Workshop
Medical Radioisotopes in the future:
European perspective

Supply and demand: estimating future requirements

Josep M Borras
University of Barcelona
Director, Cancer Plan, Catalonia, Spain
Brussels, February 7, 2019
Outline

• Assessing needs for the future: a perspective from cancer planning
• Evaluating the magnitude of the gap: a case study of the optimal versus actual utilization of radiotherapy
• Data is needed for cancer planning but not only data …. also a cancer plan for implementing changes
Variables to consider in planning resources

• Assess evidence based needs requires an evaluation of existing resources, and capacity of modelling the needs

• But also, planning in cancer care critically depends on the target population, reimbursement, and the potential future changes in a dynamic assessment of evidence

• Future challenge: Value of care
1. Assessment of the present situation
2. Evaluation of evidence based demand
3. Forecast of the future needs
NEEDS
optimal radiotherapy utilisation in European countries

AVAILABILITY
equipment & staffing guidelines reimbursement in Europe

ECONOMIC EVALUATION
of radiotherapy treatments and techniques in Europe

ACTIVITY-BASED COSTING
cost and productivity at the national level within European countries

HERO-project

Lievens & Grau. R&O 2012
Data required for planning resources: Population based perspective

• We need to take into account existing differences in:
  ✓ cancer incidence by country and tumor type
  ✓ stage at diagnosis
  ✓ Evidence based indications for radiotherapy

• Incidence has been estimated for each country in Europe for the year 2018: GLOBOCAN and EUROPEAN CANCER OBSERVATORY

• Sources of data: population based cancer registries
Age standardized cancer incidence 2018

Cancer incidence and mortality patterns in Europe: Estimates for 40 countries and 25 major cancers in 2018

J. Ferlay 1,6, M. Colombet 2, I. Soerjomataram 6, T. Dyba 1, G. Randi 3, M. Betto 4, A. Gaspar 1, O. Visser 1, F. Bray 1

Age standardized cancer incidence 2018

Cancer incidence and mortality patterns in Europe: Estimates for 40 countries and 25 major cancers in 2018

J. Ferlay, M. Colombet, I. Soerjomataram, T. Dyba, G. Randi, M. Bettio, A. Gavin, O. Visser, F. Bray

52% of all cancer patients should receive a radiotherapy treatment at least once.
Actual versus optimal utilization

In Europe, the median utilization rate is (only) 70% of the evidence-based optimum.

Borras et al. Radiother Oncol 2015
Radiotherapy is underutilized in most European countries, also in some of the most affluent.

“The actual utilization of radiotherapy is significantly lower than the optimal use predicted from the evidence based estimates in the literature. This discrepancy poses a major challenge for policy makers when planning the resources at the national level to improve provision in European countries.”
Increase in the number of patients by 2025 by country as compared to 2012 (in %)
Our projections show that many European countries are facing severe risk of radiotherapy shortage in the next decade.
The crucial balance

Availability
- Equipment
- Staff

Needs
- Patients
- Treatments

capacity
productivity
waste of money

waiting lists
underuse of RT
loss of lives
Why is RT (apparently) underutilized?

- **Patient factors**
  - Comorbidity and older age

- **Physician bias**
  - Specialists tend to recommend their own therapy

- **Geography**
  - Distance to hospital with radiotherapy

- **Health system related**
  - Shortage of resources, waiting lists, delays
  - Reimbursement and incentives
Physician bias

Specialists recommend the therapy that they deliver!!

Fowler et. al. JAMA 283(24):3217-3222, 2000
Distance to RT center

Norway 1997-2010 (329,670 incident cancers, 120,464 courses of RT)

Linn Åsli et. al., Int J Radiation Oncol Biol Phys, 90, 707-714, 2014
Norway RT utilization

1997-2010 (329,670 incident cancers, 120,464 courses of RT)

Linn Åsli et. al., Int J Radiation Oncol Biol Phys, 90, 707-714, 2014
Value-based radiotherapy

how to define value in radiotherapy?

Value = costs of delivering these outcomes

health outcomes that matter to patients

Porter, N Engl J Med 2010

Towards an evidence-informed value scale for surgical and radiation oncology: a multi-stakeholder perspective

Surgery and radiotherapy, two locoregional treatments, are essential to help improve cancer outcomes, control, and palliation. The continued evolution in treatment processes, techniques, and technologies—often at substantial increased costs—demands for decisions on outcomes that are most valued by patients, and the evidence that is required before clinical adoption of these practices. Three newly introduced frameworks—the European Society for Medical Oncology’s (ESMO) Cancer Value Framework, the American Society of Clinical Oncology’s (ASCO) Oncology Value Framework, and the National Comprehensive Cancer Network’s (NCCN) Oncology Value Framework—are designed to help patients and clinicians with decision-making. These frameworks were inspired with a focus on their methods and definition of patient benefit. In this review, we investigate the applicability of these frameworks to surgical and radiation oncology innovations. Findings show that these frameworks are not immediately transferable to locoregional cancer treatments. Moreover, the lack of emphasis on patient perspective and the reliance on traditional, trial-based endpoints such as survival, disease-free survival, and safety, calls for a new framework that includes real-world evidence with focus on the whole spectrum of patient-centered endpoints. Such an evidence-informed value scale would safeguard against the proliferation of low-value innovation while simultaneously increasing access to treatments that show significant improvements in the outcomes of cancer care.
Evidence on radiotherapy costs

Welcome to the ESTRO-HERO costing Tool. Developed by the HERO taskforce, this tool aims at calculating the actual cost and resource usage of External Beam Photon Radiotherapy (EBRT) at national level.

Introduction to the use of the tool

To make sure that your site and data editor run smoothly, we recommend using a recent version of Google Chrome browser.

The “Data input” icon takes you to the input dataset, where you can create, review and modify the dataset. Once completed, you will need to run the calculation.

Having completed the calculation, the results are then available through the “Results Datasets” Icon.

The tool has been developed through the ESTRO-HERO project (For more information on the HERO project, [https://www.estro.org/about/health-economics-in-radiation-oncology---hero/hero](https://www.estro.org/about/health-economics-in-radiation-oncology---hero/hero)).
Concluding comments

Key issues to reduce the gap between need and demand:

- Resources in the territory: centralized vs accessibility
- How to build networks of cancer care
- Organization of cancer care: multidisciplinary teams
- Reimbursement
- How to support innovation with high value
Concluding comments

- Data is available for assessing evidence based needs and it is feasible at national level.
- There is a need for long term planning of radiotherapy resources and staff.
- Combined efforts of policy makers, scientific societies and patients in an organized approach is required.
- National Cancer Control Programmes offers the right framework for fulfilling this objective due to the challenge posed by increasing number of patients, the availability of new technologies and the need of a multidisciplinary team.
Thanks to the HERO team
Cai Grau, Josep M Borras, Peter Dunscombe, Noémie Defourny,
Chiara Gasparotto, Mary Coffey, Ben Slotman, Marta Bogusz, Julian Malicki
Judith Van Loon and Lionel Perrier

CCORE team: Michael Barton

Cancer Plan team:
Josep A Espinas, Julieta Corral, Joan Prades, Paula Manchon.Walsh

jmborras@ub.edu