

Health technology assessment (HTA) and reimbursement models in gene and cell therapies

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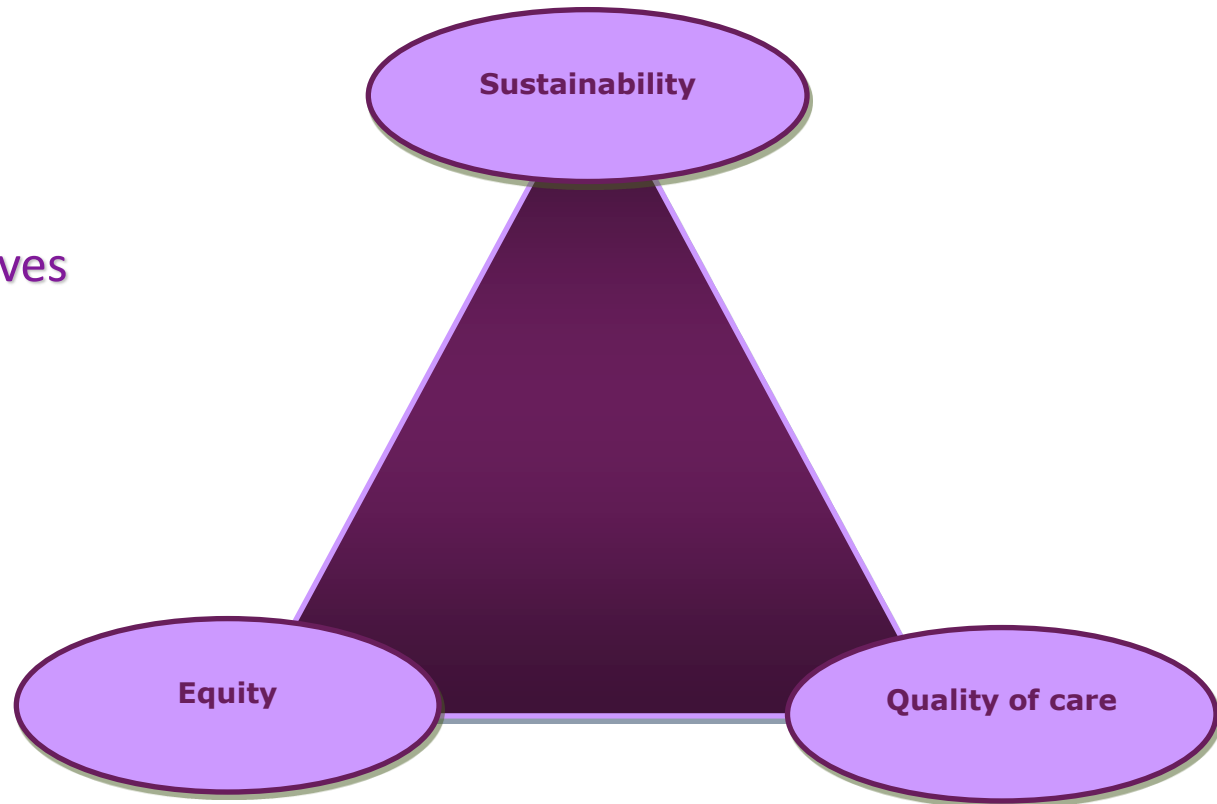
CDDF Gene and cell therapies

November 29-30, 2021

Policy goals in health care

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System objectives

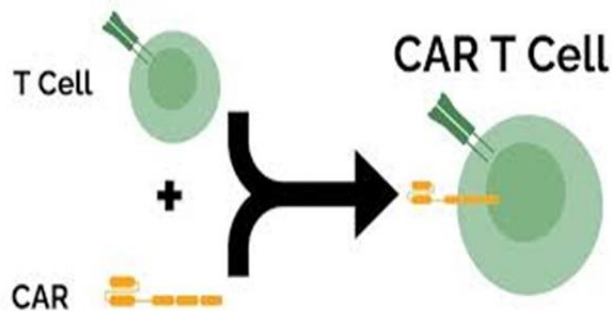


Goal:

