

Fitness to work and occupational exposure to ionizing radiation criteria for the evaluation in workers with neoplastic diseases



*Italian Association of Medical Radiation Protection
ICS Istituti Clinici Scientifici Maugeri – Pavia*

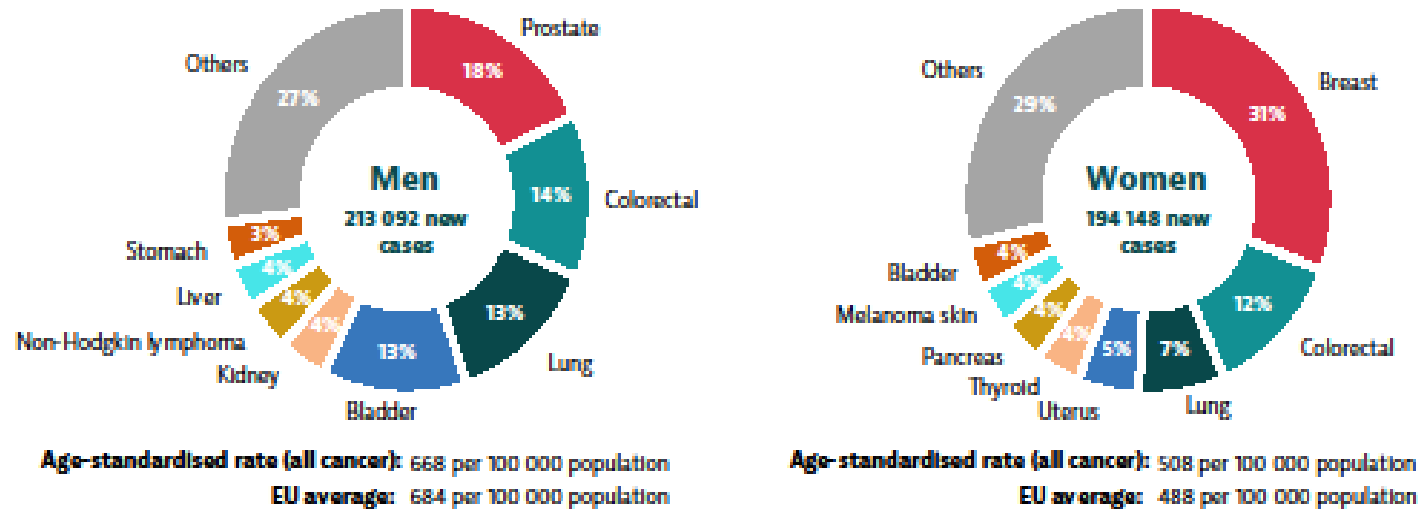
*Dr Giuseppe Taino
Dr Giulia Castellani
Dr Roberto Moccaldi*

Milan – 3 October 2024

Cancer numbers in Italy

- The burden of cancer in Italy is comparable to the EU average
- Italy witnessed approximately *390.700 new cancer cases arose in Italy in 2022* (208.000 among men e 187.000 among women)
- Prostate cancer was the single most common cancer site among men
- For women, breast cancer accounted for over 30 % of all new cancer cases

Figure 6. More than 407 000 new cancer cases in Italy were estimated in 2022



Notes: Non-melanoma skin cancer is excluded; uterine cancer does not include cervical cancer.
Source: European Cancer Information System.

Top five most frequently diagnosed cancers in Italy in 2023

Rank	Males	Females	Whole population
1	Prostate	Breast	Breast (55.900)
2	Lung	Colorectal	Colorectal (50.500)
3	Colorectal	Lung	Lung (44.000)
4	Bladdder	Thyroid	Prostate (41.100)
5	kidney	Endometrium	Bladder (27.700)

Cancer prevention is one of the main priorities of the five-year National Prevention Plan introduced in Italy in August 2020 (Ministry of Health, 2020) and of the National Oncology Plan 2023-2027 (Ministry of Health, 2023).

