

LA RETE DI RADIOTERAPIA IN REGIONE PIEMONTE E INNOVAZIONE IN ONCOLOGIA

Umberto Ricardi



Con il patrocinio di:



TORINO

GOLDEN PALACE
SALA DIAMANTE
Via Arcivescovado, 18

8 LUGLIO 2019

IL FUTURO DEL SISTEMA SANITARIO PIEMONTESE
DAL PIANO DI RIENTRO AL FUTURO
DELLA SANITÀ IN REGIONE PIEMONTE



Evidence-based Estimates of the Demand for Radiotherapy

ESTRO

G.P. Delaney, M.B. Barton

Ingham Institute for Applied Medical Research, UNSW Australia, Liverpool Hospital, Liverpool, Australia

Clinical Oncology 27 (2015) 70–76

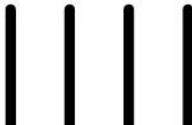
Comparison of original (2003) and revised (2012) optimal radiotherapy utilisation rates by cancer site

Cancer site	Proportion of all cancer in Australia (1998)	Proportion of all cancer in Australia (2008)	Original RUR (2003)	Revised RUR (2012)	Number of changes to radiotherapy indications
Bladder	3.0%	2.0%	58%	47%	0
Brain	2.0%	1.4%	92%	80%	Tree changed
Breast	13.0%	12.2%	83%	87%	0
			58%		
Cervix	1.0%	1.0%	58%	71%	+6
Colon	9.0%	8.4%	14%	4%	-1
Gall bladder	1.0%	0.6%	13%	17%	0
Head and neck	4.0%	3.3%	74%	74%	Tree changed
Kidney	3.0%	2.3%	28%	15%	-1
Leukaemia	3.0%	2.3%	4%	4%	Tree changed
Liver	1.0%	1.2%	0%	0%	0
Lung	10.0%	9.0%	76%	77%	0
Lymphoma	4.0%	4.2%	65%	73%	+2
Melanoma	11.0%	9.9%	23%	21%	+3
Myeloma	1.0%	1.2%	38%	45%	+3
Oesophagus	1.0%	1.2%	80%	71%	+1
Ovary	1.5%	1.1%	4%	4%	0
Pancreas	2.0%	2.1%	57%	49%	Tree changed
Prostate	12.0%	18.4%	60%	58%	Tree changed
Rectum	5.0%	4.2%	65%	60%	0
Stomach	2.0%	1.8%	68%	27%	+1
Testis	1.0%	0.8%	49%	7%	Tree changed
Thyroid	1.0%	1.8%	10%	4%	Tree changed
Unknown primary	4.0%	2.4%	61%	61%	0
Uterus	1.8%	1.8%	46%	38%	Tree changed
Vagina	0.1%	0.1%	100%	94%	-2
Vulva	0.2%	0.3%	34%	39%	Tree changed
Other	2.00%	5.0%	50%	19%	New Tree
Total (all cancer)	100.0%	100.0%	52.3%	48.3%	

RUR, radiotherapy utilisation rate (external beam).

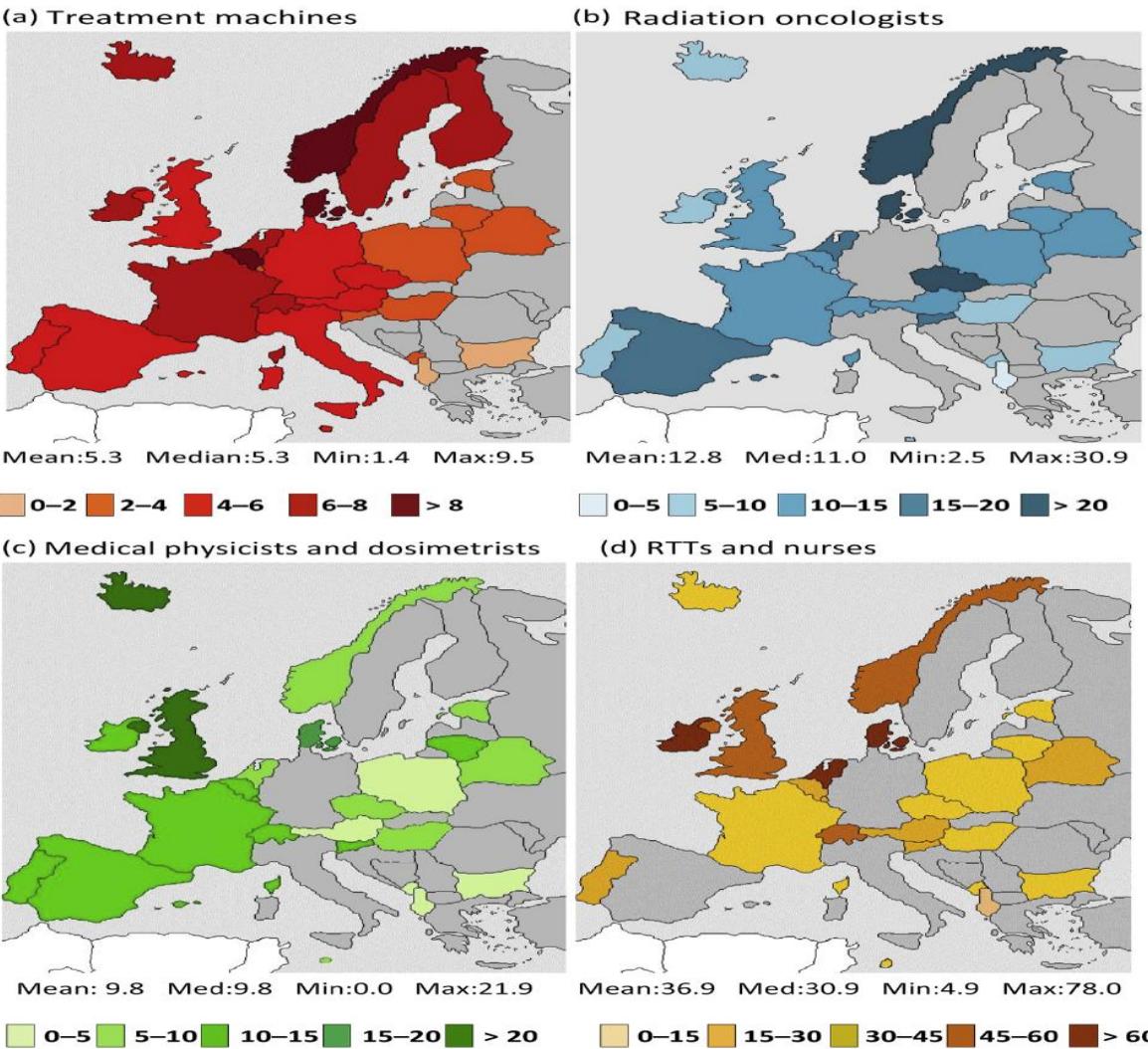
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**European SocieTy
for Radiotherapy
& Oncology**