Ensuring **affordable** and equitable access for (all) patients to **effective** therapies in a sustainable manner

E. Zafar

The good news: Many innovative (cancer) drugs

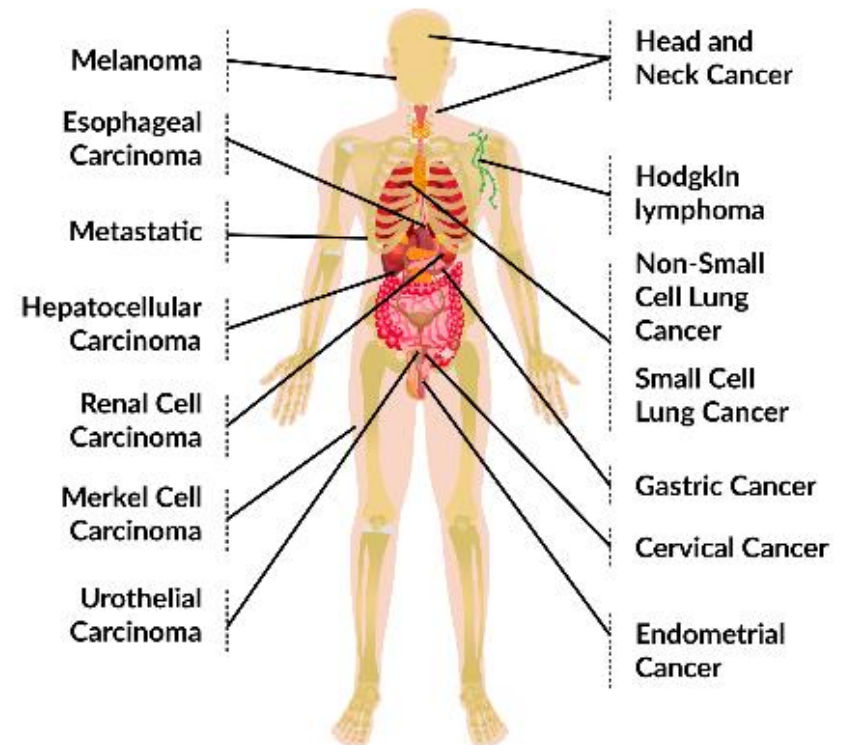


OPDIVO™
(nivolumab)

