

INDICATORS OF LONG-TERM SURVIVAL AND CURE OF CANCER

Luigino Dal Maso (1), Stefano Guzzinati (2), Roberta De Angelis (3) and AIRTUM Working Group (4)

- (1) Aviano National Cancer Institute-IRCCS, Aviano, Italy dalmaso@cro.it
- (2) Veneto Cancer Registry, Padova, Italy,
- (3) Italian National Institute of Health (ISS), Rome, Italy
- (4) <http://www.registri-tumori.it/cms/it/Rapp2014>

Background

The number of persons living after a cancer diagnosis is increasing (recent diagnosis, long-term survivors and cured)

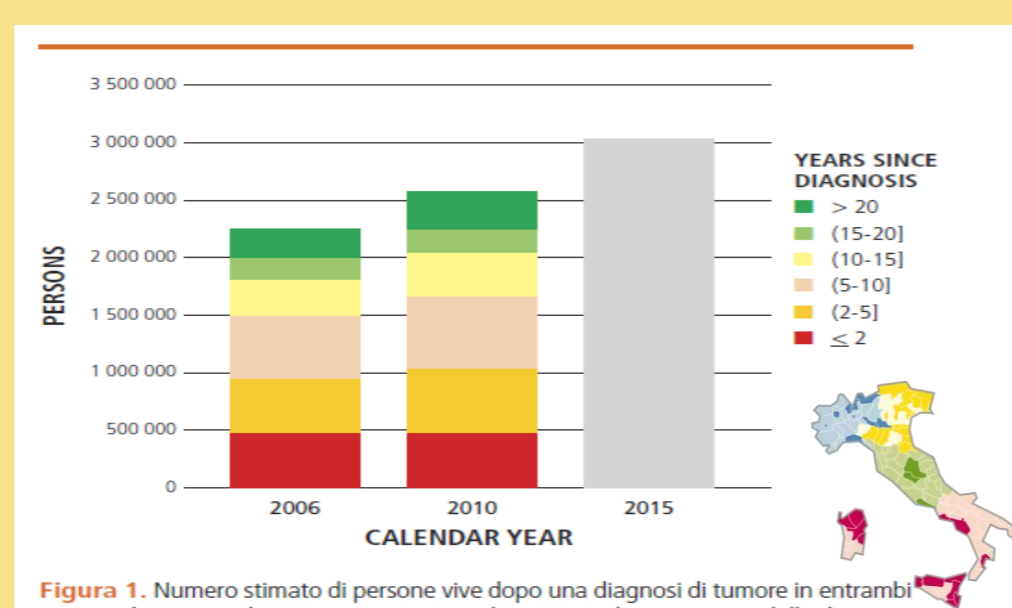
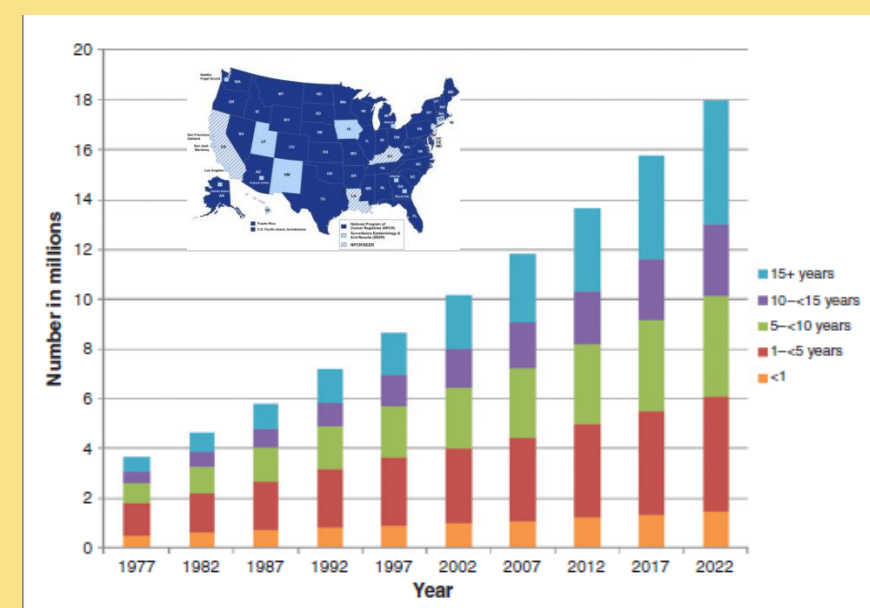


