9	100.0	17.5	6.5	-	0.2	**3.4**	44	63.6	0.0
VI	RENAL TUMOURS	8	61	17	1	**87**	7.8	100.0	11.7	19.9	4.3	0.2	**8.6**	115	97.7	0.0
	a. Nephroblastoma	8	61	17	1	**87**	7.8	100.0	11.7	19.9	4.3	0.2	**8.6**	115	97.7	0.0
	b. Renal carcinoma	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
	c. Unspecified	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
VII	HEPATIC TUMOURS	8	8	2	1	**19**	1.7	100.0	11.7	2.6	0.5	0.2	**1.9**	25	100.0	0.0
	a. Hepatoblastoma	7	8	2	0	**17**	1.5	89.5	10.2	2.6	0.5	-	**1.7**	23	100.0	0.0
	b. Hepatic carcinoma	1	0	0	1	**2**	0.2	10.5	1.5	-	-	0.2	**0.2**	2	100.0	0.0
	c. Unspecified	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
VIII	BONE TUMOURS	0	7	20	40	**67**	6.0	100.0	-	2.3	5.1	9.1	**5.0**	80	100.0	0.0
	a. Osteosarcoma	0	2	10	22	**34**	3.0	50.7	-	0.7	2.5	5.0	**2.5**	40	100.0	0.0
	b. Chondrosarcoma	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
	c. Ewing & related	0	5	10	18	**33**	2.9	49.3	-	1.6	2.5	4.1	**2.5**	40	100.0	0.0
	d. Other specified	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
	e. Unspecified	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
IX	SOFT TISSUE SARCOMA	5	33	8	17	**63**	5.6	100.0	7.3	10.8	2.0	3.9	**5.7**	80	100.0	0.0
	a. Rhabdomyosarcoma	3	30	8	9	**50**	4.5	79.4	4.4	9.8	2.0	2.0	**4.7**	64	100.0	0.0
	b. Fibrosarcoma	1	1	0	1	**3**	0.3	4.8	1.5	0.3	-	0.2	**0.3**	4	100.0	0.0
	c. Kaposi sarcoma	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
	d. Other specified	1	2	0	7	**10**	0.9	15.9	1.5	0.7	-	1.6	**0.8**	12	100.0	0.0
	e. Unspecified	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
X	GERM CELL TUMOURS	9	9	9	11	**38**	3.4	100.0	13.2	2.9	2.3	2.5	**3.3**	48	100.0	0.0
	a. CNS germ cell	0	0	3	4	**7**	0.6	18.4	-	-	0.8	0.9	**0.5**	8	100.0	0.0
	b. Other extragonadal	6	7	3	2	**18**	1.6	47.4	8.8	2.3	0.8	0.5	**1.7**	23	100.0	0.0
	c. Gonadal germ cell	3	2	3	5	**13**	1.2	34.2	4.4	0.7	0.8	1.1	**1.1**	16	100.0	0.0
	d. Gonadal carcinoma	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
	e. Unspecified gonadal	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
XI	CARCINOMA & MELANOMA	0	10	11	17	**38**	3.4	100.0	-	3.3	2.8	3.9	**3.1**	47	100.0	0.0
	a. Adrenocortical	0	3	0	0	**3**	0.3	7.9	-	1.0	-	-	**0.3**	4	100.0	0.0
	b. Thyroid	0	0	2	1	**3**	0.3	7.9	-	-	0.5	0.2	**0.2**	4	100.0	0.0
	c. Nasopharyngeal	0	0	1	0	**1**	0.1	2.6	-	-	0.3	-	**0.1**	1	100.0	0.0
	d. Melanoma	0	6	4	9	**19**	1.7	50.0	-	2.0	1.0	2.0	**1.5**	23	100.0	0.0
	e. Skin carcinoma	0	0	3	5	**8**	0.7	21.1	-	-	0.8	1.1	**0.6**	9	100.0	0.0
	f. Other & unspecified	0	1	1	2	**4**	0.4	10.5	-	0.3	0.3	0.5	**0.3**	5	100.0	0.0
XII	OTHER & UNSPECIFIED	0	1	0	0	**1**	0.1	100.0	-	0.3	-	-	**0.1**	1	100.0	0.0
	a. Other specified	0	1	0	0	**1**	0.1	100.0	-	0.3	-	-	**0.1**	1	100.0	0.0
	b. Other unspecified	0	0	0	0	**0**	-	-	-	-	-	-	**-**	-	-	-
	TOTAL	103	486	289	244	**1122**	100.0	100.0	150.6	158.5	73.5	55.4	**100.6**	1430	96.3	0.0

† includes 8 non-malignant

Please consult the quality indicators for this registry

Tunisia

Tunisia is located in North Africa and includes the eastern end of the Atlas Mountains, the northern reaches of the Sahara Desert, and fertile land spreading towards the northernmost tip of the African continent. It covers an area of 163 610 km^2 and is bordered by Algeria, Libya, and the Mediterranean Sea.

The population was estimated to be 10.6 million in 2010, and 32% are younger than 20 years (Table A.6). A successful family planning programme has decreased the population growth rate to just more than 1% per annum; this has contributed to Tunisia's economic and social stability. Ethnically, Tunisians are primarily of Berber origin, although currently they self-identify as Arabs. A purely Berber population lives mostly in a few mountainous locations and makes up a maximum of 1% of the national population.

In 2010, spending on health care accounted for 3.4% of the GDP. Health insurance is managed by the National Health Insurance Fund (Caisse Nationale d'Assurance Maladie). It is mandatory for the entire population, but the premiums differ according to socioprofessional category. State-owned health facilities and hospitals provide free services to all citizens and residents. Insured patients may also be treated in approved private services if they have severe or chronic conditions that require full health insurance coverage. The public sector remains by far the most important health-care provider in the country, accounting for 87% of hospital bed capacity (31 936 beds).

POPULATION AT RISK

The population data are provided by the National Institute of Statistics (http://www.ins.tn), which provides a mid-year age composition by sex and place of residence and organizes decennial censuses of the Tunisian population (Table A.7).

EDITORS' COMMENTS

The three cancer registries in Tunisia are in the North region, the Central region, and the South. Combined, they cover the entire country. Data for two areas are included in IICC-3: the entire North region and the Sousse province in the Central region. Combined data for these two cancer registries are presented in the IICC-3 book. They cover about 54% of the Tunisian population in the age group 0–19 years (Table A.6). Incidence tables for the individual registries are available online (Table A.12). All malignant tumours, including skin carcinomas, and non-malignant CNS tumours are reportable in both registries. Pilocytic astrocytoma is coded with uncertain behaviour. Death certificates are not used for case ascertainment in Tunisia, because they are available for only about 50% of deaths and many are classified as "natural death". In addition, all death certificates are anonymous. The slightly lower incidence rates and the higher proportion of unspecified cases in the larger registry that covers the entire North region, compared with the smaller registry of the Sousse province, may be related to easier access to health-care facilities in the mostly urban area of the Sousse province.