INJECTION FOR INTRAVENOUS USE 10 mg/mL

Pembrolizumab

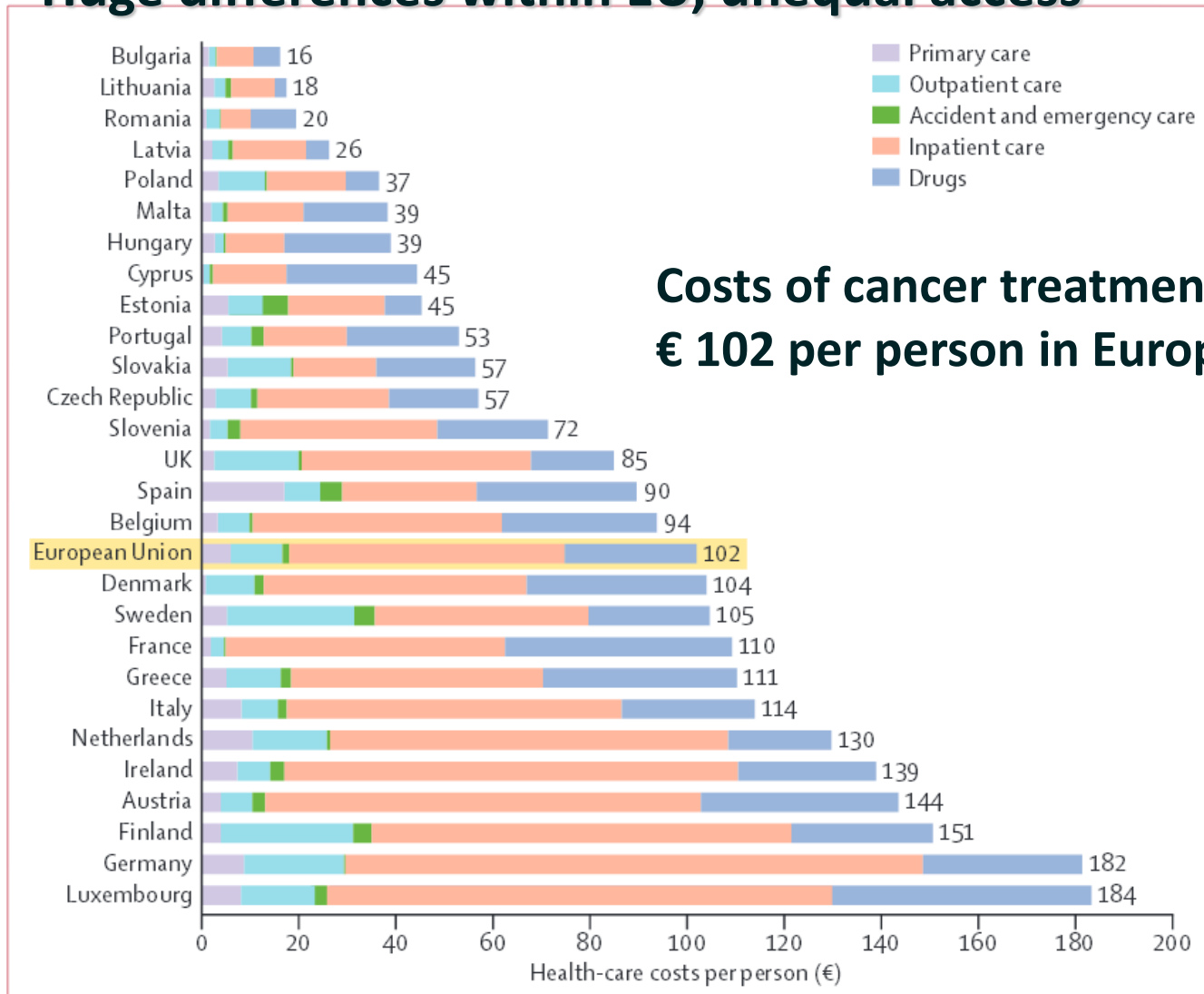
As of 1st January 2020 is FDA
approved for treating:



Erasmus

The bad news

Huge differences within EU, unequal access



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Figure 1: Health-care costs of cancer per person in European Union countries in 2009, by health-care service category

Data not adjusted for price differentials.