Figura 1. Numero stimato di persone vive dopo una diagnosi di tumore in entrambi i sessi nel 2006 e nel 2010 e proiezioni per il 2015 in Italia, per tempo dalla diagnosi.

Presently, they (i.e., cancer survivors) are 15 millions in USA and 3 millions in Italy, approximately 5% of the overall population in each

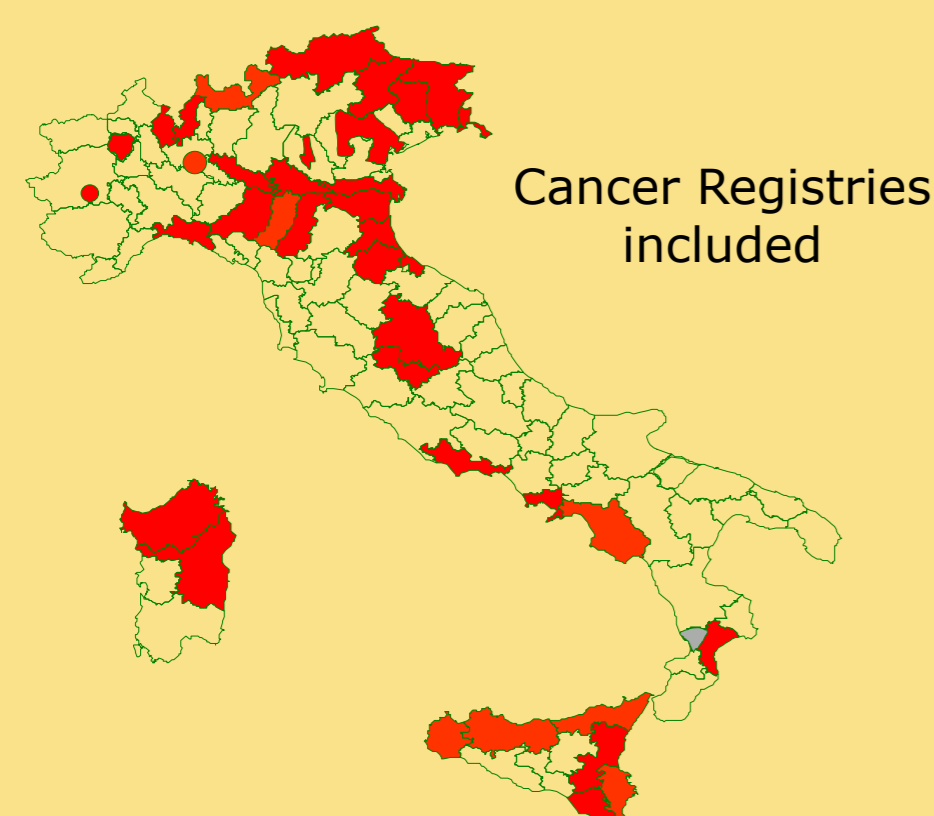
QUESTIONS

PARTIALLY OR TOTALLY UNANSWERED:

How many years will I have to wait to consider myself cured?

How many patients will be cured from the disease?

How many patients are already cured from the disease?