TUNISIA, 2 registries (1993-2007)

Registry	Period	Cases	%	Person-years	%
North	1994-2006	2362	87.1	22 910 620	88.5
Sousse	1993-2007	350	12.9	2 976 112	11.5
TUNISIA	**1993-2007**	**2712**	**100.0**	**25 886 732**	**100.0**

Please consult the quality indicators for this pool and its constituent registries

North Tunisia Cancer Registry, 1994–2006

Mansour Ben Abdallah, Wided Ben Ayoub-Hizem, Mohamed Hsairi, Noureddine Achour

The North Tunisia Cancer Registry (NTCR) covers the North region of the country (28 162 km^2), which includes the country's capital city of Tunis and 11 *wilayas*. The covered area includes urban regions such as the coastal cities of Tunis, Bizerte, and Nabeul, with widespread commercial, industrial, and tourism activities. Farming and fishing are the main occupations in the rural areas of the region, which are among the most fertile of the country. The population is mainly Arabic, and Islam is the predominant religion.

A network of health structures was planned for the whole territory using health centres and programmes of primary care. In North Tunisia, 15 university hospitals and 11 non-university hospitals (one hospital in each *wilaya*) provide support for patients with cancer. About 40% of patients with cancer who are diagnosed in North Tunisia are treated at the national cancer centre, Institut Salah-Azaïz. Radiotherapy is available at one hospital and four private radiotherapy centres. More than 60% of the population of North Tunisia is enrolled in the national public health insurance system.

Cases of childhood cancer may be diagnosed in many hospitals, but a large proportion are referred to the national cancer centre, Institut Salah-Azaïz. Leukaemia is treated at the Haematology Centre in Tunis and in paediatrics

departments. Neurological tumours are diagnosed at the Neurology Centre. Children with malignancies may also be treated in the private sector.

The NTCR was officially founded in 1997 (Table A.10) and collected data retrospectively as from 1994. The registry is subsidized by the Ministry of Public Health. It employs two physicians, three full-time clerks, and four or five half-time physicians. The NTCR uses an active method of data collection from 85 sources of public and private pathology and medical records. All types of invasive tumours are included (including basal and squamous cell skin carcinoma), and in situ tumours are included. Benign tumours of the brain and superficial tumours of the urinary bladder were not included during the reporting period. A large proportion of staff time is devoted to searching for duplicate registrations; this is performed at the time of data entry and regularly using computer software. The NTCR ensures data security and confidentiality. Informed consent is required for cancer registration.

POPULATION AT RISK

Data were provided in all the requested detail. See also Tunisia, above.

EDITORS' COMMENTS

The registry attributed the high MV% (Table A.9) to good diagnostic amenities, such as stereotactic biopsy, which is widely applied to cerebral tumours. Because of incomplete date of birth in 39% of cases and incomplete date of incidence in 13% of cases (Table A.8), age may be somewhat misclassified; age does not correspond to the reported dates in 27% of cases. The very low rates in infants may reflect the imprecise age to some extent. Laterality is provided for almost 80% of cases of interest. See also Tunisia, above.

Sousse, Cancer Registry of Central Region, 1993–2007

Sihem Hmissa, Nabiha Missaoui, Thouraya Zahmoul, Hajer Hamchi, Lilia Jaidaine, Moncef Mokni

The Cancer Registry of Central Region covers six provinces: Sousse, Monastir, Mahdia, Kairouan, Kasserine, and Sidi Bouzid. In the Sousse province, completeness was 85–90%; lack of completeness was observed in the other five provinces.

The Sousse province, with an area of 2669 km^2, is the capital of the Central region. It had a population of 0.6 million in 2010, which was 22% of the overall population of the Central region. The population is relatively young; 37% are younger than 20 years (Table A.6). The main economic sectors of the region are agriculture, industry (textiles), and tourism.

The Cancer Registry of Central Region, which is staffed by four full-time physicians, is located in the Pathology Department of Farhat Hached Sousse University Hospital. The registry staff actively look for information in specific sources to identify new cases. The sources include the pathology departments of public and private medical centres; radiotherapy, oncology, radiology, biology, and haematology departments; and all other clinical departments of public and private medical centres. The registered patients are followed up for vital status. The registry database is stored in CanReg4, provided by IARC.

The registry reports annually on cancer incidence to define the epidemiological profile of the Central region and compare it with those of the North and South regions of Tunisia and with those of other countries. The registry is used for planning and providing some health services. In central Tunisia, breast cancer and colorectal cancer occur frequently in young adults.

POPULATION AT RISK

Data were provided by sex and 5-year age group for each calendar year of the reporting period. The data for the missing year–age–sex categories were estimated at IARC using the methods described in Chapter 2. See also Tunisia, above.

EDITORS' COMMENTS

The high MV% and the absence of DCO cases in the dataset (Table A.9) may suggest some underreporting, possibly from private practice. Because of incomplete date of birth for 29% of cases, age may be misclassified, and age was inconsistent with the dates of birth and incidence in 12% of cases (Table A.8). Information on laterality is complete for the tumours of interest. See also the editors' comments for Tunisia, above.

TUNISIA, 2 registries (1993-2007)

	Age group (years)	Males	Females
Person-years	0	576 171	545 950
	1-4	2 414 549	2 285 598
	5-9	3 221 924	3 056 088
	10-14	3 493 417	3 324 302
	15-19	3 563 859	3 404 874
	0-14	9 706 061	9 211 938
	0-19	13 269 920	12 616 812

Please consult the quality indicators for this pool and its constituent registries

TUNISIA, 2 registries (1993-2007)