Epidemiology

- Within the next two decades the number of new oncological diagnoses in Italy will increase, each year, by 1.3% among men and by 0.6% among women
- On the other hand the Oncology in Italy has made important progress, in terms of thousands of lives saved
- Cancer is increasingly treatable disease and many patients regain their «previous life»
- The 2% of the Italian population (1.300.000 people) is made of “long-survivors”

Assumptions

- The ageing of working populations and increased life expectancy for people suffering from neoplastic disease leads to an increased incidence of neoplastic diseases among several categories of workers
- It then becomes more and more frequent that the Occupational Physician (Medico Autorizzato) should evaluate fitness to work with exposure to ionizing sources in workers suffering from a neoplastic disease
- It is not possible (and it is not correct) to define a unique model to apply to all cases; on the other hand, it is possible and desirable to clarify and systematize the elements of judgment in order to identify the general criteria that can help the Occupational Physician to formulate the judgment of fitness

**CRITERIA TO FORMULATE THE JUDGEMENT OF FITNESS TO I.R EXPOSURE IN WORKERS
WITH PREVIOUS DIAGNOSIS OF CANCER OR IN REMISSION**

- 1. Elements related to *cancer characteristics***
- 2. Elements related to *worker conditions***
- 3. Elements related to *work activities***
- 4. Elements related to *Regulations, Guidelines***

1. Elements related to cancer characteristics

- Time of onset of the neoplasia
- Site of occurrence of the neoplasia
- Histological type
- Degree of differentiation and staging
- **Oncological prognostic judgment** (probability of healing or relapse at 5 years after remission of the disease)
- Position of the neoplasia in the radioinducibility scale
- Cause Probability calculation (and any considerations on its meaning and applicability)

1st partial judgment: favorable/unfavorable/doubtful

2. Elements related to worker conditions

- **Coexisting other pathologies**
- **Chemo/radiotherapy treatments**
- **Psychological condition of the worker**
- **Professional and career expectations, will of the worker**

2nd partial judgment: favorable/unfavorable

3. Elements related to work activities

- Type of radiation or radionuclide
- Type of potential exposure: global and/or partial external irradiation, internal irradiation
- Possibility of using Personal Protective Equipment

3rd partial judgment: favorable/unfavorable

4. Elements related to Regulations, Guidelines

- D.M. of Health n. 488/01 which list pathophysiological conditions , "while not excluding a priori fitness to work that exposes to ionizing radiation, must be evaluated with particular attention by the Doctor assigned to Medical Surveillance"
- IAEA (International Atomic Energy Agency) 2004: the document states that: "there is no intrinsic reason why workers who have previously undergone radiation treatment are excluded from work. Exposure to ionizing radiation, within the dose limits prescribed by law, does not entail - in workers with previously treated malignancies - a significant increase, compared to healthy workers, in the risk of radio-induced tumors ..."

4th partial judgment: favorable/unfavorable/not applicable-doubtful

**CRITERIA TO FORMULATE THE JUDGEMENT OF FITNESS TO I.R EXPOSURE IN
WORKERS WITH PREVIOUS DIAGNOSIS OF CANCER OR IN REMISSION**

As a result of the analysis of the different groups of elements of judgment and on the basis of the opinions for each item it is possible to express an overall final judgment of fitness to ionizing sources exposure

Overall favorable opinion  **FIT**

Overall favorable opinion (with the formulation of any specific requirements/limitations)

 **FIT, SUBJECT TO CERTAIN CONDITIONS**

Unfavorable opinion  **UNFIT**

Final considerations on the evaluation criteria in our experience

- **The disease characteristics represent the factor that more has negatively affected the resumption of work at risk of exposure**
- **The worker's general health and above all the psychological and motivational conditions are the factors that have usually positively influenced the favorable judgment for resuming work at risk**
- **The aspects concerning the characteristics of the work favorably condition the readmission to exposure risk, especially when suitable personal/collective protective equipment are available**
- **The aspects concerning legislation and Guidelines are not always easy to apply/interpret and represent the most complex and "non-decisive" item in the evaluation process**

CONCLUSIONS

Clinical evaluation and assessment of fitness are obviously strictly related furthermore Italian Association of Medical Radiation Protection (AIRM) suggests other important aspects that should be taken into account in order to carry out a fair assessment of fitness.

The aim of AIRM is to provide a sort of flow chart to be followed by the physician to express a fair final fitness to work judgement in employees suffering from neoplastic diseases .

It is always essential to carefully analyze each individual situation examining all the elements of judgment because the assessment of the fitness to work in employees affected by neoplasia always represents a clinical issue, as well as human and social one

**Fitness to work and occupational exposure to ionizing radiation
criteria for the evaluation in workers with neoplastic diseases**



THANK YOU FOR YOUR ATTENTION

Giuseppe.taino@unipv.it

Italian Association of Medical Radiation Protection