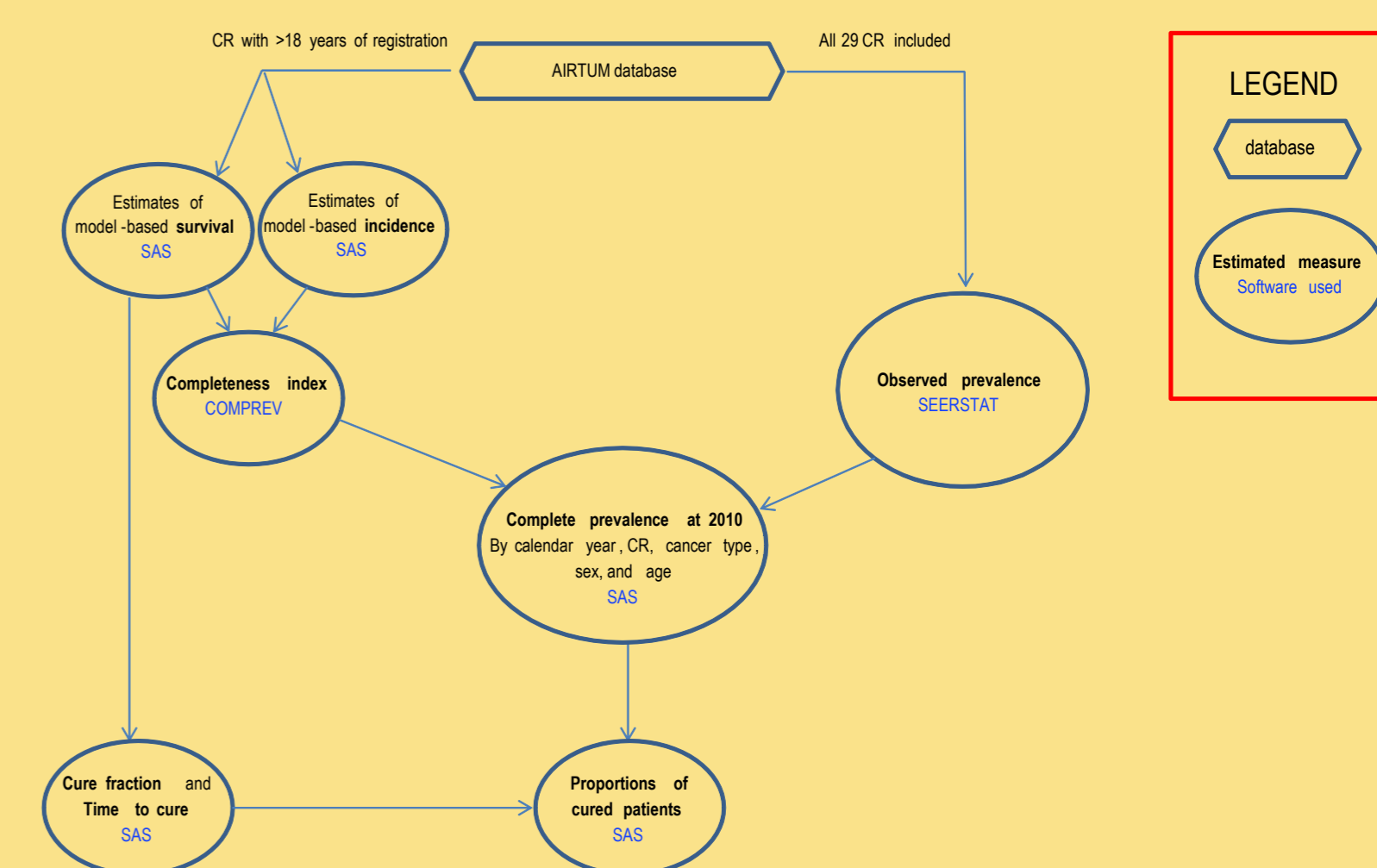


Materials

Data from 1.6 million Italian cancer patients diagnosed between 1976 and 2010 were included.