		Number of cases							Percentage				Incidence rates per million person-years									MV	DCO
		Age group (years)							0-14		0-19		Age-specific					ASR		Cumulative		%	%
		0	1-4	5-9	10-14	15-19	0-14	0-19	All	Group	All	Group	0	1-4	5-9	10-14	15-19	0-14	0-19	0-14	0-19	0-19	0-19
I	LEUKAEMIA	6	159	164	148	135	477	612	26.1	100.0	22.6	100.0	5.3	33.8	26.1	21.7	19.4	25.7	24.3	381	478	100.0	0.0
	a. Lymphoid	3	122	131	91	78	347	425	19.0	72.7	15.7	69.4	2.7	26.0	20.9	13.3	11.2	18.9	17.2	278	334	100.0	0.0
	b. Acute myeloid	3	30	31	51	47	115	162	6.3	24.1	6.0	26.5	2.7	6.4	4.9	7.5	6.7	6.0	6.1	90	124	100.0	0.0
	c. CMD	0	0	0	2	4	2	6	0.1	0.4	0.2	1.0	-	-	-	0.3	0.6	0.1	0.2	1	4	100.0	0.0
	d. MDS & other	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	e. Unspecified	0	7	2	4	6	13	19	0.7	2.7	0.7	3.1	-	1.5	0.3	0.6	0.9	0.7	0.8	11	15	100.0	0.0
II	LYMPHOMA & RELATED	2	59	136	136	225	333	558	18.2	100.0	20.6	100.0	1.8	12.6	21.7	19.9	32.3	16.8	20.3	260	422	100.0	0.0
	a. Hodgkin	0	7	66	80	140	153	293	8.4	45.9	10.8	52.5	-	1.5	10.5	11.7	20.1	7.3	10.1	117	218	100.0	0.0
	b. Non-Hodgkin except BL	0	12	33	36	68	81	149	4.4	24.3	5.5	26.7	-	2.6	5.3	5.3	9.8	4.0	5.3	63	112	100.0	0.0
	c. Burkitt (BL)	0	4	8	2	1	14	15	0.8	4.2	0.6	2.7	-	0.9	1.3	0.3	0.1	0.8	0.6	11	12	100.0	0.0
	d. Lymphoreticular	2	32	26	11	8	71	79	3.9	21.3	2.9	14.2	1.8	6.8	4.1	1.6	1.1	4.1	3.4	58	64	100.0	0.0
	e. Unspecified	0	4	3	7	8	14	22	0.8	4.2	0.8	3.9	-	0.9	0.5	1.0	1.1	0.7	0.8	11	17	100.0	0.0
III	CNS NEOPLASMS †	1	74	119	80	84	274	358	15.0	100.0	13.2	100.0	0.9	15.7	19.0	11.7	12.1	14.5	14.0	218	278	90.8	0.0
	a. Ependymoma	0	10	9	7	7	26	33	1.4	9.5	1.2	9.2	-	2.1	1.4	1.0	1.0	1.4	1.3	21	26	100.0	0.0
	b. Astrocytoma	1	28	47	38	47	114	161	6.2	41.6	5.9	45.0	0.9	6.0	7.5	5.6	6.7	6.0	6.1	90	124	100.0	0.0
	c. CNS embryonal	0	20	33	19	11	72	83	3.9	26.3	3.1	23.2	-	4.3	5.3	2.8	1.6	3.8	3.3	57	65	100.0	0.0
	d. Other gliomas	0	4	11	6	14	21	35	1.1	7.7	1.3	9.8	-	0.9	1.8	0.9	2.0	1.1	1.3	17	27	100.0	0.0
	e. Other specified	0	2	0	4	1	6	7	0.3	2.2	0.3	2.0	-	0.4	-	0.6	0.1	0.3	0.3	5	5	100.0	0.0
	f. Unspecified CNS	0	10	19	6	4	35	39	1.9	12.8	1.4	10.9	-	2.1	3.0	0.9	0.6	1.9	1.6	28	31	15.4	0.0
IV	NEUROBLASTOMA	17	82	21	6	7	126	133	6.9	100.0	4.9	100.0	15.1	17.4	3.3	0.9	1.0	7.9	6.4	106	111	98.5	0.0
	a. (Ganglio)neuroblastoma	17	81	20	3	4	121	125	6.6	96.0	4.6	94.0	15.1	17.2	3.2	0.4	0.6	7.7	6.1	102	105	98.4	0.0
	b. Peripheral nervous	0	1	1	3	3	5	8	0.3	4.0	0.3	6.0	-	0.2	0.2	0.4	0.4	0.2	0.3	4	6	100.0	0.0
V	RETINOBLASTOMA	7	41	7	0	0	55	55	3.0	100.0	2.0	100.0	6.2	8.7	1.1	-	-	3.6	2.8	47	47	100.0	0.0
VI	RENAL TUMOURS	7	84	32	6	4	129	133	7.0	100.0	4.9	100.0	6.2	17.9	5.1	0.9	0.6	7.9	6.3	108	111	95.5	0.0
	a. Nephroblastoma	7	81	30	4	1	122	123	6.7	94.6	4.5	92.5	6.2	17.2	4.8	0.6	0.1	7.6	5.9	102	103	97.6	0.0
	b. Renal carcinoma	0	0	0	2	3	2	5	0.1	1.6	0.2	3.8	-	-	-	0.3	0.4	0.1	0.2	1	4	100.0	0.0
	c. Unspecified	0	3	2	0	0	5	5	0.3	3.9	0.2	3.8	-	0.6	0.3	-	-	0.3	0.2	4	4	40.0	0.0
VII	HEPATIC TUMOURS	1	8	5	10	3	24	27	1.3	100.0	1.0	100.0	0.9	1.7	0.8	1.5	0.4	1.3	1.1	19	21	88.9	0.0
	a. Hepatoblastoma	0	8	4	1	0	13	13	0.7	54.2	0.5	48.1	-	1.7	0.6	0.1	-	0.8	0.6	11	11	100.0	0.0
	b. Hepatic carcinoma	0	0	0	8	3	8	11	0.4	33.3	0.4	40.7	-	-	-	1.2	0.4	0.3	0.4	6	8	100.0	0.0
	c. Unspecified	1	0	1	1	0	3	3	0.2	12.5	0.1	11.1	0.9	-	0.2	0.1	-	0.2	0.1	2	2	0.0	0.0
VIII	BONE TUMOURS	0	5	32	87	97	124	221	6.8	100.0	8.1	100.0	-	1.1	5.1	12.8	13.9	5.7	7.5	94	163	100.0	0.0
	a. Osteosarcoma	0	0	13	47	47	60	107	3.3	48.4	3.9	48.4	-	-	2.1	6.9	6.7	2.7	3.6	45	79	100.0	0.0
	b. Chondrosarcoma	0	0	0	2	5	2	7	0.1	1.6	0.3	3.2	-	-	-	0.3	0.7	0.1	0.2	1	5	100.0	0.0
	c. Ewing & related	0	5	19	35	42	59	101	3.2	47.6	3.7	45.7	-	1.1	3.0	5.1	6.0	2.8	3.5	45	75	100.0	0.0
	d. Other specified	0	0	0	3	2	3	5	0.2	2.4	0.2	2.3	-	-	-	0.4	0.3	0.1	0.2	2	4	100.0	0.0
	e. Unspecified	0	0	0	0	1	0	1	-	-	0.0	0.5	-	-	-	-	0.1	-	0.0	-	1	100.0	0.0
IX	SOFT TISSUE SARCOMA	4	33	18	36	73	91	164	5.0	100.0	6.0	100.0	3.6	7.0	2.9	5.3	10.5	4.9	6.2	73	125	100.0	0.0
	a. Rhabdomyosarcoma	4	28	11	13	20	56	76	3.1	61.5	2.8	46.3	3.6	6.0	1.8	1.9	2.9	3.2	3.2	46	60	100.0	0.0
	b. Fibrosarcoma	0	0	0	4	15	4	19	0.2	4.4	0.7	11.6	-	-	-	0.6	2.2	0.2	0.6	3	14	100.0	0.0
	c. Kaposi sarcoma	0	0	1	1	1	2	3	0.1	2.2	0.1	1.8	-	-	0.2	0.1	0.1	0.1	0.1	2	2	100.0	0.0
	d. Other specified	0	4	6	12	30	22	52	1.2	24.2	1.9	31.7	-	0.9	1.0	1.8	4.3	1.1	1.8	17	39	100.0	0.0
	e. Unspecified	0	1	0	6	7	7	14	0.4	7.7	0.5	8.5	-	0.2	-	0.9	1.0	0.3	0.5	5	10	100.0	0.0
X	GERM CELL TUMOURS	4	6	4	18	36	32	68	1.7	100.0	2.5	100.0	3.6	1.3	0.6	2.6	5.2	1.6	2.4	25	51	97.1	0.0
	a. CNS germ cell	0	0	1	1	1	2	3	0.1	6.3	0.1	4.4	-	-	0.2	0.1	0.1	0.1	0.1	2	2	100.0	0.0
	b. Other extragonadal	2	3	0	0	5	5	10	0.3	15.6	0.4	14.7	1.8	0.6	-	-	0.7	0.3	0.4	4	8	100.0	0.0
	c. Gonadal germ cell	2	2	2	15	24	21	45	1.1	65.6	1.7	66.2	1.8	0.4	0.3	2.2	3.4	1.0	1.6	16	33	100.0	0.0
	d. Gonadal carcinoma	0	0	0	0	3	0	3	-	-	0.1	4.4	-	-	-	-	0.4	-	0.1	-	2	100.0	0.0
	e. Unspecified gonadal	0	1	1	2	3	4	7	0.2	12.5	0.3	10.3	-	0.2	0.2	0.3	0.4	0.2	0.3	3	5	71.4	0.0
XI	CARCINOMA & MELANOMA	0	5	26	96	207	127	334	6.9	100.0	12.3	100.0	-	1.1	4.1	14.1	29.7	5.8	11.1	95	244	100.0	0.0
	a. Adrenocortical	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	b. Thyroid	0	1	3	15	47	19	66	1.0	15.0	2.4	19.8	-	0.2	0.5	2.2	6.7	0.9	2.2	14	48	100.0	0.0
	c. Nasopharyngeal	0	0	4	50	86	54	140	3.0	42.5	5.2	41.9	-	-	0.6	7.3	12.3	2.3	4.6	40	102	100.0	0.0
	d. Melanoma	0	0	0	6	3	6	9	0.3	4.7	0.3	2.7	-	-	-	0.9	0.4	0.3	0.3	4	7	100.0	0.0
	e. Skin carcinoma	0	4	13	16	23	33	56	1.8	26.0	2.1	16.8	-	0.9	2.1	2.3	3.3	1.6	2.0	26	42	100.0	0.0
	f. Other & unspecified	0	0	6	9	48	15	63	0.8	11.8	2.3	18.9	-	-	1.0	1.3	6.9	0.7	2.1	11	46	100.0	0.0
XII	OTHER & UNSPECIFIED	4	15	5	14	11	38	49	2.1	100.0	1.8	100.0	3.6	3.2	0.8	2.1	1.6	2.1	2.0	31	38	44.9	0.0
	a. Other specified	0	2	0	1	2	3	5	0.2	7.9	0.2	10.2	-	0.4	-	0.1	0.3	0.2	0.2	2	4	100.0	0.0
	b. Other unspecified	4	13	5	13	9	35	44	1.9	92.1	1.6	89.8	3.6	2.8	0.8	1.9	1.3	1.9	1.8	28	35	38.6	0.0
	TOTAL	53	571	569	637	882	1830	2712	100.0	100.0	100.0	100.0	47.2	121.5	90.6	93.4	126.6	97.8	104.3	1456	2089	97.3	0.0

