

CANCER REGISTRATION IN THAILAND

S Deerasamee¹, N Martin, S Sontipong, S Sriamporn, H Sriplung, P Srivatanakul, V Vatanasapt, D. Parkin, J Ferlay

History of Cancer Registration in Thailand

Cancer registration was started in 1971 by the National Cancer Institute, with the collection of information on cancer patients treated in 53 hospitals throughout the country. Data collection relied upon passive notification. This system was unsatisfactory; most community hospitals did not contribute, and notification from others was incomplete. The first population-based cancer registry started in 1986 in Chiang Mai, followed by Khon Kaen in 1988, Songkhla and Bangkok in 1990 and Lampang in 1993. With the cooperation of the registries, the National Cancer Institute in Bangkok, and the International Agency for Research on Cancer (IARC), the first volume of Cancer in Thailand was published in 1993. The second volume, with data from 1992-1994 was published in 1999.

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Present Status

Thailand is divided into 76 provinces within four geographical regions. The registries of Chiang Mai and Lampang are in the Northern region, Khon Kaen is in the Northeastern region, the central region is represented by the registry of Bangkok, and Songkhla registry is the only one in the Southern region (Fig. 1). The population of Thailand at the 1990 census was 54.5 million (27 million males and 27.5 million females). The populations of the five provincial cancer registries are shown in Table 1, below.

Incidence data

The National Estimate, 1993

An estimate of the incidence of cancer in 1993, for the whole country was prepared, based on data from the five registries. The estimated number of new cancer cases was 32 801 in men and 30 940 in women; these correspond to age standardized rates of 151.3 per 100 000 for men and 123.8 per 100 000 in women (see Table 2) The most common cancers in men were liver (8189 cases), lung (5500), and colon/rectum (2197), and in women cancers of the cervix (5462), breast (4223),



Figure 1. Cancer Registries in Thailand

liver (3679), lung (2608) and colon-rectum (1796). Estimated age standardized incidence rates for the 10 leading cancers in males and females are shown in Figure 2.

Table 1. Populations Covered by Cancer Registries

Region:	Registry	Population	(as % regional Population.)	Pop.Density (per sq.km)
Central:	Bangkok	5 882 411	32.8%	3758
North	Chiang Mai	1 367 183	12.9%	
69	Lampang	728 843	6.9%	
59				

Regional Variation

The age-standardized incidence rates (ASR) of cancer at all sites ranged from 99.0 per 100 000 (M) and 79.0 per 100 000 (F) in Songkhla to 173.8 per 100 000 (M) in Khon Kaen and 156.4 per 100 000 (F) in Chiang Mai. There are quite marked differences in the profile of cancer in the different regions (Fig 3).

In Chiang Mai, lung cancer is the most important site in both

Table 2. Age-specific Incidence Rates for Cancers per 100,000 Population (Estimate) 1993