Methods

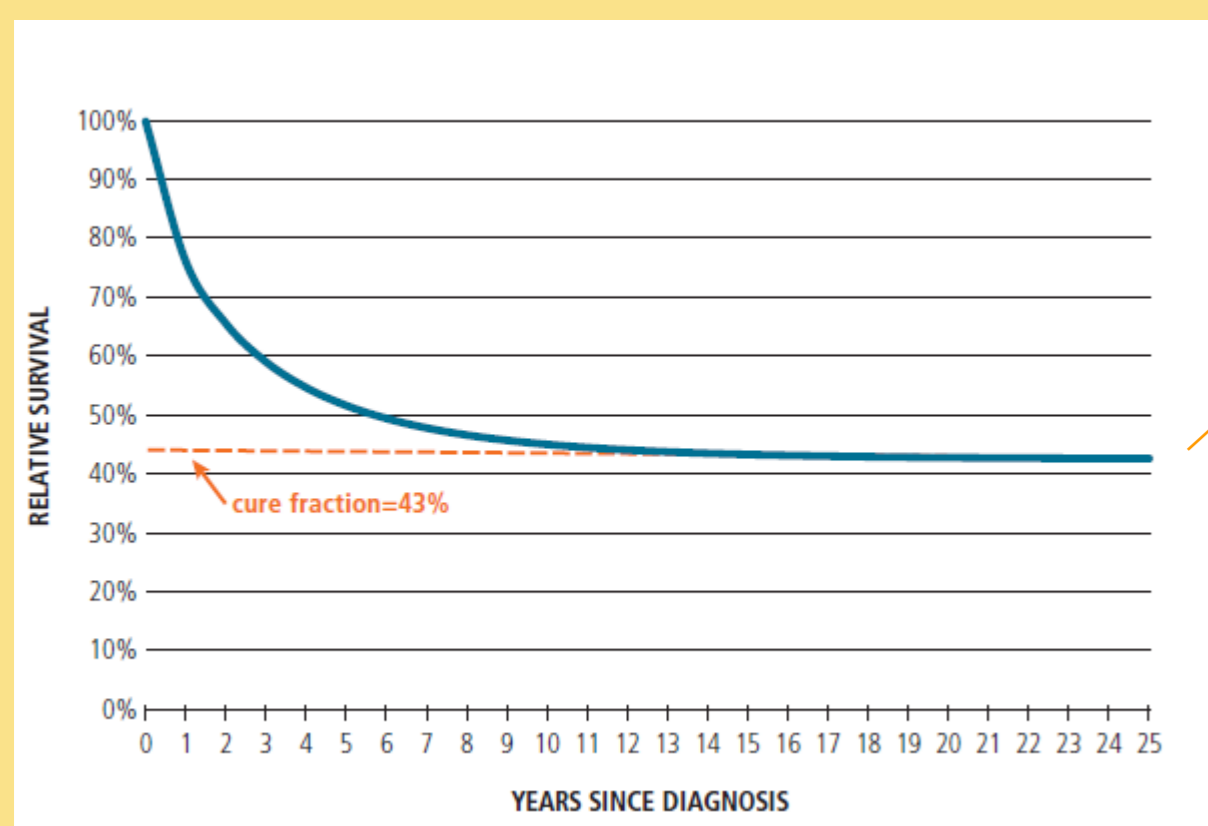
Validated statistical models had been used to estimate complete prevalence and four population-based specific indicators of cancer cure, by cancer type, sex, age, and period.



Results

1. Cure fraction

Proportion of cancer cases who are expected to reach the same death rates of the general population



This proportion (dashed line) represents patients who will not die as a result of their cancer. It equals the plateau reached by the relative survival curve (43% in Italian men diagnosed with colorectal cancer aged 60-74 years).