† includes 34 non-malignant

Please consult the quality indicators for this pool and its constituent registries

Uganda

Kyadondo, Kampala Cancer Registry, 1996–2013

Henry R. Wabinga, Srah Nambooze, Phoebe Mary Amulen, Phiona Bukirwa

Kyadondo County is covered by the Kampala Cancer Registry (KCR), which was established in 1954 (Table A.10). The KCR is located in the Department of Pathology in the School of Biomedical Sciences at Makerere University College of Health Sciences. The county includes Kampala, the capital of Uganda. The population of Kyadondo County is quite young; people younger than 20 years make up 46% (Table A.6). About 80% of the population is urban and semi-urban and 20% is rural. The population is largely of African descent; it is composed mainly of the Ganda ethnic group, and other ethnic groups of Uganda are also well represented. The main activities include trade, administration, and plant and machine operation. The main staple foods are steamed green bananas (plantains), maize, bread, and beans. Alcohol consumption is high. The Uganda AIDS Indicator Survey in 2011 showed a prevalence of HIV infection of 6.7%; 7.7% of women and 5.6% of men were HIV-positive.

The KCR collects cancer data by both active and passive methods from several health units scattered throughout Kyadondo County. The registry employs two registrars and assistant data collectors in these health centres. The data collected by the KCR include demographic and basic cancer information. Since 1989 the registry is computerized and uses CanReg, provided by IARC, which has user-specific passwords that enable only the cancer registrars to access personal identifiers. This program enables data checking for duplicates and inconsistencies.

The KCR provides the longest continuous time series of cancer incidence in Africa. Therefore, these data are of special value in cancer surveillance and research, and they enable monitoring of the effects of the HIV/AIDS epidemic to serve as the baseline for analytical and intervention studies.

POPULATION AT RISK

Intercensal figures are provided by the Uganda Statistical Service and are based on the 2002 census (Table A.7). Data were provided by sex and 5-year age group for each calendar year of the reporting period. The decimal figures provided for some sex and age categories were rounded to the nearest integer, and the data for the missing year–age–sex categories were estimated at IARC using the methods described in Chapter 2.

EDITORS' COMMENTS

The KCR participated in IICC-1 and IICC-2 (Table A.1). Mulago Hospital is a national referral centre, and it is not clear whether all patients from other areas have been adequately excluded. This may account for the relatively high observed incidence rates (Table A.9). The MV% was the lowest among African cancer registries (67%), and it was low for most diagnostic groups. This may be explained by inadequate diagnostic facilities, the high proportion of clinically diagnosed cases, and the high proportion of unspecified cases (Table A.9). Because of incomplete date of birth for more than 90% of cases, age may be misclassified; the provided age was inconsistent with the dates of birth and incidence in 4% of all cases (Table A.8). The low rates in infants may reflect the imprecise age to some extent, but also late diagnosis (Table A.9). Also notable is a low rate of CNS tumours, based on registration of malignant tumours only. Skin carcinomas are reportable, but laterality is not recorded.