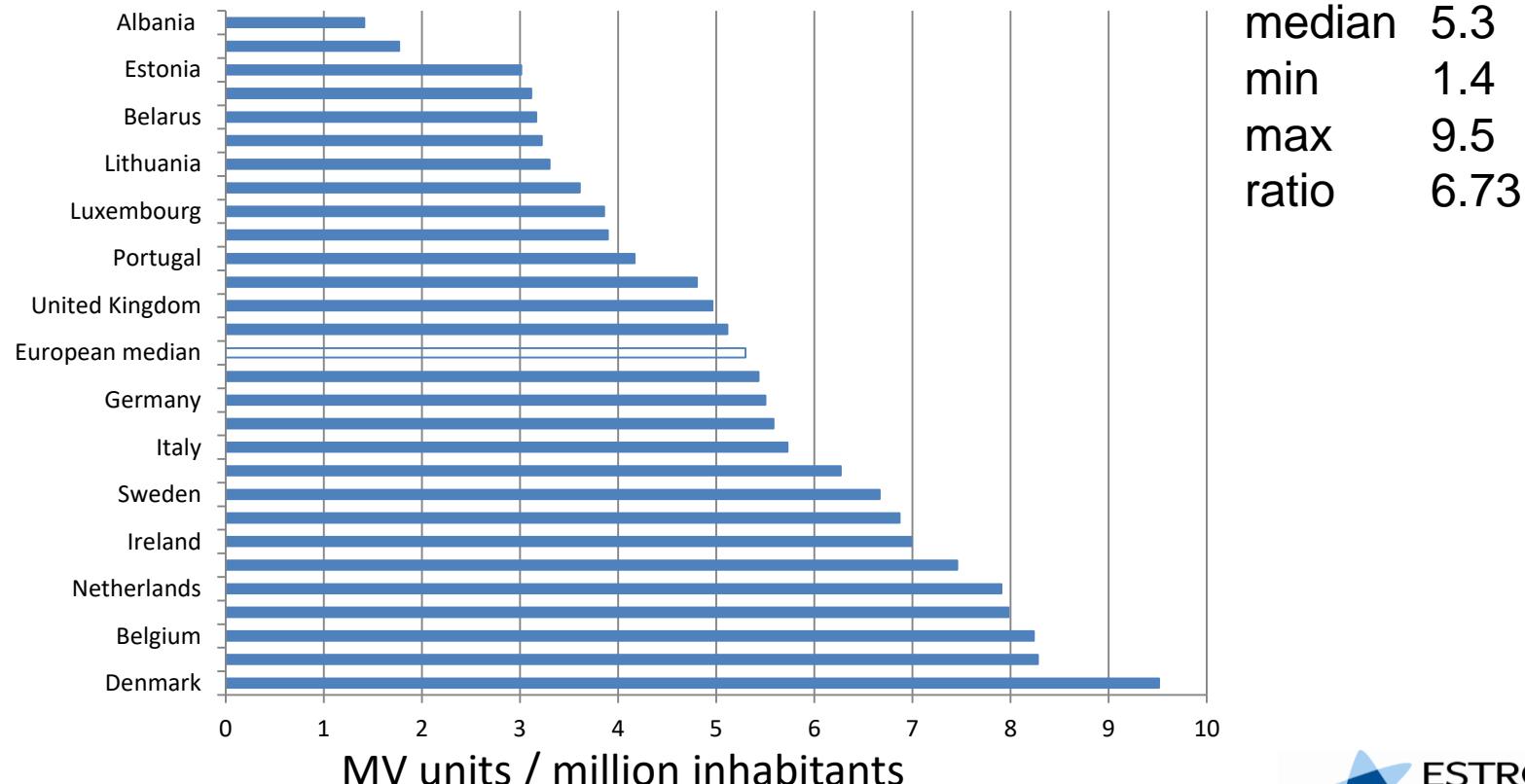
European map of resources availability

Lievens et al. Clin Oncol 2015



Large disparity in access to radiotherapy machines in Europe

ESTRO[®]