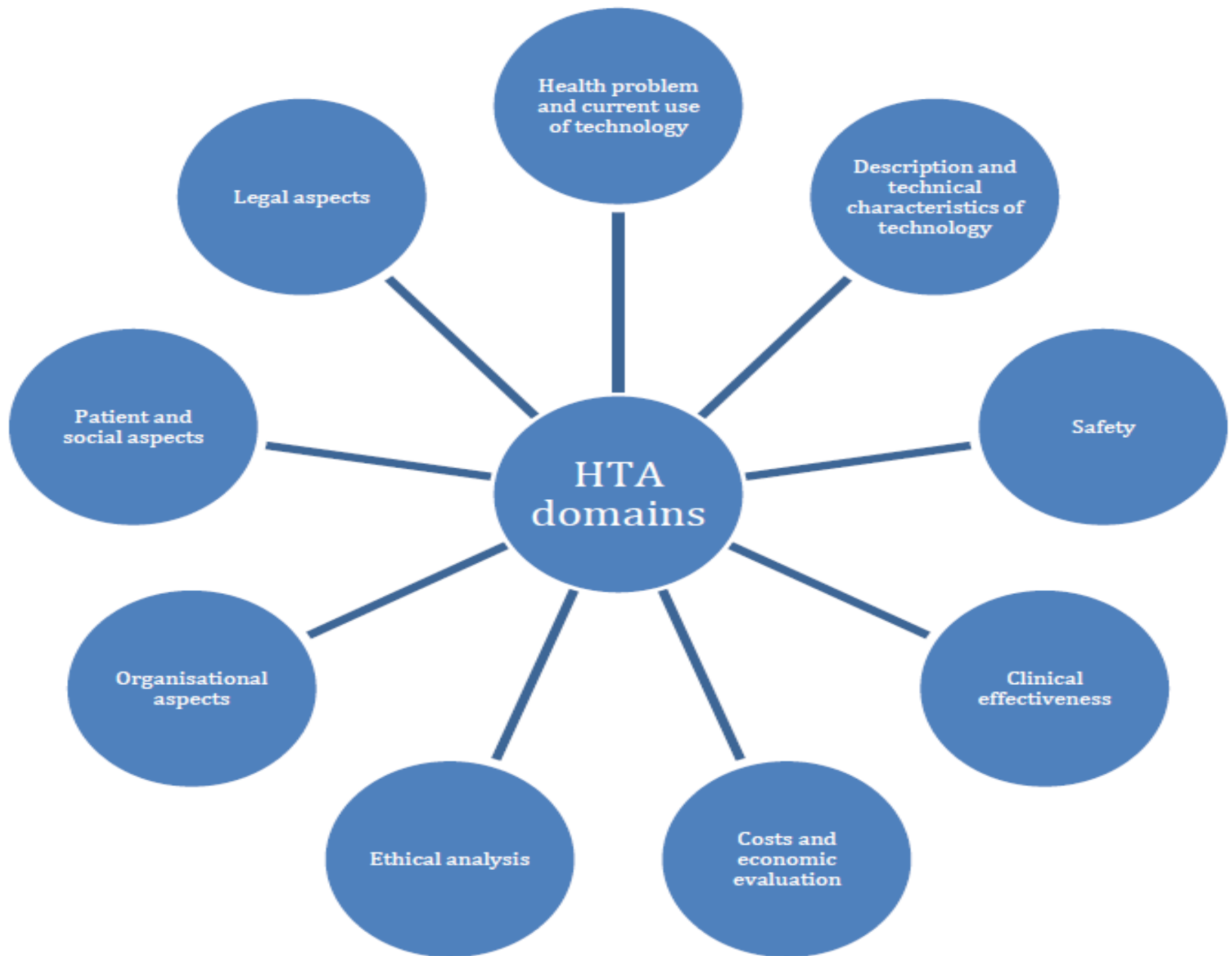
Result budget problems

The Netherlands (2014): € 530 million spent on new cancer drugs

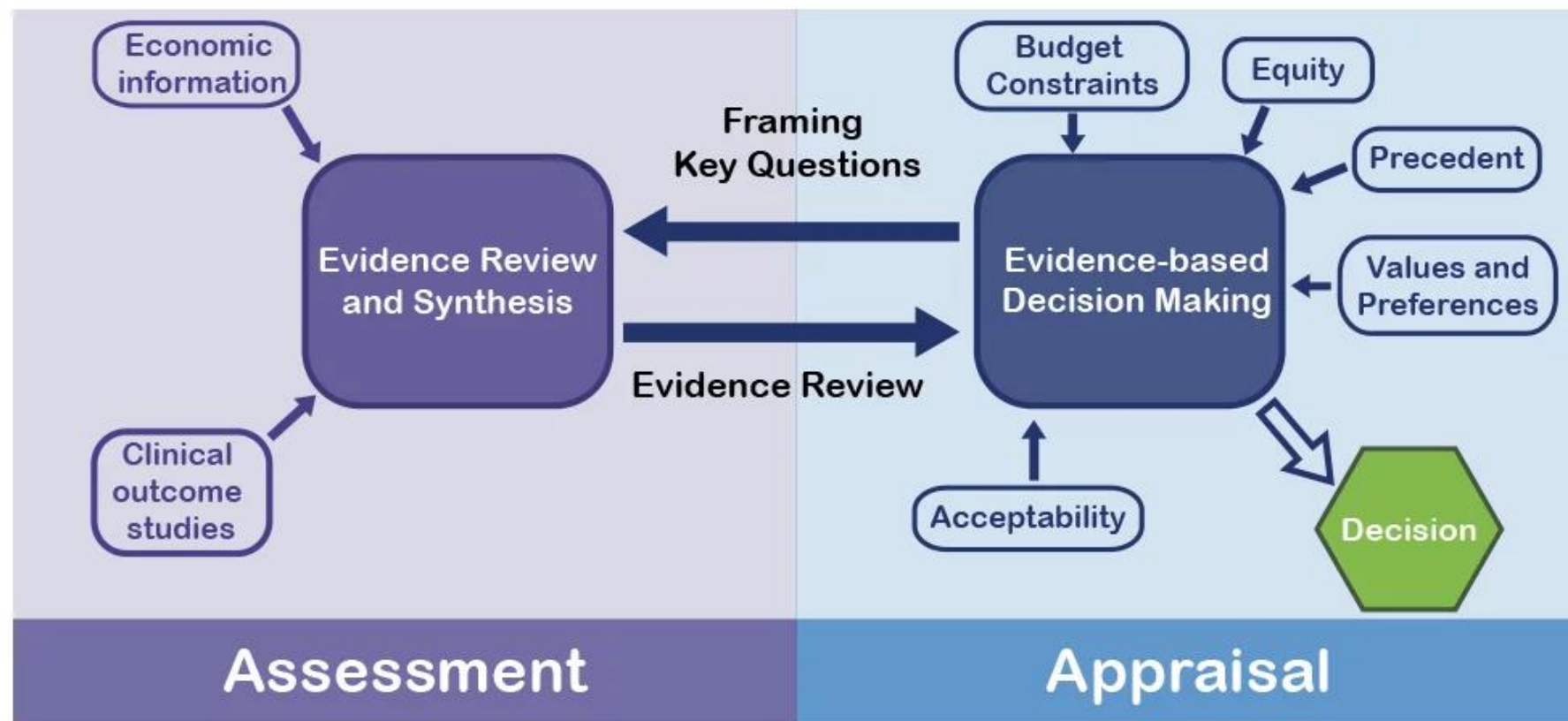
Maximum growth budget per year: 1.2%

New cancer drugs 2016	Estimated costs per	ICER	Estimated budget impact
Nivolumab	Opportunity cost		200 mln
Pertuzumab	€ 78.000	€ 150.000	€ 40 mln
Ibrutinib	€ 70.000	Unknown	€ 100 mln
Palbociclib	Unknown	Unknown	€100 mln
CAR-T cells	€300-400.000	Unknown	Unknown





The two main components of HTA: Assessment and Appraisal



Examples of HTA bodies for pharmaceutical assessment in Europe

- France – Haute Autorité de Santé (HAS) – <http://www.has-sante.fr>
- Germany – Gemeinsamer Bundesausschuss (GBA) – <https://www.g-ba.de/>
- Scotland – Scottish Medicines Consortium (SMC) – scottishmedicines.org.uk/Home
- Sweden – Tandvårds Och Läkemedelsförmånsverket (TLV) – tlv.se/In-English/in-english/
- Netherlands – Zorg Instituut Nederland (ZIN) <https://www.zorginstituutnederland.nl/>

A stylized, handwritten-style logo of the word "Erasmus" in a dark grey or black color, located in the bottom right corner of the slide.

Systems are not sustainable so:

How to reduce spending?

- Shift from expensive to cheap technologies
 - Make patients or the insurance pay a larger part
 - Reduce the prices of therapies
 - Reduce the total use of therapies
-
- Focus on reduction of prices of newly registered therapies

The Erasmus logo, featuring the word "Erasmus" in a stylized, handwritten script font.