Male																							
Site	All Age	0-	5-	10-	15-	20-	25-	30-	35-	40-	45-	50-	55-	60-	65-	70-	75+	CRUDE %					
ASR	ICD	AGES UNK																	RATE				
(W) (10th)																							
Oral cavity	1094	0	-	-	0.1	-	0.1	0.4	0.3	0.8	2.6	5.7	8.3	10.5	27.2	40.6	43.1	37.6	3.8	3.4	5.4	C00-08	
Oropharynx	299	0	-	-	-	-	-	-	0.2	0.2	0.5	1.5	2.5	3.3	5.4	7.0	20.1	12.0	1.0	0.9	1.5	C09-10	
Nasopharynx	855	0	-	-	-	0.5	1.0	0.8	2.1	3.2	5.9	7.4	7.6	8.1	15.9	16.4	12.5	9.1	2.9	2.6	3.6	C11	
Hypopharynx	311	0	-	-	-	-	0.1	-	0.2	0.0	0.3	0.9	1.7	2.5	5.6	9.1	21.1	18.5	1.1	1.0	1.6	C12-14	
Oesophagus	748	0	-	-	-	-	-	-	0.0	0.1	1.5	2.3	4.5	11.5	16.7	29.0	38.2	24.5	2.6	2.3	3.7	C15	
Stomach	1041	0	-	-	-	-	0.2	0.4	0.6	2.1	2.5	5.6	8.8	12.9	18.8	29.6	37.1	44.6	3.6	3.2	4.9	C16	
Colon/Rectum	2191	0	-	-	-	0.2	0.7	1.1	2.3	3.9	7.0	8.9	15.7	22.1	44.5	68.3	91.6	79.1	7.6	6.7	10.4	C18-21	
Liver	8189	0	0.7	0.2	0.4	0.6	0.9	1.5	6.5	14.5	32.1	56.9	90.9	138	174	229	188	138	28.2	25.1	37.4	C22	
Bronchus, Lung	5500	0	-	0.0	-	-	0.6	1.5	2.9	7.5	12.7	23.2	45.1	72.2	138	194	196	157	19.0	16.9	26.5	C33-34	
Melanoma of skin	86	0	-	0.0	-	-	-	0.1	0.3	0.0	0.2	0.4	0.4	0.9	1.4	3.1	1.6	4.2	0.3	0.3	0.4	C43	
Prostate	832	0	-	-	-	-	-	-	-	0.3	0.4	1.4	2.2	12.3	32.9	59.9	76.8	2.9	2.6	4.4	C61		
Testis	115	0	0.0	-	0.0	-	0.5	0.4	0.7	0.7	0.7	1.2	0.5	0.5	0.5	1.0	1.1	0.5	0.4	0.4	0.4	C62	
Bladder	1057	0	-	-	-	0.1	-	0.1	0.7	1.7	1.9	2.3	7.6	11.4	19.2	35.2	55.6	48.8	3.6	3.2	5.2	C67	
Thyroid	271	0	-	-	-	-	0.1	0.3	0.3	0.7	1.0	1.9	1.7	2.7	4.0	4.5	2.5	7.0	2.1	0.9	0.8	1.1	C73
Hodgkin's disease	162	0	0.0	0.1	0.2	0.6	0.1	0.7	0.3	0.4	0.6	1.3	1.0	1.5	2.9	1.9	2.4	0.5	0.6	0.5	0.6	C81	
Non-Hodgkin																							
lymphoma	881	0	0.4	0.7	0.7	0.9	1.2	2.7	1.6	2.8	3.7	3.6	6.2	6.9	11.3	17.0	20.3	23.0	3.0	2.7	3.7	C82-85,96	
Leukaemia	891	0	2.4	2.2	3.0	2.2	2.1	2.5	2.9	3.0	4.5	3.1	2.2	4.5	6.5	9.7	8.4	6.5	3.1	2.7	3.3	C 9 1 -	