The optimal utilization proportion of external beam radiotherapy in European countries: An ESTRO-HERO analysis

Josep M. Borras ^{a,*}, Yolande Lievens ^b, Peter Dunscombe ^c, Mary Coffey ^d, Julian Malicki ^e, Julieta Corral ^{f,g},
Chiara Gasparotto ^h, Noemie Defourny ^h, Michael Barton ⁱ, Rob Verhoeven ^j, Liesbeth van Eycken ^k,
Maja Primic-Zakelj ^l, Maciej Trojanowski ^m, Primoz Strojan ⁿ, Cai Grau ^o

Radiotherapy and Oncology xxx (2015)

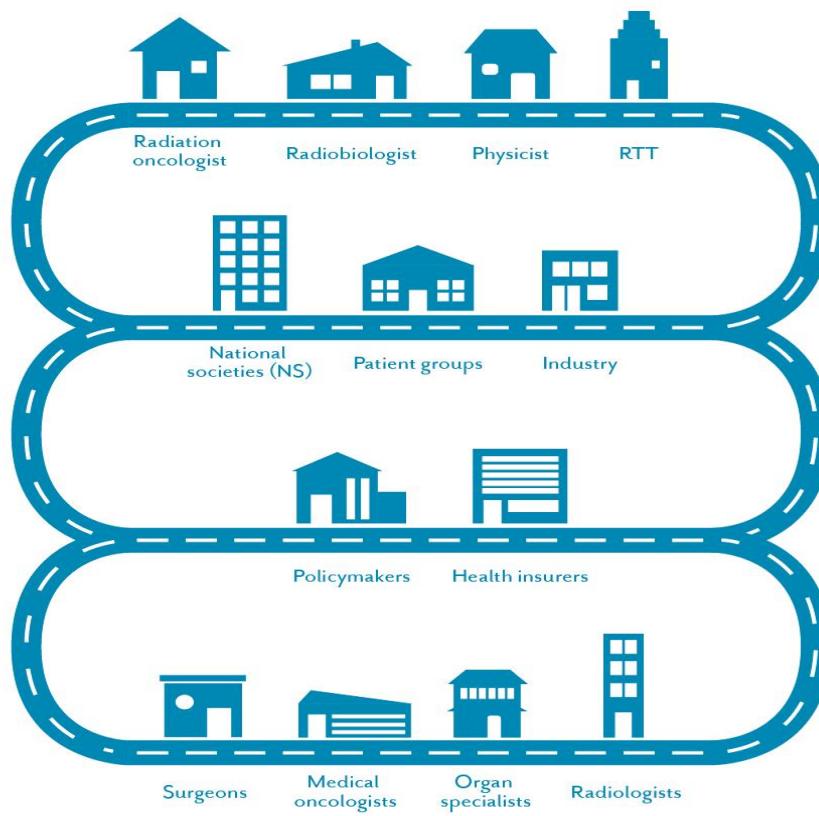
A quarter of cancer patients in EU do not receive
the radiation oncology treatment they need



Measurable in a patient centered key performance indicator
(kpi)

$$kpi = \frac{\text{patients receiving RT}}{\text{patients should receive RT}}$$

Close the Gap: Multi-stakeholders approach





Contents lists available at ScienceDirect

Radiotherapy and Oncology

journal homepage: www.thegreenjournal.com

Original Article

Radiation Oncology. Optimal Health for All, Together. ESTRO vision, 2030

Yolande Lievens ^{a,*}, Umberto Ricardi ^b, Philip Poortmans ^c, Dirk Verellen ^{d,e},
Chiara Gasparotto ^f, Christine Verfaillie ^f, Alessandro J. Cortese ^{f,g}



Radiotherapy: seizing the opportunity in cancer care

Coming 7 November

#RadiotherapySavesLives



10 facts about radiotherapy

1

At least a quarter of patients
who need radiotherapy
DO NOT receive it.¹

3

By 2035, if every cancer
patient who needs radiotherapy
has access to it, almost
ONE MILLION
more lives will be saved
every year worldwide.⁴

5

Radiotherapy alleviates
cancer symptoms, such as pain,
and **IMPROVES**
patients' quality of life.^{4-6,8}

7

State-of-the-art radiotherapy can
specifically match the shape of the
tumour it is **TARGETING**
—thus limiting damage to nearby
healthy organs and tissue.⁹⁻¹⁰

9

Advances in radiotherapy
mean **MORE** patients
than ever can access treatment
—for example, in cases of cancer
that are not eligible for surgery.¹¹⁻¹⁸

2

The demand for radiotherapy will
increase by **16%** by 2025^{2,3}
but current capacity is insufficient
to meet this demand.²

4

Radiotherapy
SAVES LIVES
—and is a key part
of curative treatment
for many types of cancer.^{2,5}

6

Radiotherapy is
NOT INVASIVE
—many patients receiving
radiotherapy can still go to work
and carry on with day-to-day life.⁵