Value based pricing

Incremental cost-effectiveness ratios: Cost per QALY
Thresholds

- NICE: £ 30.000, US: US\$ 50-100.000
- WHO threshold: depend on WHO region and Gross Domestic Product (GDP)

Still budget impact problem.

Pay for performance (P4P)

- Reimbursement dependent on treatment success

Volume-price arrangements

- sales < Y price P1; sales > Y lower price P2

Coverage with evidence development (CED)

A stylized, handwritten-style logo of the word "Erasmus" in a dark grey or black color, located in the bottom right corner of the slide.

Rationale for adapting the business model of (cancer) drug pricing

Issues:

1. A free market does not work for innovative (cancer) drugs
 - *Informational imbalance*
 - *Failure of competition*
2. Current cancer drug prices not justified by Research and Development (R&D)
3. Country specific solutions did not solve the problem
 - EUNeHTA
4. Restricted access to innovative drugs

A stylized, handwritten-style logo of the word "Erasmus" in a dark blue or black color, located in the bottom right corner of the slide.

New pricing algorithm for innovative (cancer) drugs:

$$\text{Fair Cost of New Medicine} = \left[\frac{\text{R\&D costs}}{\text{nr. of patients} \times \text{years of patent left}} + \frac{\text{production costs per patient per year}}{\text{patient per year}} \right] \times (1 + \text{profit margin})$$

Profit margin should depend on clinical value: e.g. ESMO Magnitude of Clinical Benefit Score