EXAMPLES:
CANCER PATIENTS DIAGNOSED IN ITALY, 1985-2009

AGE AT DIAGNOSIS	CURE FRACTION %	
	MALE	FEMALE
0-44	60%	65%
45-59	52%	56%
60-74	43%	47%
75+	38%	41%

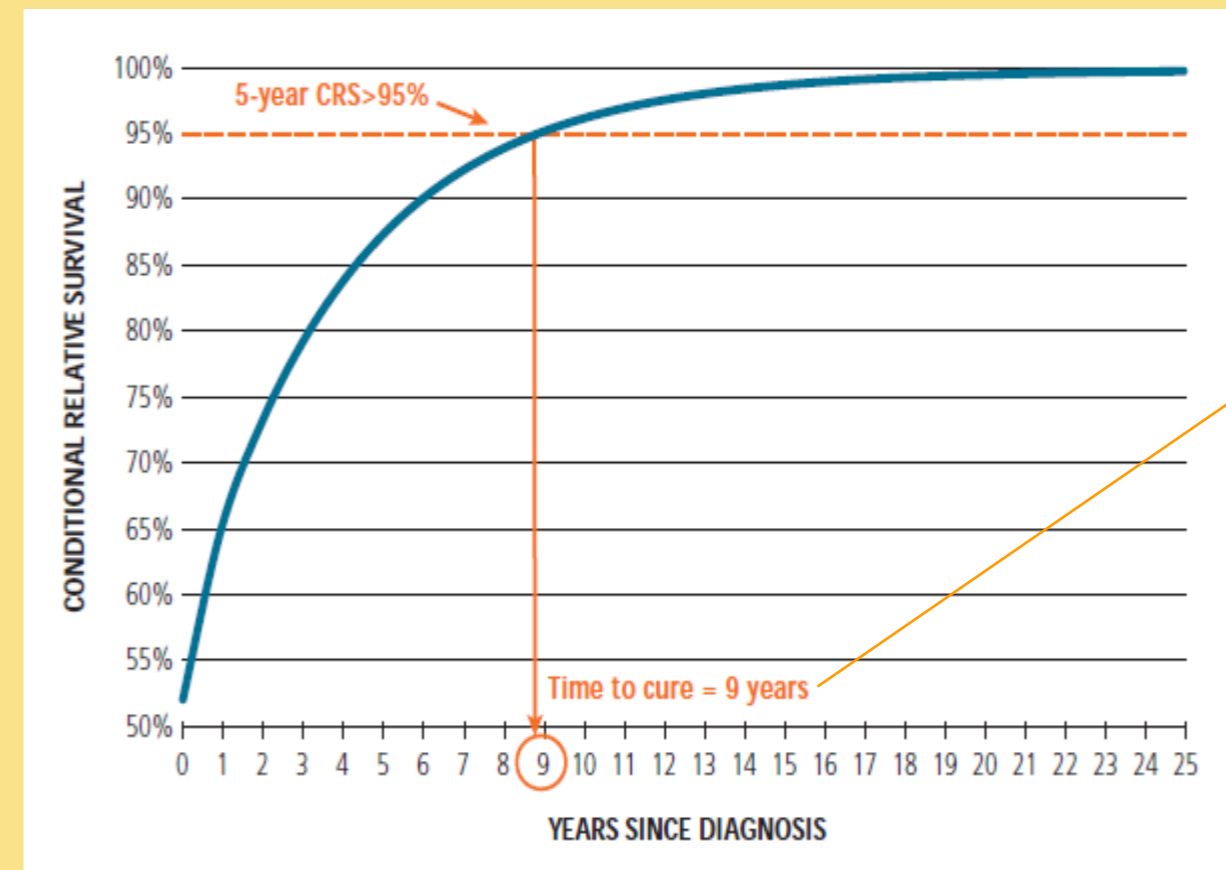
AGE AT DIAGNOSIS	CURE FRACTION %	
	FEMALE	
0-44	46%	
45-59	64%	
60-74	52%	
75+	47%	

AGE AT DIAGNOSIS	CURE FRACTION %	
	MALE	FEMALE
0-44	96%	99%
45-59	84%	95%
60-74	50%	74%
75+	35%	38%

AGE AT DIAGNOSIS	CURE FRACTION %	
	MALE	FEMALE
0-44	7%	14%
45-59	4%	7%
60-74	2%	3%
75+	1%	1%

2. Time to cure

Time span after cancer diagnosis necessary to eliminate excess mortality due to cancer



When five-year conditional relative survival (blue line) becomes >95%, excess mortality can be classified as "hardly any" or negligible (9 years in Italian men diagnosed with colorectal cancer aged 60-74 years).