8

Continuous improvements
in delivery of radiotherapy have
allowed treatment times to be reduced;
for example, the time for an average
radiotherapy course for breast or
prostate cancer has **HALVED**
in the past two decades.¹¹⁻¹⁵

10

There is significant
VARIATION
across Europe in access
to radiotherapy treatment,
services and trained staff.^{1,19-20}

These facts are summarised from the report
Radiotherapy: seizing the opportunity in cancer care.
For more information visit: mariecurielegacy.org

Indagine conoscitiva sui pazienti trattati, personale, attrezzature e tecniche

Centri RT Piemonte

1. Città della Salute e della Scienza
2. IRCCS Candiolo
3. Mauriziano
4. Alessandria
5. Asti
6. Biella
7. Cuneo
8. Ivrea
9. Novara (+ Vercelli)

10. San Luigi
11. Verbania

Centri: 11 Centri in Piemonte + 1 privato (Villa Maria Pia)

Linac: 28 + 1 privato (Piemonte)

Brachiterapia: 5

Dirigenti Medici: 64

Dirigenti Fisici: 39

TSRM: 113

Dosimetristi: 3

CPSE: 9

Infermieri: 21

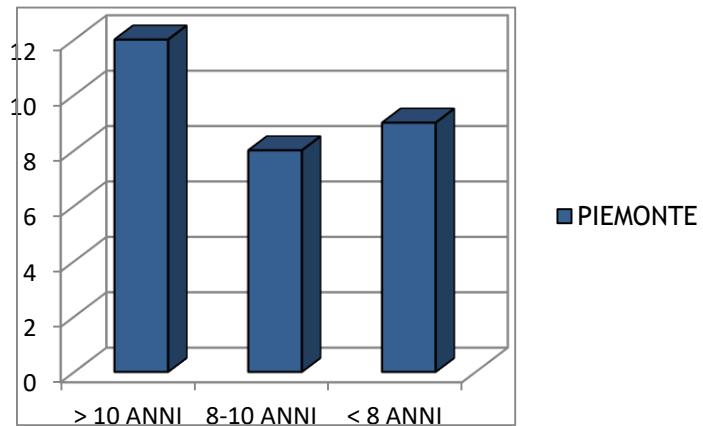
Personale Ausiliario: 10

Numero pazienti trattati 2017: 11.747



REGIONE PIEMONTE

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Obsolescenza tecnologica e assenza di »nuove tecnologie»

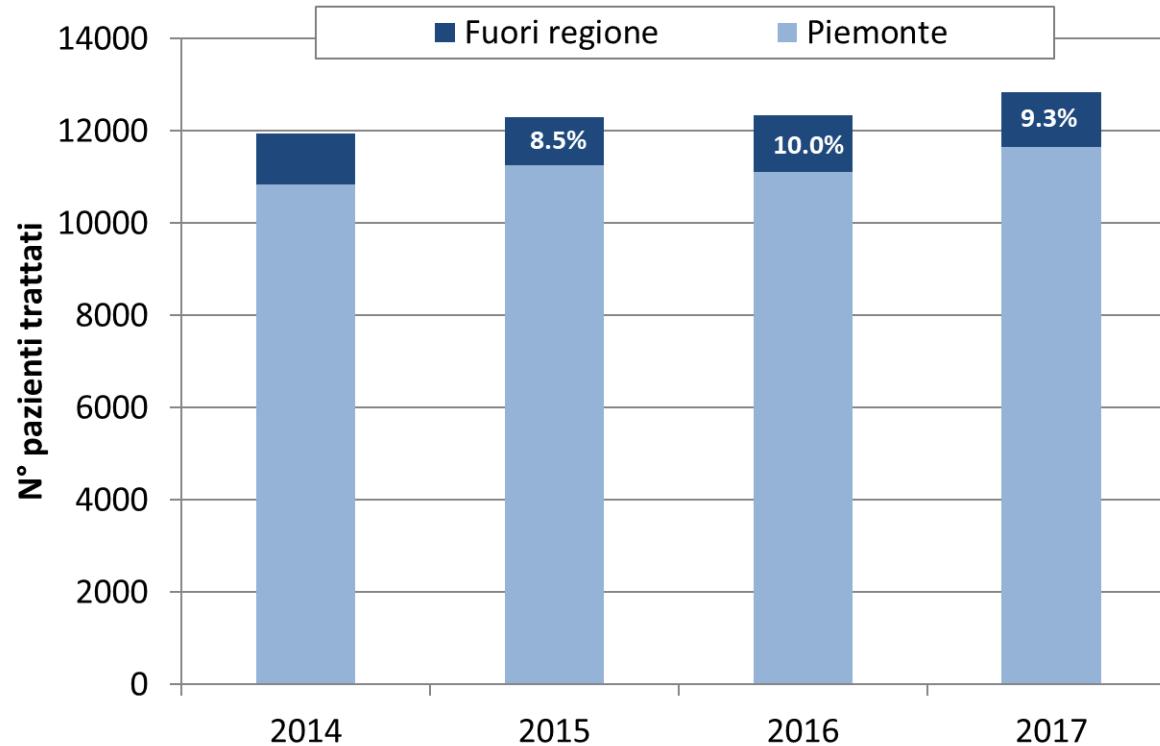
Rimini, 2-4 Novembre 2018



199 centri (138 pubblici, 61 privati)
583 apparecchiature

- 405 Linac
 - 26 Tomoterapia
 - 9 Gammaknife
 - 12 Cyberknife
 - 62 Brachiterapia
 - 48 IORT
 - 16 Plesio/Röntgen
 - 1 MRI Linac
 - 3 Prototerapia
 - 1 Ioni carbonio

