

HUMAN RESOURCES FOR TREATING NEW CANCER CASES IN BANGLADESH

Executive Summary

The purpose of this report is to describe the human resources needed in Bangladesh to treat new cancer patients. The population of Bangladesh is approximately 152.41 million (77.09 million men and 75.31 million women) and the estimated number of new cancer cases in Bangladesh for the year 2012, based on GLOBOCAN data (<http://globocan.iarc.fr/>) for Bangladesh as a whole was 122715 (60696 in men and 62019 in women) (Table A).

The five most common cancers in Bangladesh are (1) head and neck (lip, oral cavity, nasopharynx, other pharynx, larynx and thyroid), (2) gynecological (cervix uteri, corpus uteri and ovary), (3) breast, (4) esophagus and (5) lung.

Cancer	BOTH SEXES		MEN		WOMEN	
	Incidence	Rank	Incidence	Rank	Incidence	Rank
All cancers excl. non-melanoma skin cancer	122715		60696		62019	
Head and Neck	24675	1	18307	1	6368	3
Gynecological	15812	2	0	13	15812	1
Breast	14836	3	0	13	14836	2
Esophagus	13909	4	8567	3	5342	4
Lung	10851	5	8728	2	2123	8
Stomach	6583	6	4055	4	2528	6
Hematological	5460	7	3196	6	2264	7
Gallbladder	4712	8	1217	9	3495	5
Colorectal	4287	9	2533	7	1754	9
Urological	3861	10	3262	5	599	11
Liver	3022	11	1837	8	1185	10
Brain, nervous system	1190	12	729	10	461	12

Table A: The ten most frequently occurring cancers in Bangladesh for men and women based on 2012 GLOBOCAN data.

Newly diagnosed cancer patients need pathology, surgery, chemotherapy and/or radiation therapy. The number of oncologists needed is based, therefore, on the number of patients requiring pathology, surgery, chemotherapy and radiation therapy (Table B). This number is estimated from the percentage of patients requiring surgery, chemotherapy and/or radiation therapy for the top ten cancers in both men and women.

For developing countries the International Atomic Energy Agency (IAEA) recommends training Radiation/Clinical Oncologists who can prescribe both radiation and chemotherapy for the common solid cancers, instead of separate medical and radiation oncologists. Hematological malignancies are treated primarily by hematologist-oncologists. The number of specialists needed is based upon the number of cancer patients but each city, in order to ensure coverage if one person leaves or goes on vacation, must have at least 2 surgical oncologists, 2 radiation/clinical oncologists, 2 hematologist oncologists, etc.

Table B: Number of Oncologists needed for Bangladesh's 2 most populous major urban areas based on 2011 population estimates (<http://citypopulation.de/>) and 2012 GLOBOCAN data for new cancer cases.

	Population	New Cancer Cases	Hematologist Oncologists	Surgical Oncologists	Radiation / Clinical Oncologists	Urologic Oncologists	Gynecologic Oncologists	Pathologists
Dhaka	11086309	8927	2 [‡]	9	45	2 [‡]	3	18
Chittagong	3669170	2955	2 [‡]	3	15	2 [‡]	2 [‡]	6

[‡]At least 2 are needed in each major urban area.

In addition to oncologists, support staff such as onco-pharmacists, pharmacy technicians, oncology nurses and palliative care specialists is also needed. Many cancer patients require hospitalization for diagnosis, treatment and/or complications, therefore an adequate number of oncology beds will be needed. The number of oncology nurses, onco-pharmacists and pharmacy technicians needed is based upon the number of beds occupied daily by cancer patients while the number of palliative care specialists is based on the number of new cancer cases per year (Table C). The oncology nursing staff for each 24-bed oncology unit (operating 24 hours a day, 7 days a week) comprises of one head nurse and a nurse specialist as well as 13 nurses working 8 hour shifts, 5 days per week.

Table C: Number of Oncology Units, Nursing and Pharmacy Staff needed for Bangladesh's 2 most populous major urban areas based on 2011 population estimates and 2012 GLOBOCAN data for new cancer cases.

	New Cancer Cases	Maximum # of beds/day	# of 24 bed oncology wards	Onco-Pharmacists	Onco-Pharmacy Technicians	Palliative Care Specialists	Oncology Nursing Staff other than Radiation Oncology Nurses
Dhaka	8927	158	7	28	42	18	105
Chittagong	2955	53	3	12	18	6	45

Since many cancer patients require radiotherapy, appropriately equipped facilities will be needed along with radiation oncology staff (Tables D and E). Radiation oncology staff includes radiation therapy technicians, medical physicists, Linac engineers and radiation oncology nurses in addition to radiation/clinical oncologists. The minimum radiation therapy equipment requirements are at least one of each: Linac, brachytherapy unit, CT simulator, treatment planning computer and dosimetry/quality assurance package.

Table D: Radiation Therapy Staff needed for Bangladesh's 2 most populous major urban areas based on 2011 population estimates and 2012 GLOBOCAN data for new cancer cases.

	New Cancer Cases	Radiation / Clinical Oncologists	Radiation Therapy Technicians	Medical Physicists	Linac Engineers	Radiation Oncology Nurses
Dhaka	8927	45	64	22	6	22
Chittagong	2955	15	21	7	2	7

Table E: Radiation Therapy Equipment needed for Bangladesh's 2 most populous major urban areas based on 2011 population estimates and 2012 GLOBOCAN data for new cancer cases.

	New Cancer Cases	Linacs / Co 60 Megavolt Units	# of Brachytherapy units	# CT simulators	# of treatment planning computers	# of dosimetry/QA package
Dhaka	8927	11	6	6	6	6
Chittagong	2955	4	2	2	2	2

NOTE: Guidelines from the IAEA of the United Nations were used to calculate the radiation therapy equipment and staff needed in the setting of a developing country. Guidelines from the Oncology Nursing Society were used to calculate the number of nurses needed. Several other specialty societies were also requested to provide guidelines but in most cases there were none, therefore colleagues active in those fields were consulted for estimating the number of staff needed.