Females																						
Site	All Age	0-	5-	10-	15-	20-	25-	30-	35-	40-	45-	50-	55-	60-	65-	70-	75+	CRUDE %				
ASR	ICD	AGES UNK																	RATE			
(W) (10th)																						
Oral cavity	953	0	-	-	0.0	0.2	0.3	0.3	1.0	1.0	1.4	2.6	4.7	11.3	16.0	22.1	38.2	39.2	3.3	3.1	4.0	C00-08
Oropharynx	68	0	-	-	-	-	-	0.0	0.1	0.1	0.6	0.4	0.4	1.2	1.4	3.3	2.6	0.2	0.2	0.3	C09-10	
Nasopharynx	328	0	-	-	-	0.5	0.1	0.4	0.7	1.3	2.4	2.2	2.9	4.3	5.4	4.0	3.7	2.2	1.1	1.1	1.3	C11
Hypopharynx	60	0	-	-	-	-	-	0.1	0.1	0.1	-	0.5	0.9	0.8	1.2	3.3	1.7	0.2	0.2	0.2	C12-14	
Oesophagus	299	0	-	-	-	-	-	-	-	0.2	0.9	1.2	2.6	6.9	9.9	14.0	11.7	1.0	1.0	1.3	C15	
Stomach	723	0	-	-	-	-	0.1	0.6	1.7	1.8	2.6	3.2	4.5	7.3	16.2	16.7	17.7	16.5	2.5	2.4	3.0	C16
Colon/Rectum	1789	0	-	-	-	0.1	0.2	1.0	2.5	3.6	5.0	8.4	14.5	18.4	28.6	52.8	62.7	39.2	6.2	5.8	7.5	C18-21
Liver	3679	0	0.2	0.1	-	-	0.3	0.8	1.9	5.8	11.3	21.9	32.8	51.7	87.2	87.6	95.6	61.9	12.7	12.0	15.5	C22
Bronchus, Lung	2608	0	-	-	-	0.5	0.9	1.0	3.1	6.9	13.3	23.9	36.1	54.1	64.8	88.1	49.1	9.0	8.5	11.1	C33-34	
Melanoma of skin	96	0	-	-	-	0.0	0.1	-	0.1	0.2	0.2	1.1	0.2	0.5	0.8	2.8	4.7	3.2	0.3	0.3	0.4	C43
Breast	4223	0	-	-	-	-	0.8	2.5	10.2	20.3	39.7	50.1	46.2	39.2	50.9	53.0	42.0	21.4	14.6	13.8	16.3	C50
Cervix uteri	5462	0	-	-	-	-	1.7	4.3	13.4	30.7	44.4	56.1	62.1	56.4	68.9	65.3	58.5	24.3	18.8	17.8	20.9	C53
Corpus uteri	703	0	-	-	-	-	-	0.2	0.6	1.7	4.0	6.8	10.1	10.9	11.8	12.2	11.0	3.2	2.4	2.3	2.9	C54
Ovary	1252	0	0.0	0.3	1.0	1.0	1.7	2.7	2.4	5.9	6.8	11.1	15.3	13.6	14.2	9.8	11.2	7.4	4.3	4.1	4.7	C56
Bladder	295	0	-	-	-	-	0.0	0.3	0.4	0.6	0.8	1.0	3.8	5.6	7.7	11.2	11.5	1.0	1.0	1.2	C67	
Thyroid	885	0	-	0.1	0.3	1.1	1.8	3.2	3.7	4.9	5.1	4.8	5.7	4.9	9.1	9.8	11.4	8.6	3.1	2.9	3.2	C73
Hodgkin's disease	74	0	-	0.0	-	0.0	0.5	0.2	0.2	0.2	-	0.2	0.2	0.1	0.8	3.1	1.6	1.3	0.3	0.2	0.3	C81
Non-Hodgkin																						
lymphoma	625	0	0.2	0.5	0.2	0.6	0.4	1.1	0.8	2.6	3.1	4.2	5.0	3.6	8.9	9.6	11.4	13.6	2.2	2.0	2.4	C82-85,96

men and women. Liver cancer is in second place in men, and cervix cancer in women. The incidence of cervix in women is the highest amongst the five registries.

In Lampang, the profile is similar to that in Chiang Mai, except that the incidence of lung cancer in men is even higher than in Chiang Mai.

In Khon Kaen, the picture is dominated by liver cancer, by far the most common cancer in men (50% of all cancers) and women (28% of cancers). Cervix cancer is second in frequency in women.

In Bangkok, lung cancer is the most important tumour of men, followed by cancers of colon rectum, and then liver. In women breast cancer is now the leading cancer, ahead of cervix cancer (in contrast to the other four registries), and colorectal cancer is third in frequency.

In Songkhla, the leading site in men is lung cancer, followed by oral cavity and oesophagus, for which rates are higher than elsewhere, followed by liver cancer, with an incidence much lower than in the other registries. In females, thyroid cancer is in third place and liver cancer not among the first ten.