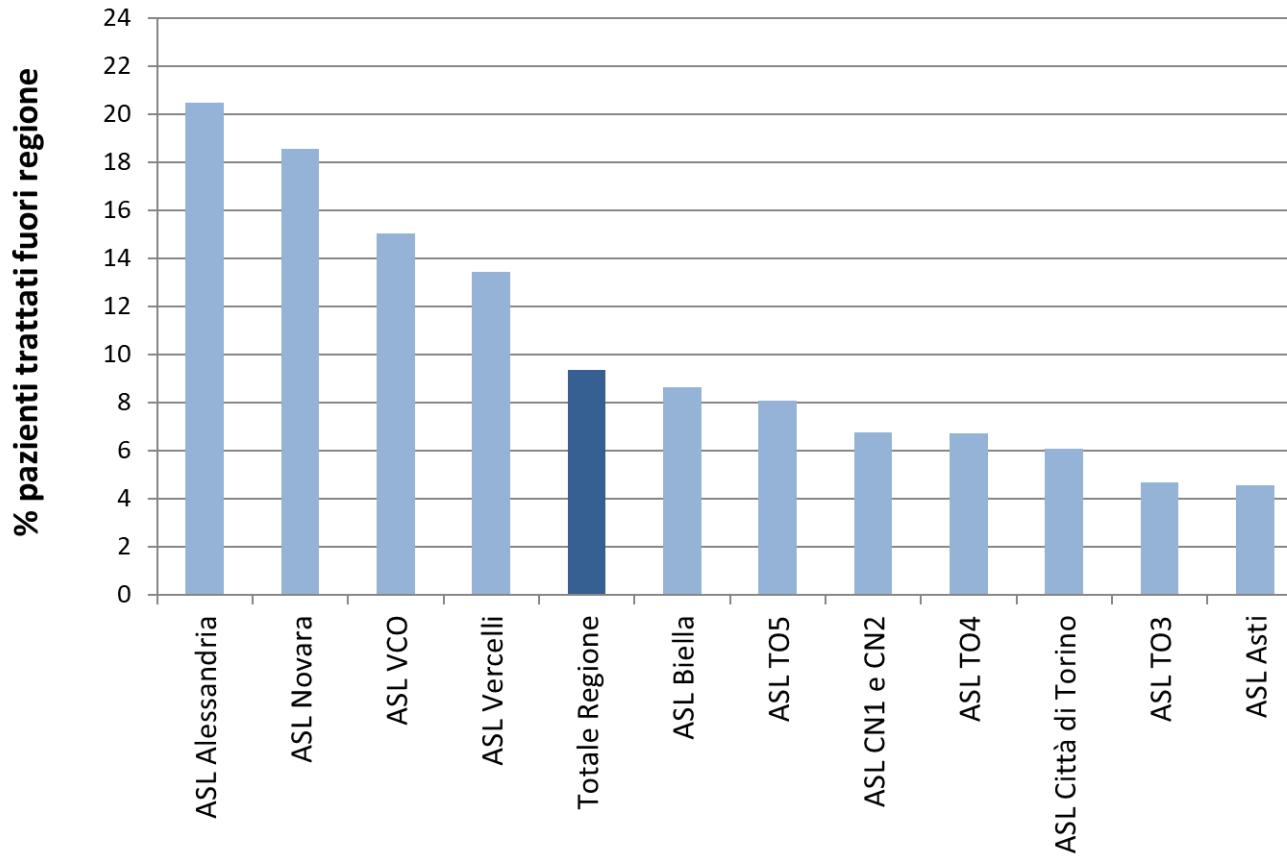
Mobilità passiva per trattamenti di Radioterapia. Residenti in Piemonte, 2014-2017



