

HUMAN RESOURCES FOR TREATING NEW CANCER CASES IN EGYPT

Executive Summary

The purpose of this report is to describe the human resources needed in Egypt to treat new cancer patients. The population of Egypt is approximately 83.96 million (42.16 million men and 41.8 million women) and the estimated number of new cancer cases in Egypt for the year 2012, based on GLOBOCAN data (<http://globocan.iarc.fr/>) for Egypt as a whole was 108611 (52958 in men and 55653 in women) (Table A).

The five most common cancers in Egypt are (1) breast, (2) liver, (3) urological (bladder, kidney, prostate and testis), (4) hematological malignancies (Hodgkin lymphoma, non-Hodgkin lymphoma, multiple myeloma and leukemia) and (5) head and neck (lip, oral cavity, nasopharynx, other pharynx, larynx and thyroid).

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

Cancer	BOTH SEXES		MEN		WOMEN	
	Incidence	Rank	Incidence	Rank	Incidence	Rank
All cancers excl. non-melanoma skin cancer	108611		52958		55653	
Breast	18660	1			18660	1
Liver	17621	2	12493	1	5128	3
Urological	13225	3	10529	2	2696	5
Hematological	11938	4	6555	3	5383	2
Head and Neck	6023	5	3365	5	2658	6
Brain, nervous system	5404	6	2889	6	2515	7
Lung	5017	7	3634	4	1383	9
Gynecological	4658	8			4658	4
Colorectal	4060	9	2115	7	1945	8
Pancreas	2347	10	1473	8	874	10
Stomach	1789	11	953	9	836	11
Esophagus	1450	12	909	10	541	12

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 Egypt's 2 most populous governorates based on 2013 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	Neuro-Oncologists	Pathologists
Cairo	8922949	11544	3	12	58	3	2	2	24
Giza	7205122	9321	3	10	47	3	2 [‡]	2 [‡]	19

[‡]At least 2 are needed in each governorate.

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 Egypt's 2 most populous governorates based on 2013 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
Cairo	11544	218	10	40	60	24	150
Giza	9321	176	8	32	48	19	120

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 Egypt's 2 most populous governorates based on 2013 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
Cairo	11544	58	79	27	7	27
Giza	9321	47	64	22	6	22

Table E: Radiation Therapy Equipment needed for Egypt's 2 most populous governorates based on 2013 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
Cairo	11544	14	7	7	7	7
Giza	9321	11	6	6	6	6

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.