UGANDA, Kyadondo (1996-2013)

	Age group (years)	Males	Females
Person-years	0	520 521	532 420
	1-4	1 917 738	1 953 192
	5-9	2 072 669	2 210 926
	10-14	1 916 012	2 317 478
	15-19	1 890 664	2 604 300
	0-14	6 426 940	7 014 016
	0-19	8 317 604	9 618 316
Average annual population	0-14	357 052	389 668
	0-19	462 089	534 351

Please consult the quality indicators for this registry

UGANDA, Kyadondo (1996-2013)

		Number of cases							Percentage				Incidence rates per million person-years									MV	DCO
		Age group (years)							0-14		0-19		Age-specific					ASR		Cumulative		%	%
		0	1-4	5-9	10-14	15-19	0-14	0-19	All	Group	All	Group	0	1-4	5-9	10-14	15-19	0-14	0-19	0-14	0-19	0-19	0-19
I	LEUKAEMIA	2	29	57	53	40	141	181	7.5	100.0	7.3	100.0	1.9	7.5	13.3	12.5	8.9	10.4	10.0	161	205	59.7	6.1
	a. Lymphoid	0	14	32	26	11	72	83	3.8	51.1	3.3	45.9	-	3.6	7.5	6.1	2.4	5.3	4.7	82	95	69.9	2.4
	b. Acute myeloid	0	1	8	3	4	12	16	0.6	8.5	0.6	8.8	-	0.3	1.9	0.7	0.9	0.9	0.9	14	18	68.8	6.3
	c. CMD	0	3	3	1	8	7	15	0.4	5.0	0.6	8.3	-	0.8	0.7	0.2	1.8	0.5	0.8	8	17	53.3	6.7
	d. MDS & other	0	1	0	0	0	1	1	0.1	0.7	0.0	0.6	-	0.3	-	-	-	0.1	0.1	1	1	0.0	0.0
	e. Unspecified	2	10	14	23	17	49	66	2.6	34.8	2.6	36.5	1.9	2.6	3.3	5.4	3.8	3.6	3.6	56	75	47.0	10.6
II	LYMPHOMA & RELATED	12	139	342	195	105	688	793	36.7	100.0	31.8	100.0	11.4	35.9	79.8	46.1	23.4	51.0	44.8	783	900	72.0	1.8
	a. Hodgkin	0	16	25	27	23	68	91	3.6	9.9	3.6	11.5	-	4.1	5.8	6.4	5.1	5.0	5.0	77	103	86.8	0.0
	b. Non-Hodgkin except BL	4	23	65	49	34	141	175	7.5	20.5	7.0	22.1	3.8	5.9	15.2	11.6	7.6	10.4	9.7	161	199	92.0	0.6
	c. Burkitt (BL)	1	82	201	75	17	359	376	19.1	52.2	15.1	47.4	0.9	21.2	46.9	17.7	3.8	26.8	21.6	407	426	73.9	2.7
	d. Lymphoreticular	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	e. Unspecified	7	18	51	44	31	120	151	6.4	17.4	6.1	19.0	6.6	4.7	11.9	10.4	6.9	8.8	8.4	137	171	35.1	2.0
III	CNS NEOPLASMS	0	15	17	14	10	46	56	2.5	100.0	2.2	100.0	-	3.9	4.0	3.3	2.2	3.4	3.2	52	63	28.6	3.6
	a. Ependymoma	0	1	1	0	0	2	2	0.1	4.3	0.1	3.6	-	0.3	0.2	-	-	0.2	0.1	2	2	100.0	0.0
	b. Astrocytoma	0	0	3	3	2	6	8	0.3	13.0	0.3	14.3	-	-	0.7	0.7	0.4	0.4	0.4	7	9	100.0	0.0
	c. CNS embryonal	0	3	1	0	0	4	4	0.2	8.7	0.2	7.1	-	0.8	0.2	-	-	0.3	0.2	4	4	100.0	0.0
	d. Other gliomas	0	0	2	0	0	2	2	0.1	4.3	0.1	3.6	-	-	0.5	-	-	0.2	0.1	2	2	0.0	0.0
	e. Other specified	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	f. Unspecified CNS	0	11	10	11	8	32	40	1.7	69.6	1.6	71.4	-	2.8	2.3	2.6	1.8	2.4	2.2	36	45	5.0	5.0
IV	NEUROBLASTOMA	0	6	4	1	0	11	11	0.6	100.0	0.4	100.0	-	1.6	0.9	0.2	-	0.8	0.7	12	12	72.7	0.0
	a. (Ganglio)neuroblastoma	0	6	3	1	0	10	10	0.5	90.9	0.4	90.9	-	1.6	0.7	0.2	-	0.8	0.6	11	11	70.0	0.0
	b. Peripheral nervous	0	0	1	0	0	1	1	0.1	9.1	0.0	9.1	-	-	0.2	-	-	0.1	0.1	1	1	100.0	0.0
V	RETINOBLASTOMA	5	65	10	2	0	82	82	4.4	100.0	3.3	100.0	4.7	16.8	2.3	0.5	-	6.4	5.0	85	85	73.2	0.0
VI	RENAL TUMOURS	11	92	30	10	10	143	153	7.6	100.0	6.1	100.0	10.4	23.8	7.0	2.4	2.2	11.0	9.1	151	163	82.4	0.7
	a. Nephroblastoma	9	89	28	10	1	136	137	7.2	95.1	5.5	89.5	8.5	23.0	6.5	2.4	0.2	10.5	8.2	144	145	87.6	0.7
	b. Renal carcinoma	0	0	0	0	7	0	7	-	-	0.3	4.6	-	-	-	-	1.6	-	0.4	-	8	85.7	0.0
	c. Unspecified	2	3	2	0	2	7	9	0.4	4.9	0.4	5.9	1.9	0.8	0.5	-	0.4	0.5	0.5	7	10	0.0	0.0
VII	HEPATIC TUMOURS	0	5	3	9	20	17	37	0.9	100.0	1.5	100.0	-	1.3	0.7	2.1	4.4	1.2	2.0	19	41	54.1	2.7
	a. Hepatoblastoma	0	1	3	0	0	4	4	0.2	23.5	0.2	10.8	-	0.3	0.7	-	-	0.3	0.2	5	5	100.0	0.0
	b. Hepatic carcinoma	0	3	0	5	13	8	21	0.4	47.1	0.8	56.8	-	0.8	-	1.2	2.9	0.6	1.1	9	23	76.2	0.0
	c. Unspecified	0	1	0	4	7	5	12	0.3	29.4	0.5	32.4	-	0.3	-	0.9	1.6	0.4	0.6	6	14	0.0	8.3
VIII	BONE TUMOURS	0	6	17	46	60	69	129	3.7	100.0	5.2	100.0	-	1.6	4.0	10.9	13.3	4.9	6.8	80	147	59.7	0.8
	a. Osteosarcoma	0	0	10	27	36	37	73	2.0	53.6	2.9	56.6	-	-	2.3	6.4	8.0	2.6	3.8	44	84	84.9	1.4
	b. Chondrosarcoma	0	0	0	0	1	0	1	-	-	0.0	0.8	-	-	-	-	0.2	-	0.1	-	1	100.0	0.0
	c. Ewing & related	0	2	0	1	0	3	3	0.2	4.3	0.1	2.3	-	0.5	-	0.2	-	0.2	0.2	3	3	100.0	0.0
	d. Other specified	0	1	1	4	4	6	10	0.3	8.7	0.4	7.8	-	0.3	0.2	0.9	0.9	0.4	0.5	7	11	100.0	0.0
	e. Unspecified	0	3	6	14	19	23	42	1.2	33.3	1.7	32.6	-	0.8	1.4	3.3	4.2	1.6	2.2	27	48	2.4	0.0
IX	SOFT TISSUE SARCOMA	13	127	174	176	203	490	693	26.1	100.0	27.8	100.0	12.3	32.8	40.6	41.6	45.2	36.2	38.2	553	779	77.1	1.4
	a. Rhabdomyosarcoma	3	25	22	16	24	66	90	3.5	13.5	3.6	13.0	2.8	6.5	5.1	3.8	5.3	5.0	5.0	73	100	84.4	0.0
	b. Fibrosarcoma	3	2	2	4	15	11	26	0.6	2.2	1.0	3.8	2.8	0.5	0.5	0.9	3.3	0.8	1.4	12	29	88.5	0.0
	c. Kaposi sarcoma	7	96	138	144	144	385	529	20.5	78.6	21.2	76.3	6.6	24.8	32.2	34.0	32.0	28.4	29.2	436	596	77.3	1.9
	d. Other specified	0	0	9	3	8	12	20	0.6	2.4	0.8	2.9	-	-	2.1	0.7	1.8	0.9	1.1	14	23	100.0	0.0
	e. Unspecified	0	4	3	9	12	16	28	0.9	3.3	1.1	4.0	-	1.0	0.7	2.1	2.7	1.2	1.5	18	32	21.4	0.0
X	GERM CELL TUMOURS	1	5	3	13	34	22	56	1.2	100.0	2.2	100.0	0.9	1.3	0.7	3.1	7.6	1.6	2.9	25	63	62.5	0.0
	a. CNS germ cell	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	b. Other extragonadal	1	1	0	2	11	4	15	0.2	18.2	0.6	26.8	0.9	0.3	-	0.5	2.4	0.3	0.8	4	17	93.3	0.0
	c. Gonadal germ cell	0	1	1	6	6	8	14	0.4	36.4	0.6	25.0	-	0.3	0.2	1.4	1.3	0.6	0.7	9	16	92.9	0.0
	d. Gonadal carcinoma	0	0	1	1	4	2	6	0.1	9.1	0.2	10.7	-	-	0.2	0.2	0.9	0.1	0.3	2	7	100.0	0.0
	e. Unspecified gonadal	0	3	1	4	13	8	21	0.4	36.4	0.8	37.5	-	0.8	0.2	0.9	2.9	0.6	1.1	9	23	9.5	0.0
XI	CARCINOMA & MELANOMA	0	8	13	27	68	48	116	2.6	100.0	4.7	100.0	-	2.1	3.0	6.4	15.1	3.5	6.1	55	131	97.4	0.9
	a. Adrenocortical	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	b. Thyroid	0	0	0	2	2	2	4	0.1	4.2	0.2	3.4	-	-	-	0.5	0.4	0.1	0.2	2	5	100.0	0.0
	c. Nasopharyngeal	0	3	0	11	18	14	32	0.7	29.2	1.3	27.6	-	0.8	-	2.6	4.0	1.0	1.7	16	36	96.9	3.1
	d. Melanoma	0	0	3	1	3	4	7	0.2	8.3	0.3	6.0	-	-	0.7	0.2	0.7	0.3	0.4	5	8	71.4	0.0
	e. Skin carcinoma	0	0	2	2	5	4	9	0.2	8.3	0.4	7.8	-	-	0.5	0.5	1.1	0.3	0.5	5	10	100.0	0.0
	f. Other & unspecified	0	5	8	11	40	24	64	1.3	50.0	2.6	55.2	-	1.3	1.9	2.6	8.9	1.7	3.4	27	72	100.0	0.0
XII	OTHER & UNSPECIFIED	4	43	37	36	67	120	187	6.4	100.0	7.5	100.0	3.8	11.1	8.6	8.5	14.9	9.0	10.3	133	208	6.4	1.1
	a. Other specified	0	0	0	0	1	0	1	-	-	0.0	0.5	-	-	-	-	0.2	-	0.1	-	1	100.0	0.0
	b. Other unspecified	4	43	37	36	66	120	186	6.4	100.0	7.5	99.5	3.8	11.1	8.6	8.5	14.7	9.0	10.2	133	207	5.9	1.1
	TOTAL	48	540	707	582	617	1877	2494	100.0	100.0	100.0	100.0	45.6	139.5	165.0	137.5	137.3	139.4	138.9	2110	2796	67.4	1.7