EXAMPLES:
CANCER PATIENTS DIAGNOSED IN ITALY, 1985-2009

AGE AT DIAGNOSIS	TIME TO CURE YEARS	
	MALE	FEMALE
0-44	7	6
45-59	8	7
60-74	9	8
75+	10	8

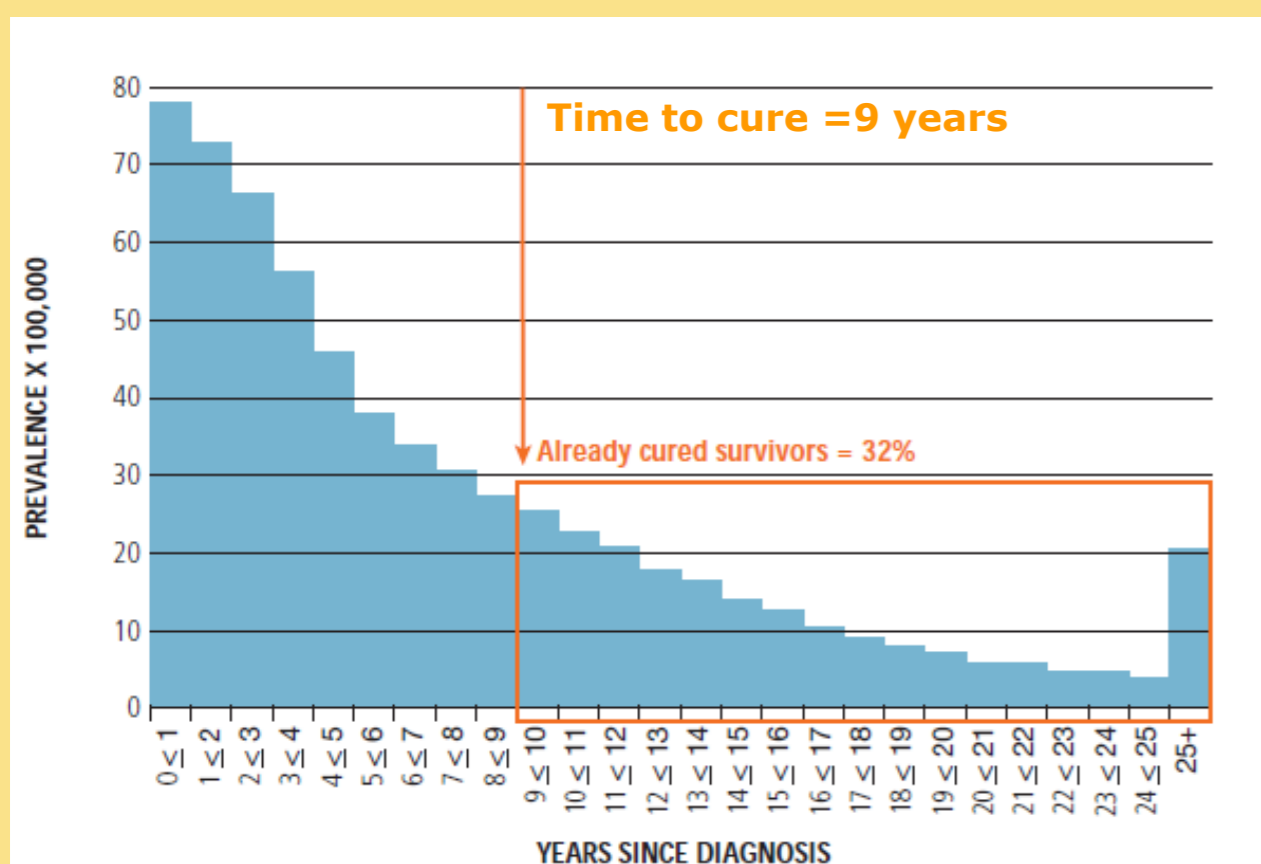
AGE AT DIAGNOSIS	TIME TO CURE YEARS	
	FEMALE	
0-44	>25	
45-59	15	
60-74	20	
75+	17	