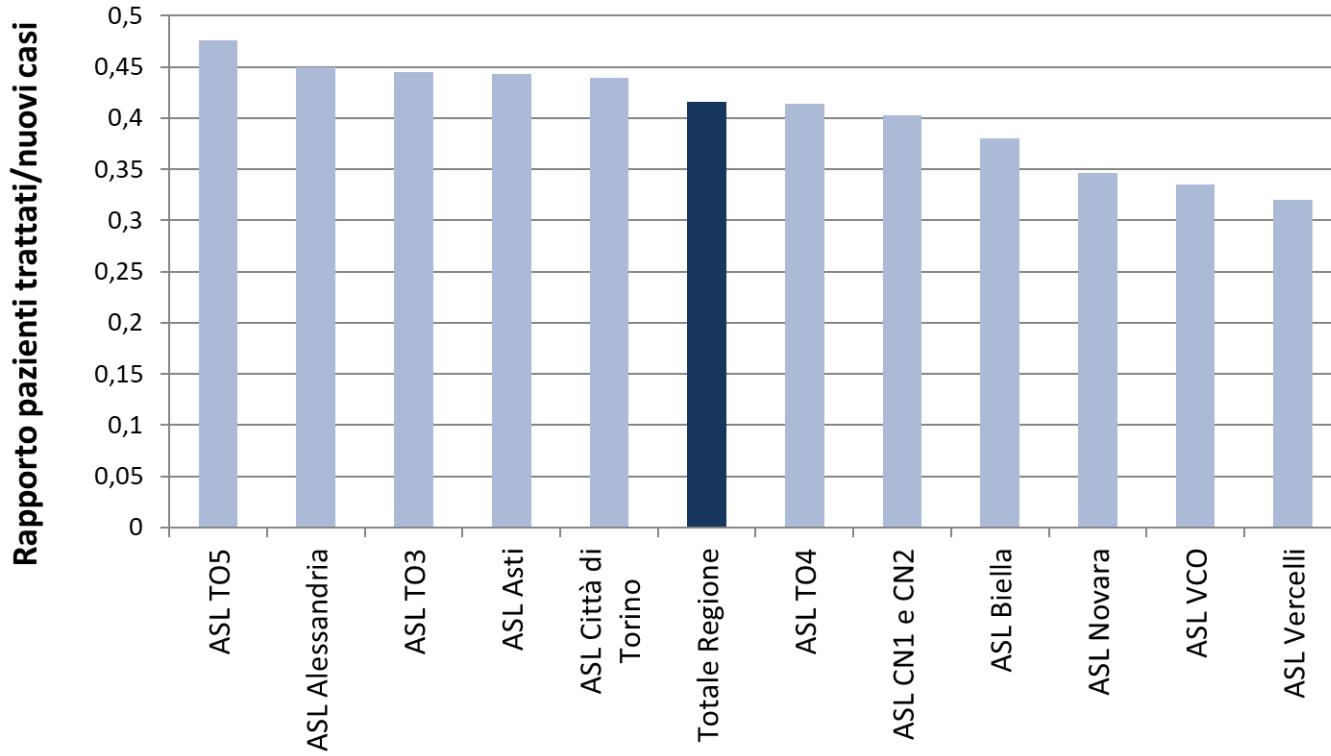
Mobilità passiva per trattamenti di Radioterapia per ASL di residenza.

Residenti in Piemonte, 2017

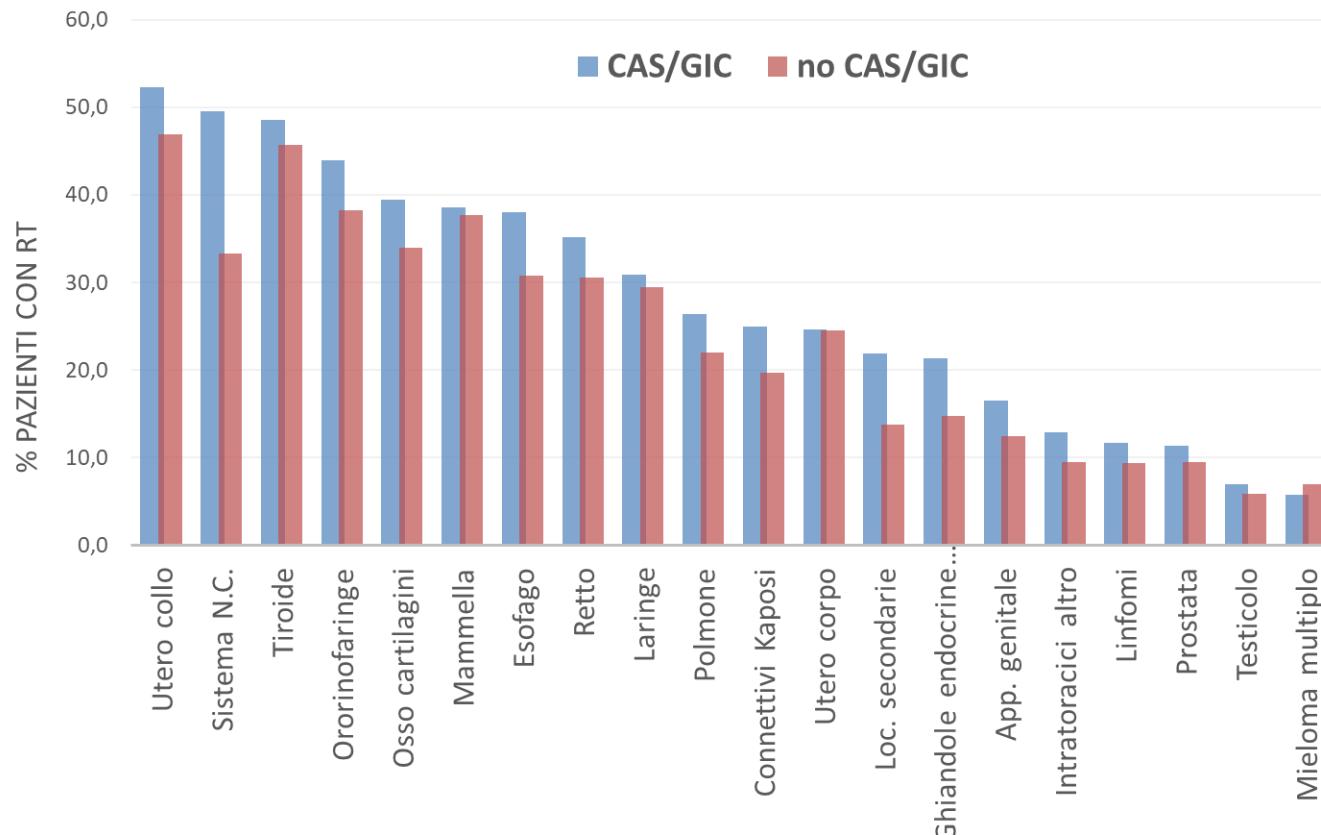
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Rapporto tra N=12845 pazienti con trattamenti di radioterapia
(inclusi trattamenti fuori regione) e N=30900 nuovi casi di
tumore per ASL di residenza. Residenti in Piemonte, 2017