Please consult the quality indicators for this registry

Zimbabwe

Harare, Zimbabwe National Cancer Registry, 1995–2013

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The Zimbabwe National Cancer Registry was established in 1985 as a result of a collaborative research agreement between the Ministry of Health and Child Care (MHCC) and IARC. It is strategically located in the Parirenyatwa Group of Hospitals complex, a large government tertiary referral centre, which provides most of the cancer management services for the northern part of the country and is one of the two teaching hospitals of the University of Zimbabwe College of Health Sciences.

The registry covered the entire Harare Province during 1990–2002 (Table A.10), after which the district of Epworth became an independent local authority and ceased being part of the registration area. In 2010 the registry covered 1.4 million people, and 44% of the population was younger than 20 years (Table A.6). The severe economic challenges in Zimbabwe in 2007 had a negative impact on cancer registration activities, resulting in a lower reported incidence rate.

The activities of the registry are overseen by a constituted multidisciplinary advisory committee, and day-to-day administration is the responsibility of the registrar under the guidance of the medical director. The registry has four full-time staff: the registrar, a secretary, and two data collection officers. The registry is supported by the MHCC, the African Cancer Registry Network, IARC, and other organizations.

The Zimbabwe National Cancer Registry uses a combination of active and passive methods of case finding, and the registry staff visit institutions in the health-care delivery system that are involved in the management of patients with cancer. Regular routine visits are made to the inpatient wards, oncology outpatient clinics, and medical records departments of the three government referral hospitals (Parirenyatwa Group of Hospitals, Harare Central Hospital, and Chitungwiza Central Hospital), three major private hospitals, and the two municipal infectious diseases hospitals in Harare. The main referral centre for children with cancer is the paediatric oncology unit at Parirenyatwa Group of Hospitals, which provides imaging and laboratory services, including cytometry, for children with leukaemia. Other important data sources are public and private pathology laboratories, the radiotherapy centre, the radiology and haematology departments at Parirenyatwa Group of Hospitals, and the Harare Death Registry. Death certificates of people who die in greater Harare and the dormitory town of Chitungwiza are scrutinized weekly to record those who have died of malignant disease.