AGE AT DIAGNOSIS	TIME TO CURE YEARS	
	MALE	FEMALE
0-44	1	1
45-59	4	1
60-74	9	5
75+	4	5

AGE AT DIAGNOSIS	TIME TO CURE YEARS	
	MALE	FEMALE
0-44	6	6
45-59	6	7
60-74	7	7
75+	7	7

3. Already cured

Proportion of patients who have survived longer than time to cure

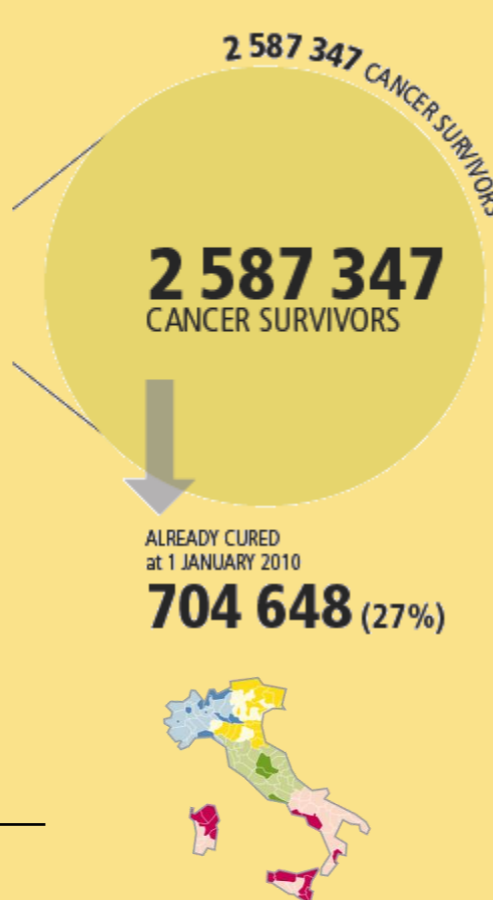


The rectangle encloses the already cured patients (32% years in this example, showing distribution of prevalent cases by years since diagnosis).

EXAMPLES:
ALREADY CURED AMONG CANCER SURVIVORS ITALY, 2010

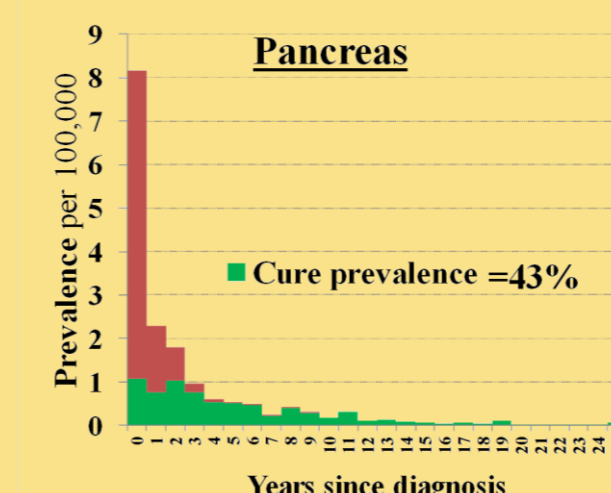
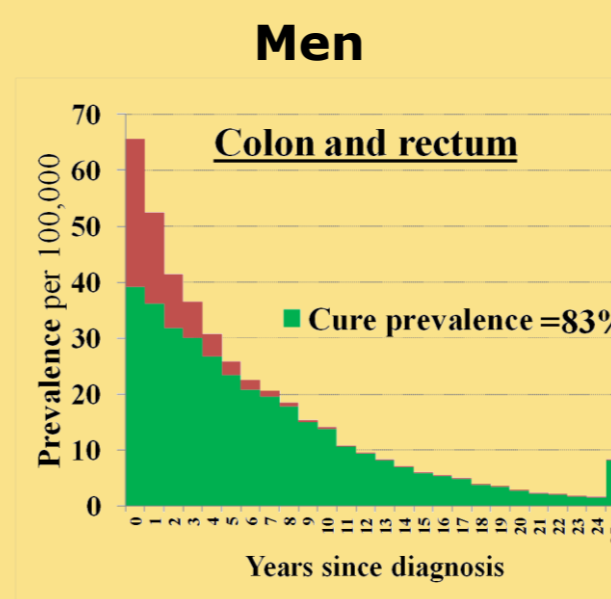
Cancer type (examples)	Men	Women
Stomach	40%	45%
Colon-rectum	30%	44%
Lung	22%	18%
Breast		16%
Cervix uteri		74%
Prostate	0%	
Testis	94%	
Bladder	1%	3%
Thyroid	62%	81%
Hodgkin lymphoma	69%	75%
Non-Hodgkin lymphoma	3%	1%
All cancer types*	20%	33%