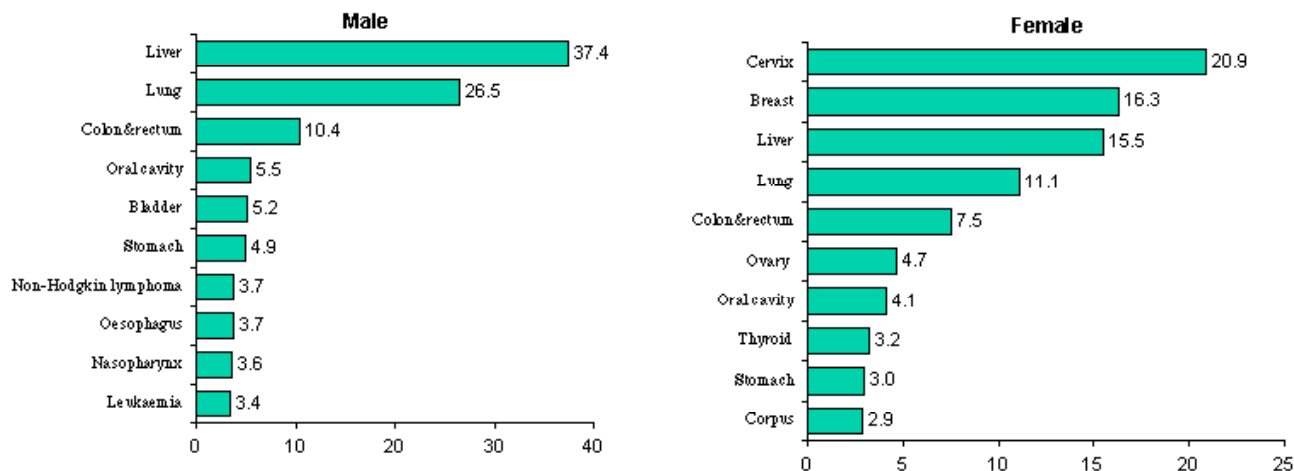


Figure 2. Leading Cancers in Thailand (1993, Estimates of Age-standardized Rates/100,000)

Epidemiology of the Principal Cancers.

The four principle cancers of Thailand (liver, lung, cervix, breast) are responsible for 42.2% of all cancers in men and 51.6% in women.

Liver Cancer

Incidence. The very high incidence of liver cancer in the Northeastern region means that liver cancer is the major cancer of men in the whole country, with an estimated 8 189 new cases in 1993, and third in women. The considerable geographic variation is the result of the very striking pattern of occurrence of cholangiocarcinoma (CCA) which varies more than 12-fold between regions, while the frequency of hepatocellular cancer is more or less constant. CCA is usually a relatively rare cancer (worldwide it accounts for about 15% of liver cancers); the very high incidence in Khon Kaen is the result of infection by the liver fluke (*Opisthorchis viverrini*), acquired through the habit of eating raw fish, a common feature of the local diet. In Khon Kaen, 82% of cases are CCA (Figure 4); the proportion is also relatively high in Chiang Mai (38.2%) and Lampang (46.2%), but is lower in Bangkok (22.1%) - these may be mainly in migrants from the northeast and north- and rare in Songkhla (4%).

Survival. Late presentation and the difficulty of a surgery mean that the five-year survival is poor: around 8% in Khon Kaen and 1% in Chiang Mai.

Lung Cancer

Incidence. The age-standardized incidence is highest (in both sexes) in Lampang followed by Chiang Mai, and it is the most common cancer in males in all centres except for Khon Kaen (Fig 3). By world standards, incidence of lung cancer in females of northern Thailand is rather high and, in Asia, the incidence in Chiang Mai is second only to that in Tianjin, China. The most common histological type is adenocarcinoma, particularly in women, although squamous cell carcinoma is slightly more frequent in males in Lampang

and Songkhla (Fig 4).

Survival. Survival at five years is about 3% in men and 10% in women.

Cervix Cancer

Incidence. Cancer of the cervix is the most common cancer in Thai women. The incidence (ASR) ranges from 25.7 in Chiang Mai to 15.8 in Songkhla. The age-specific incidence curves (Fig. 5) show a pattern of early increase (starting before age 20), with a steep rise to about ages 45-50, followed by a plateau and a decline. 80-86% of the cases are squamous cell carcinoma, with adenocarcinoma comprising 12-19%. Stage at diagnosis is often very advanced, compared with developed countries (Fig.6).

Survival. Prognosis is quite good, with 68% of women surviving five years in Chiang Mai and 55% in Khon Kaen.

Breast Cancer

Incidence. Breast cancer is the second most frequent cancer of women, with an estimated incidence rate of 16.3 per 100 000 women, higher than estimated for 1990 (ASR=13.5). Incidence is highest in Bangkok (ASR 20.6) and lowest in Khon Kaen (ASR=8.6). Age-specific rates show a rise to maximum around age 50, with a plateau or even a small decline in risk at older ages (Fig. 5). The predominant histological type is ductal carcinoma.