All notifications received by the registry are thoroughly verified to ensure that only incident cases are recorded. The data are coded according to ICD-O-3 (Table A.10) and stored electronically using CanReg, provided by IARC. The registry exchanges data with the Bulawayo Cancer Registry and plans to arrange to exchange data with neighbouring countries to limit the effect of patient migration for cancer treatment on cancer incidence data. Data from the registry are extensively used by the MHCC for management planning and cancer control programmes.

POPULATION AT RISK

During the reporting period, population censuses were conducted in 1992, 2002, and 2012 (Table A.7). Population figures were generated by the Central Statistical Office and the Zimbabwe National Statistics Agency (https://www.zimstat.co.zw/). Data were provided by sex and 5-year age group for the urban Black population for each calendar year in 1990–2012. Data for 2013 were estimated using the growth rate provided by the registry, which was based on the annual population estimates for 2002–2012 for each sex–age category. The decimal numbers provided for some counts were rounded to the nearest integer, and the data for the missing year–age–sex categories were estimated at IARC using the methods described in Chapter 2.

EDITORS' COMMENTS

Annual incidence rates decreased in 2003 and 2007; this can be explained by factors external to the registry (see above). The MV% was low (78%), and the proportion of unspecified tumours was high (17%), also among MV cases (Table A.9). Date of birth was unavailable (Table A.8); thus, age may be misclassified. This may partly explain the comparatively lower rates in the age groups 0 years and 15–19 years. The sex ratio was high in adolescents (Table A.9). Non-malignant CNS tumours are not routinely registered, but several cases were recorded. Pilocytic astrocytoma was coded mostly with uncertain behaviour, except for one malignant case. Laterality was not provided. Skin carcinomas were reportable.

ZIMBABWE, Harare, African (1995-2013)

	Age group (years)	Males	Females
Person-years	0	353 387	370 695
	1-4	1 392 616	1 429 179
	5-9	1 302 915	1 368 755
	10-14	1 128 864	1 233 518
	15-19	1 310 379	1 646 261
	0-14	4 177 782	4 402 147
	0-19	5 488 161	6 048 408
Average annual population	0-14	219 883	231 692
	0-19	288 851	318 337

Please consult the quality indicators for this registry

ZIMBABWE, Harare, African (1995-2013)