*Obtained as the sum of already cured by cancer type and sex



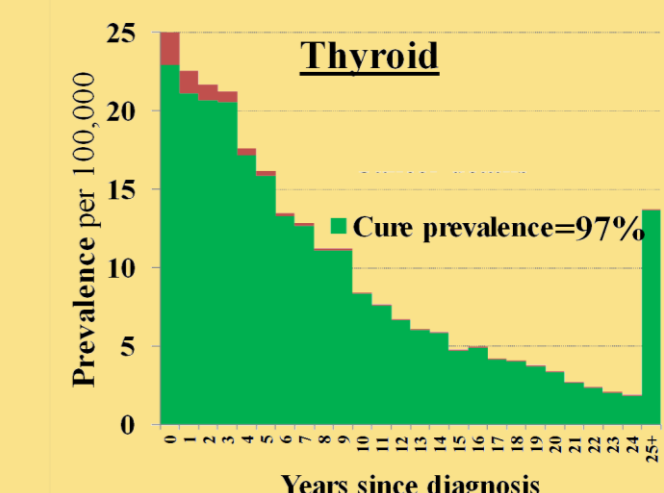
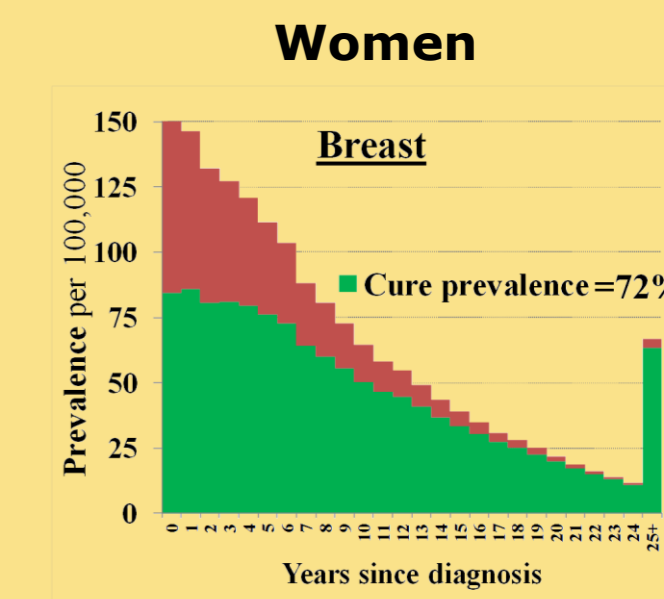
4. Cure prevalence

Proportion of patients out of all prevalent cases who will not die of their cancer (green bars)



EXAMPLES:
CURE PREVALENCE ITALY, 2006

Obtained as the sum of prevalent patients expected to reach the same death rates of the general population (cure fraction), given that they have already survived X years.



CONCLUSIONS:

The availability of these indicators has a high potential impact on health planning, clinical practice, and patients' perspective

Major limitatons

- The presented estimates, in particular, those for cure fraction and time to cure, were average figures referred to groups of patients
- The identifiability of cure models parameters can vary by cancer and age, depending on how rapidly the excess mortality due to cancer is reducing over time

More details

AIRTUM Working Group. Epidemiol Prev. 2014; 38(6 Suppl 1):1-122. www.registri-tumori.it/cms/it/Rapp2014

Dal Maso L, et al. Ann Oncol. 2014; 25(11):2251-60. doi:10.1093/annonc/mdu383

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