Survival. Survival from breast cancer at five years was 64% in Chiang Mai and 47% in Khon Kaen.

Research Studies

The registries have been involved in a variety of studies into the epidemiology and prevention of cancer. Particular areas of interest have been the epidemiology of oral and oesophageal cancer (in Songkhla), the epidemiology of liver cancer and mechanisms of liver fluke associated carcinogenesis (in Khon Kaen and Bangkok), and work on tobacco-associated cancer in northern Thailand. References to this work can be

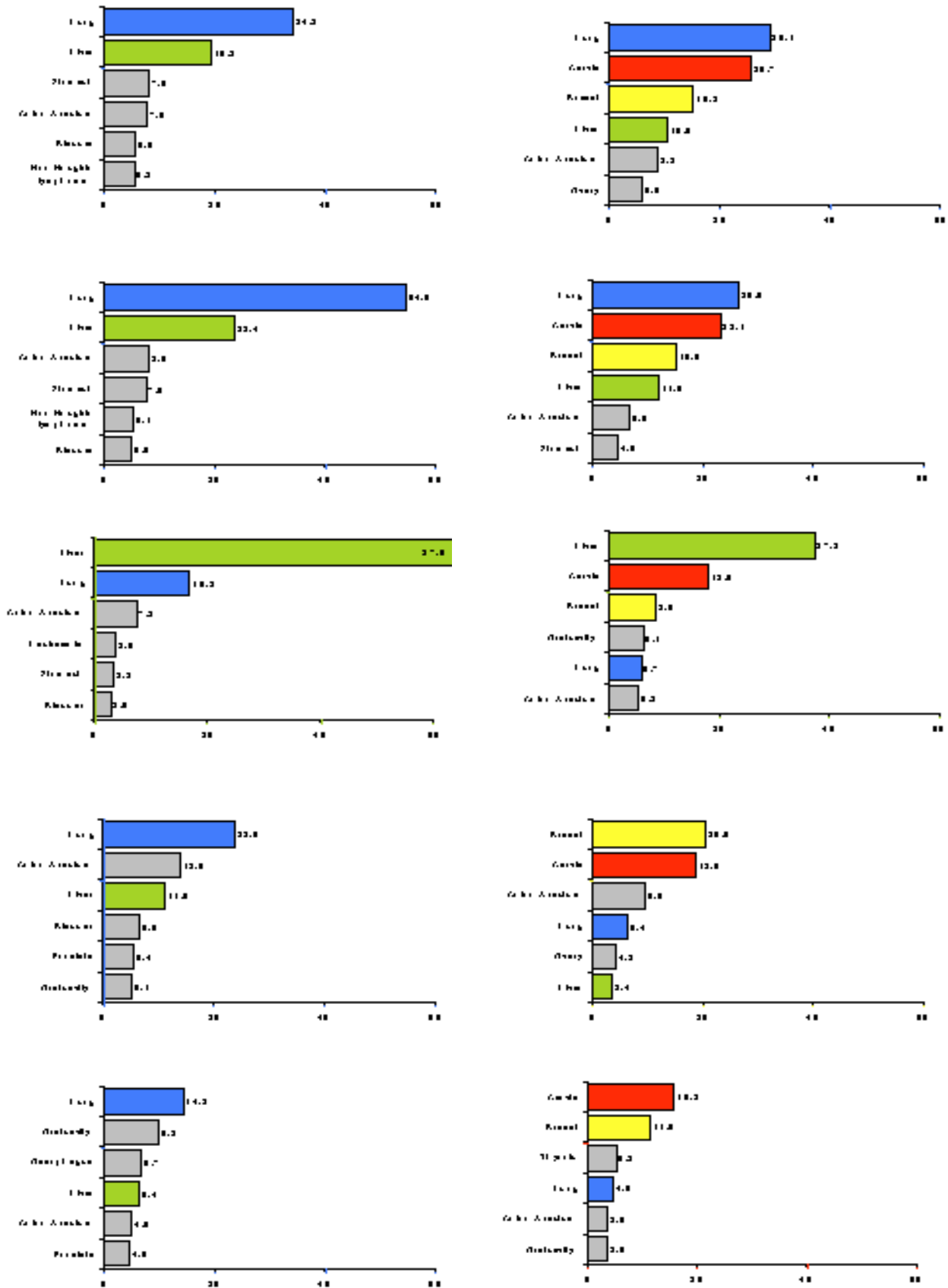


Figure 3 : The Leading Cancers, by Registry. (Age standardised rates per 100,000)