		Number of cases							Percentage				Incidence rates per million person-years									MV	DCO
		Age group (years)							0-14		0-19		Age-specific					ASR		Cumulative		%	%
		0	1-4	5-9	10-14	15-19	0-14	0-19	All	Group	All	Group	0	1-4	5-9	10-14	15-19	0-14	0-19	0-14	0-19	0-19	0-19
I	LEUKAEMIA	4	48	45	46	36	143	179	13.2	100.0	12.3	100.0	5.5	17.0	16.8	19.5	12.2	16.8	15.7	255	316	98.3	1.7
	a. Lymphoid	1	19	26	27	7	73	80	6.7	51.0	5.5	44.7	1.4	6.7	9.7	11.4	2.4	8.6	7.2	134	146	100.0	0.0
	b. Acute myeloid	1	17	11	10	17	39	56	3.6	27.3	3.9	31.3	1.4	6.0	4.1	4.2	5.7	4.5	4.8	67	96	98.2	1.8
	c. CMD	0	0	0	5	0	5	5	0.5	3.5	0.3	2.8	-	-	-	2.1	-	0.6	0.5	11	11	100.0	0.0
	d. MDS & other	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	e. Unspecified	2	12	8	4	12	26	38	2.4	18.2	2.6	21.2	2.8	4.3	3.0	1.7	4.1	3.0	3.2	43	63	94.7	5.3
II	LYMPHOMA & RELATED	3	34	60	59	62	156	218	14.4	100.0	15.0	100.0	4.1	12.0	22.5	25.0	21.0	18.5	19.1	289	394	93.1	3.7
	a. Hodgkin	0	4	17	13	15	34	49	3.1	21.8	3.4	22.5	-	1.4	6.4	5.5	5.1	4.1	4.3	65	90	98.0	2.0
	b. Non-Hodgkin except BL	2	20	33	37	41	92	133	8.5	59.0	9.1	61.0	2.8	7.1	12.4	15.7	13.9	10.9	11.6	171	240	92.5	4.5
	c. Burkitt (BL)	0	5	9	3	1	17	18	1.6	10.9	1.2	8.3	-	1.8	3.4	1.3	0.3	2.0	1.6	30	32	100.0	0.0
	d. Lymphoreticular	0	0	0	2	0	2	2	0.2	1.3	0.1	0.9	-	-	-	0.8	-	0.2	0.2	4	4	100.0	0.0
	e. Unspecified	1	5	1	4	5	11	16	1.0	7.1	1.1	7.3	1.4	1.8	0.4	1.7	1.7	1.3	1.4	19	27	75.0	6.3
III	CNS NEOPLASMS †	5	25	41	38	24	109	133	10.1	100.0	9.1	100.0	6.9	8.9	15.3	16.1	8.1	12.9	11.8	199	240	48.1	15.0
	a. Ependymoma	0	0	1	3	0	4	4	0.4	3.7	0.3	3.0	-	-	0.4	1.3	-	0.5	0.4	8	8	100.0	0.0
	b. Astrocytoma	2	3	9	9	6	23	29	2.1	21.1	2.0	21.8	2.8	1.1	3.4	3.8	2.0	2.7	2.6	43	53	100.0	0.0
	c. CNS embryonal	0	7	5	3	1	15	16	1.4	13.8	1.1	12.0	-	2.5	1.9	1.3	0.3	1.7	1.4	26	27	100.0	0.0
	d. Other gliomas	0	3	2	2	2	7	9	0.6	6.4	0.6	6.8	-	1.1	0.7	0.8	0.7	0.8	0.8	12	16	88.9	0.0
	e. Other specified	0	1	1	2	0	4	4	0.4	3.7	0.3	3.0	-	0.4	0.4	0.8	-	0.5	0.4	8	8	75.0	0.0
	f. Unspecified CNS	3	11	23	19	15	56	71	5.2	51.4	4.9	53.4	4.1	3.9	8.6	8.0	5.1	6.6	6.3	103	128	5.6	28.2
IV	NEUROBLASTOMA	2	10	4	3	2	19	21	1.8	100.0	1.4	100.0	2.8	3.5	1.5	1.3	0.7	2.2	1.8	31	34	90.5	9.5
	a. (Ganglio)neuroblastoma	2	10	4	3	0	19	19	1.8	100.0	1.3	90.5	2.8	3.5	1.5	1.3	-	2.2	1.7	31	31	89.5	10.5
	b. Peripheral nervous	0	0	0	0	2	0	2	-	-	0.1	9.5	-	-	-	-	0.7	-	0.2	-	3	100.0	0.0
V	RETINOBLASTOMA	8	68	11	0	0	87	87	8.0	100.0	6.0	100.0	11.0	24.1	4.1	-	-	9.6	7.5	128	128	96.6	0.0
VI	RENAL TUMOURS	14	76	34	8	6	132	138	12.2	100.0	9.5	100.0	19.3	26.9	12.7	3.4	2.0	14.9	12.0	207	218	94.9	1.4
	a. Nephroblastoma	14	75	34	8	4	131	135	12.1	99.2	9.3	97.8	19.3	26.6	12.7	3.4	1.4	14.8	11.8	206	213	95.6	1.5
	b. Renal carcinoma	0	0	0	0	1	0	1	-	-	0.1	0.7	-	-	-	-	0.3	-	0.1	-	2	100.0	0.0
	c. Unspecified	0	1	0	0	1	1	2	0.1	0.8	0.1	1.4	-	0.4	-	-	0.3	0.1	0.2	1	3	50.0	0.0
VII	HEPATIC TUMOURS	3	5	5	10	14	23	37	2.1	100.0	2.5	100.0	4.1	1.8	1.9	4.2	4.7	2.7	3.2	42	65	40.5	10.8
	a. Hepatoblastoma	3	3	2	0	0	8	8	0.7	34.8	0.6	21.6	4.1	1.1	0.7	-	-	0.9	0.7	12	12	100.0	0.0
	b. Hepatic carcinoma	0	2	2	9	14	13	27	1.2	56.5	1.9	73.0	-	0.7	0.7	3.8	4.7	1.6	2.3	26	49	25.9	11.1
	c. Unspecified	0	0	1	1	0	2	2	0.2	8.7	0.1	5.4	-	-	0.4	0.4	-	0.2	0.2	4	4	0.0	50.0
VIII	BONE TUMOURS	1	7	9	33	44	50	94	4.6	100.0	6.5	100.0	1.4	2.5	3.4	14.0	14.9	6.0	8.0	98	172	86.2	0.0
	a. Osteosarcoma	0	3	4	21	21	28	49	2.6	56.0	3.4	52.1	-	1.1	1.5	8.9	7.1	3.4	4.2	56	92	100.0	0.0
	b. Chondrosarcoma	0	0	0	1	6	1	7	0.1	2.0	0.5	7.4	-	-	-	0.4	2.0	0.1	0.6	2	12	100.0	0.0
	c. Ewing & related	0	2	1	1	1	4	5	0.4	8.0	0.3	5.3	-	0.7	0.4	0.4	0.3	0.5	0.4	7	8	100.0	0.0
	d. Other specified	0	1	1	5	12	7	19	0.6	14.0	1.3	20.2	-	0.4	0.4	2.1	4.1	0.8	1.6	14	34	100.0	0.0
	e. Unspecified	1	1	3	5	4	10	14	0.9	20.0	1.0	14.9	1.4	0.4	1.1	2.1	1.4	1.2	1.2	19	26	7.1	0.0
IX	SOFT TISSUE SARCOMA	13	74	104	73	96	264	360	24.4	100.0	24.8	100.0	18.0	26.2	38.9	30.9	32.5	31.0	31.4	472	634	69.4	5.3
	a. Rhabdomyosarcoma	3	22	16	13	8	54	62	5.0	20.5	4.3	17.2	4.1	7.8	6.0	5.5	2.7	6.3	5.5	93	106	100.0	0.0
	b. Fibrosarcoma	3	1	0	4	5	8	13	0.7	3.0	0.9	3.6	4.1	0.4	-	1.7	1.7	0.9	1.1	14	23	100.0	0.0
	c. Kaposi sarcoma	5	46	77	45	65	173	238	16.0	65.5	16.4	66.1	6.9	16.3	28.8	19.0	22.0	20.4	20.8	311	421	54.6	7.6
	d. Other specified	0	4	8	8	14	20	34	1.8	7.6	2.3	9.4	-	1.4	3.0	3.4	4.7	2.4	2.9	38	61	100.0	0.0
	e. Unspecified	2	1	3	3	4	9	13	0.8	3.4	0.9	3.6	2.8	0.4	1.1	1.3	1.4	1.1	1.1	16	23	84.6	7.7
X	GERM CELL TUMOURS	3	7	2	5	21	17	38	1.6	100.0	2.6	100.0	4.1	2.5	0.7	2.1	7.1	1.9	3.1	28	64	73.7	2.6
	a. CNS germ cell	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	b. Other extragonadal	3	7	0	0	4	10	14	0.9	58.8	1.0	36.8	4.1	2.5	-	-	1.4	1.1	1.2	14	21	92.9	0.0
	c. Gonadal germ cell	0	0	2	2	8	4	12	0.4	23.5	0.8	31.6	-	-	0.7	0.8	2.7	0.5	1.0	8	22	100.0	0.0
	d. Gonadal carcinoma	0	0	0	0	2	0	2	-	-	0.1	5.3	-	-	-	-	0.7	-	0.2	-	3	100.0	0.0
	e. Unspecified gonadal	0	0	0	3	7	3	10	0.3	17.6	0.7	26.3	-	-	-	1.3	2.4	0.4	0.8	6	18	10.0	10.0
XI	CARCINOMA & MELANOMA	0	9	12	23	28	44	72	4.1	100.0	5.0	100.0	-	3.2	4.5	9.7	9.5	5.3	6.2	84	131	97.2	1.4
	a. Adrenocortical	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	b. Thyroid	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	c. Nasopharyngeal	0	0	1	4	5	5	10	0.5	11.4	0.7	13.9	-	-	0.4	1.7	1.7	0.6	0.9	10	19	90.0	0.0
	d. Melanoma	0	1	0	0	2	1	3	0.1	2.3	0.2	4.2	-	0.4	-	-	0.7	0.1	0.2	1	5	100.0	0.0
	e. Skin carcinoma	0	2	4	5	6	11	17	1.0	25.0	1.2	23.6	-	0.7	1.5	2.1	2.0	1.3	1.5	21	31	100.0	0.0
	f. Other & unspecified	0	6	7	14	15	27	42	2.5	61.4	2.9	58.3	-	2.1	2.6	5.9	5.1	3.2	3.6	51	77	97.6	2.4
XII	OTHER & UNSPECIFIED	5	8	10	15	39	38	77	3.5	100.0	5.3	100.0	6.9	2.8	3.7	6.3	13.2	4.5	6.4	69	135	9.1	24.7
	a. Other specified	0	0	0	0	2	0	2	-	-	0.1	2.6	-	-	-	-	0.7	-	0.2	-	3	100.0	0.0
	b. Other unspecified	5	8	10	15	37	38	75	3.5	100.0	5.2	97.4	6.9	2.8	3.7	6.3	12.5	4.5	6.3	69	131	6.7	25.3
	TOTAL	61	371	337	313	372	1082	1454	100.0	100.0	100.0	100.0	84.2	131.5	126.1	132.5	125.8	126.3	126.2	1902	2531	77.6	5.4

† includes 8 non-malignant

Please consult the quality indicators for this registry