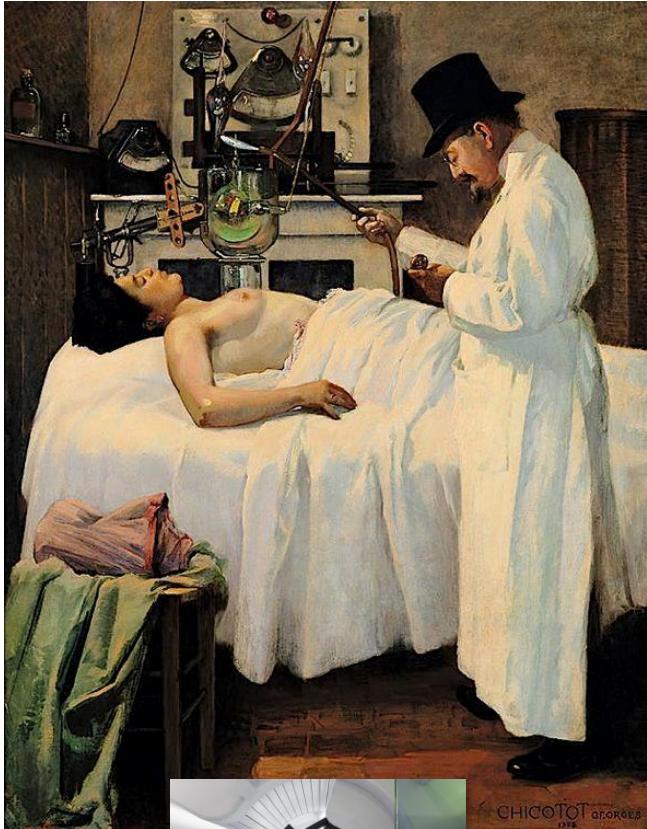
Percentuale di pazienti trattati con RT per visita CAS e/o GIC nei
6 mesi prima o dopo la diagnosi per tipo di tumore. Residenti in
Piemonte, 2017



The future of Radiation Oncology

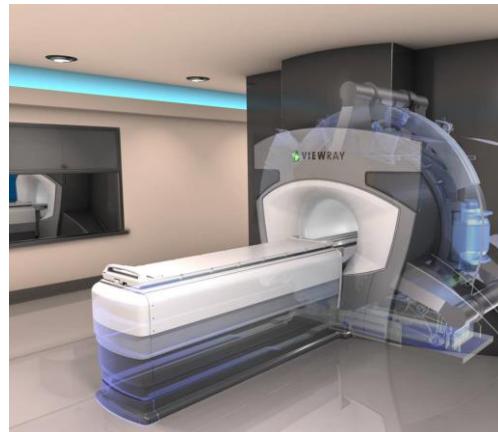
- Radiotherapy practice is deemed to change over the next decades due to:
 - ever-expanding needs (sixteen percent increase in radiotherapy needs in 2025)
 - wider adoption of hypofractionated and ablative schedules
 - clinical introduction of more advanced radiation technologies
 - closer integration with imaging
 - increasing capabilities of automation
 - morphological and functional adaptation into our daily treatments
 - scientific progress in all oncologic disciplines
 - genetics, predictive markers, big data analysis