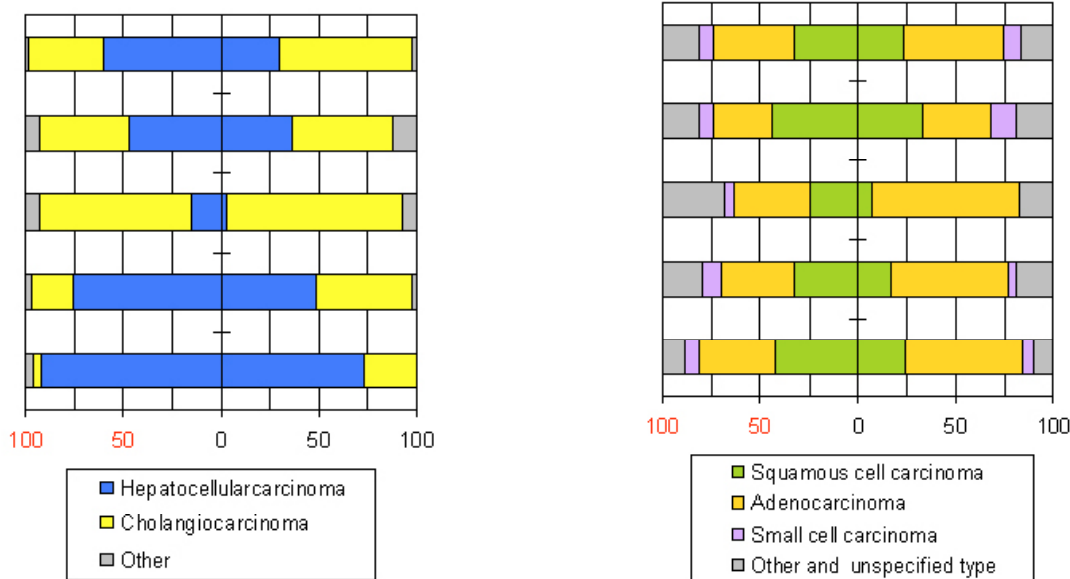


Figure 4. Histopathological Classification of Tumours of the Liver and Lung

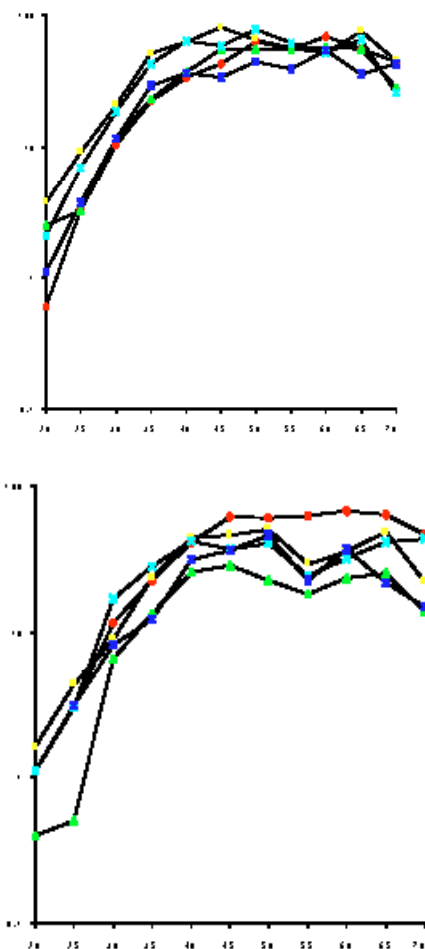


Figure 5. Age-specific Rates of Cancers

found in the monographs on Cancer in Thailand (Vatanasapt et al 1993; Deerasamee et al 1999), and reviews of cancer of the oesophagus (Chanvitan, 1990), and liver (Vatanasapt and Sripa, 2000).