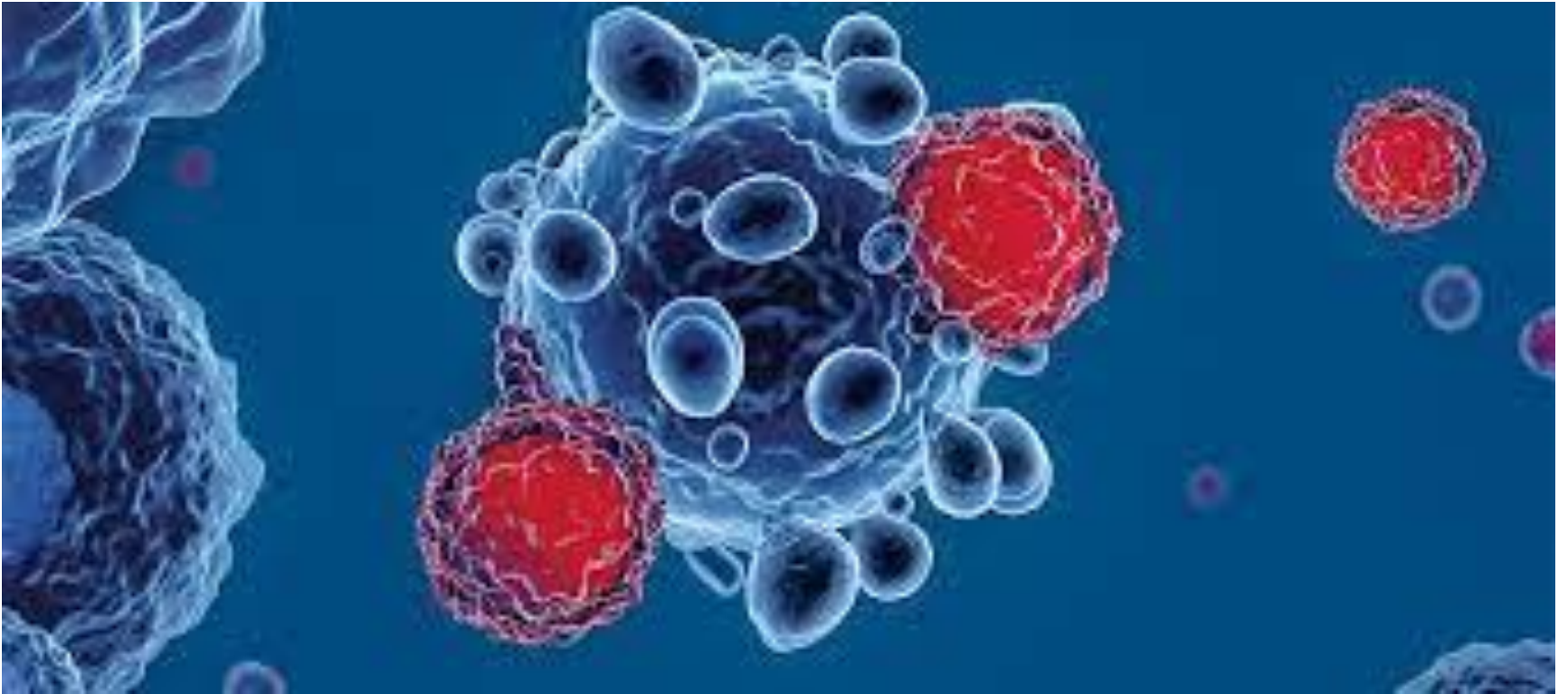
News and Views | 7 May 2018

Sustainability and affordability of cancer drugs: a novel pricing model

Carin A. Uyl-de Groot & Bob Löwenberg

Nature Reviews Clinical Oncology **15**, 405–406

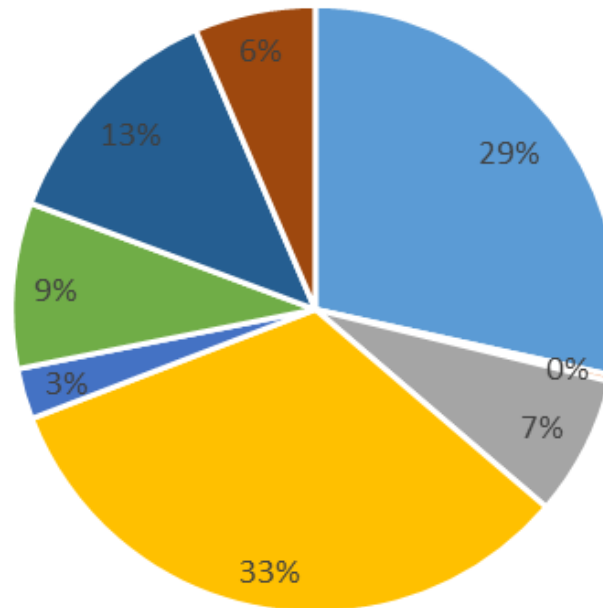
Cell and gene therapy



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Indications CAR T cell therapy in the hematology (N=295 studies)

Indications Hematology



- Acute lymphoid leukaemia
- Chronic lymphoid leukaemia
- Hodgkin's lymphoma
- Multiple Myeloma
- Chronic myeloid leukaemia
- Non-Hodgkin's Lymphoma
- Unspecified Leukaemia & Lymphoma
- Acute myeloid leukaemia

Review of list prices in EU5 and the Netherlands

Country	Price	
	Axicabtagene ciloleucel (Yescarta [®])	Tisagenlecleucel (Kymriah [®])
France	€ 350,000	€ 320,000
Germany	€ 327,000	€ 320,000
Italy		
The Netherlands	€ 327,000	€ 320,000
Spain	€ 327,000	€ 307,200
UK	£ 300,000	£ 282,000

Other cost components pre and post CAR T (average 5 countries)