Technology

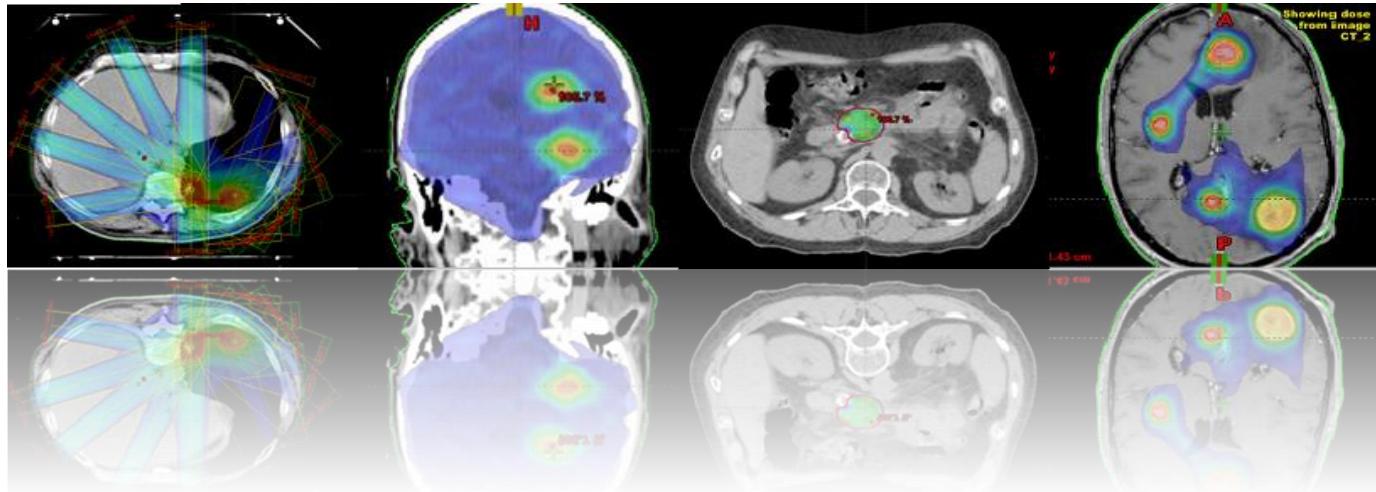


New technology: treatment delivery

- MR-guided adaptive radiotherapy
- Particles



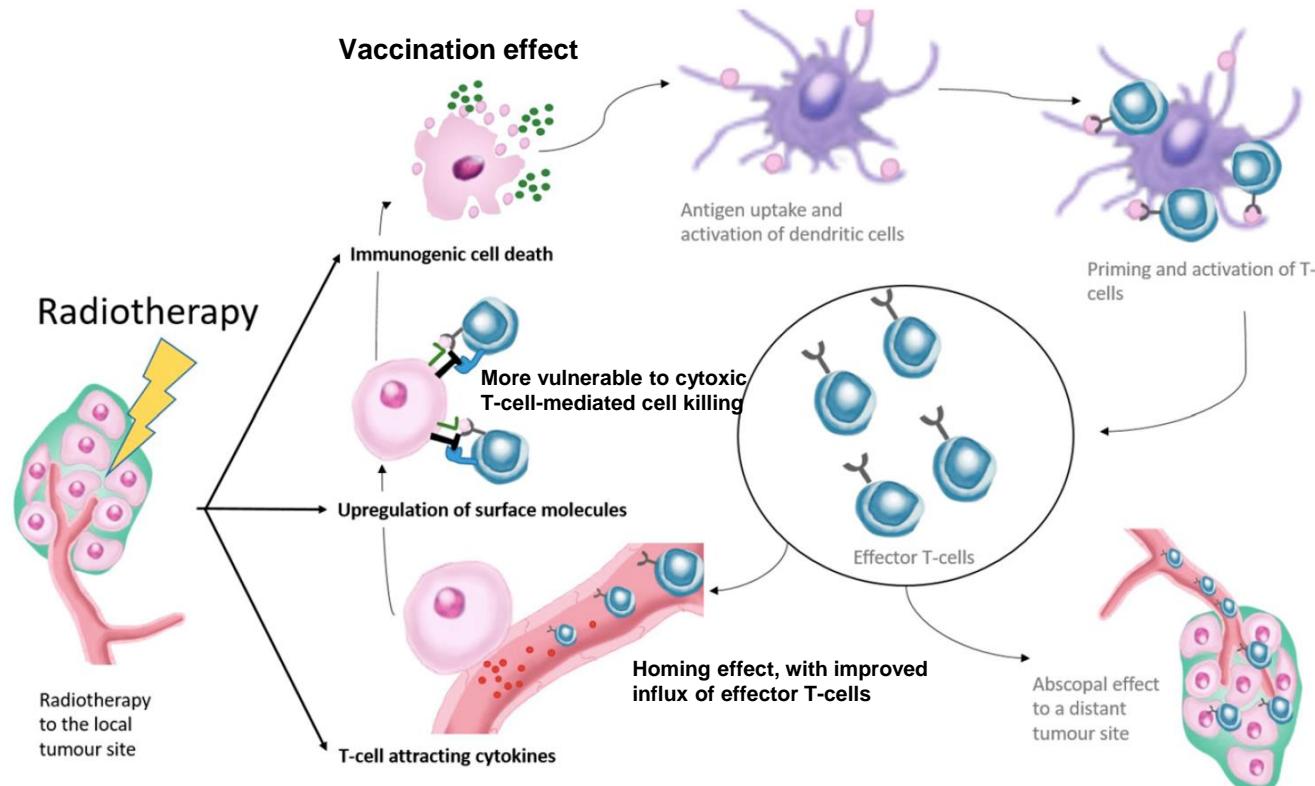
Ablative Radiation Therapy



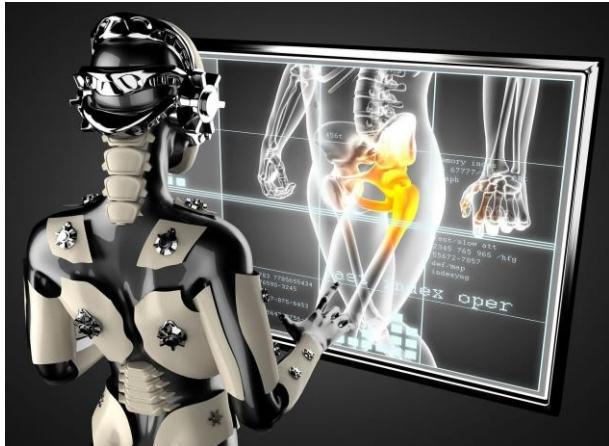
Ablative doses towards small target volumes

Radiotherapy Affects the Immune Response

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Artificial Intelligence in Medicine



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