National Policy

The registries were closely involved in the establishment of the first National Cancer Control programme of Thailand, in 1998, which concentrates upon prevention, early diagnosis, and treatment of the four most common cancers..

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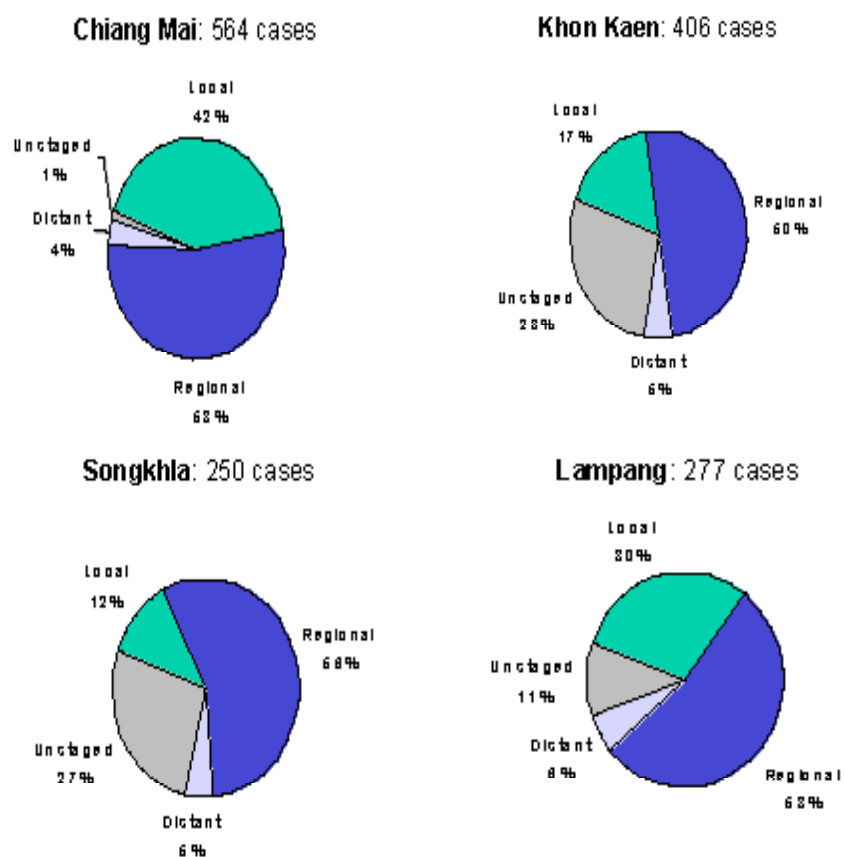


Figure 6. Stage at Diagnosis of Cervical Cancers in Different Locations

Contacts

Bangkok Cancer Registry

Sineenat Sontipong
 Planning & Statistics Division
 National Cancer Institute
 268/1 Rama VI Road
 Bangkok 10400
 Tel: 66 - 2 - 2461294
 Fax: 66 - 2 - 2465145 or 2479428
 e-mail: sontipon@moph.go.th

Dr Songphol Srisukho
 Maharaj Nakorn Chiang Mai Hospital
 Faculty of Medicine , Chiang Mai University
 Chiang Mai 50200
 Thailand
 Tel: 66 (53) 221122, 221788
 Fax: 66 (53) 217144
 e-mail: srsisukh@suandok01.medicine.cmu.ac.th

Khon Kaen Provincial Cancer Registry

Vanchai Vatanasapt
 Cancer Unit Faculty of Medicine
 Khon Kaen University
 Srinagarind Hospital
 Khon Kaen 40002
 Thailand
 Tel: 66 (43) 243088
 Fax: 66 (43) 2433088/243064
 e-mail: supanee@kku.ac.th
 internet:
<http://web.kku.ac.th/~kkreg/>

Songkhla Cancer Registry

Hutchia Sriplung
 Faculty of Medicine
 Prince of Songkla University
 Hat Yai
 Songkhla 90112
 Tel: 66 - 74 - 212070
 Fax: 66 - 74 - 212900
 e-mail: shutcha@ratree.psu.ac.th
 internet: http://203.154.164.2/Dept/Cancer_Unit/Songkhla_Registry.html