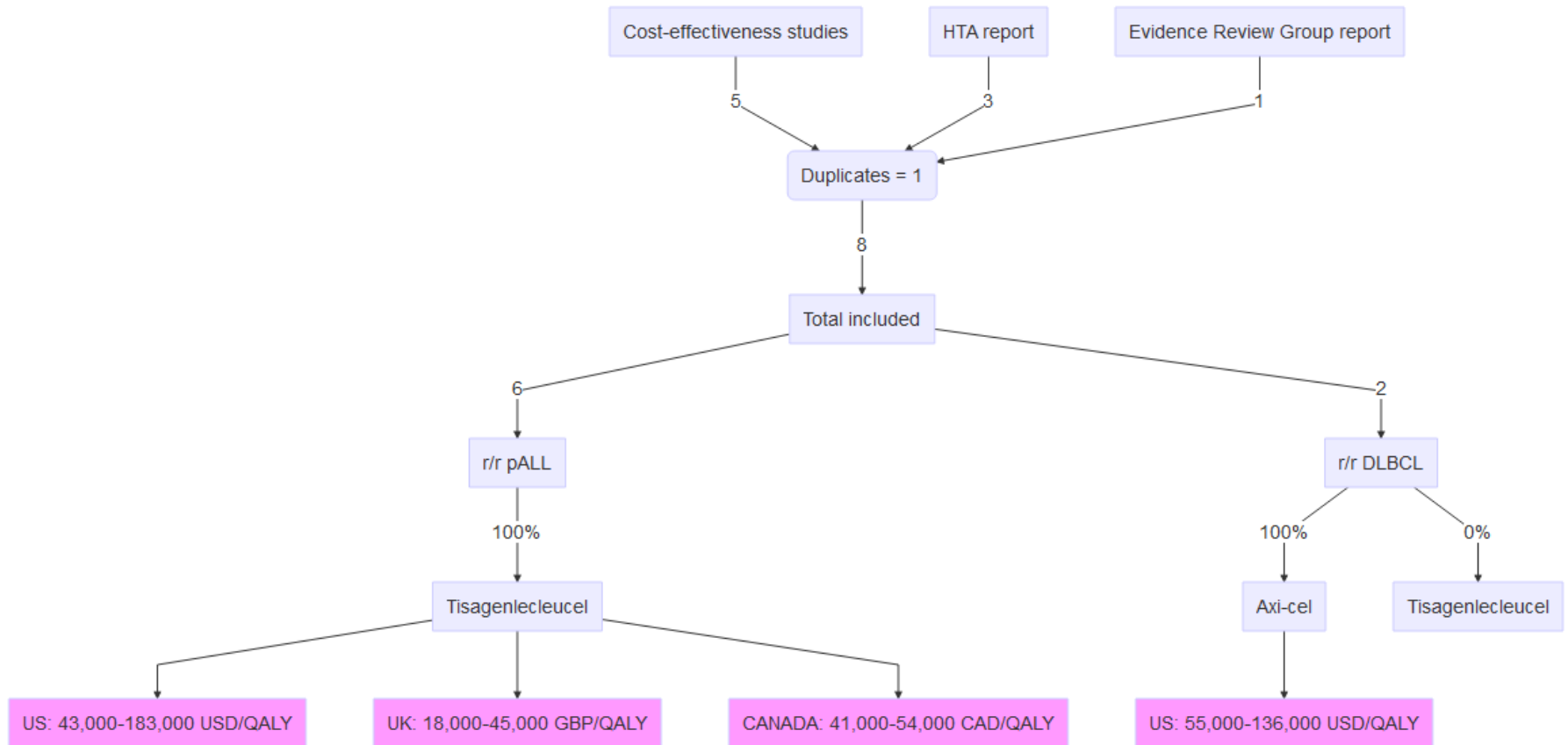
Cost components	
Leukapheresis and cryopreservation	€ 4,947.29
Administering CAR-T Cells + Lymphodepletion	€ 15,032.54
ICU (per day)	€ 1,444.02
Hospital Hematology/oncology per day	€ 627.50
Intravenous immunoglobulin IVIG per dose	€ 2,031.76
Tocilizumab per event	€ 1,483.04
Febrile Neutropenia (FN)	€ 4,953.34
Anemia	€ 2,961.45
Thrombocytopenia	€ 2,417.43
Visit oncologist/hematologist	€ 144.62
Visit neurologist	€ 103.00
MRI scan	€ 214.00
PET-CT scan	€ 1,109.85

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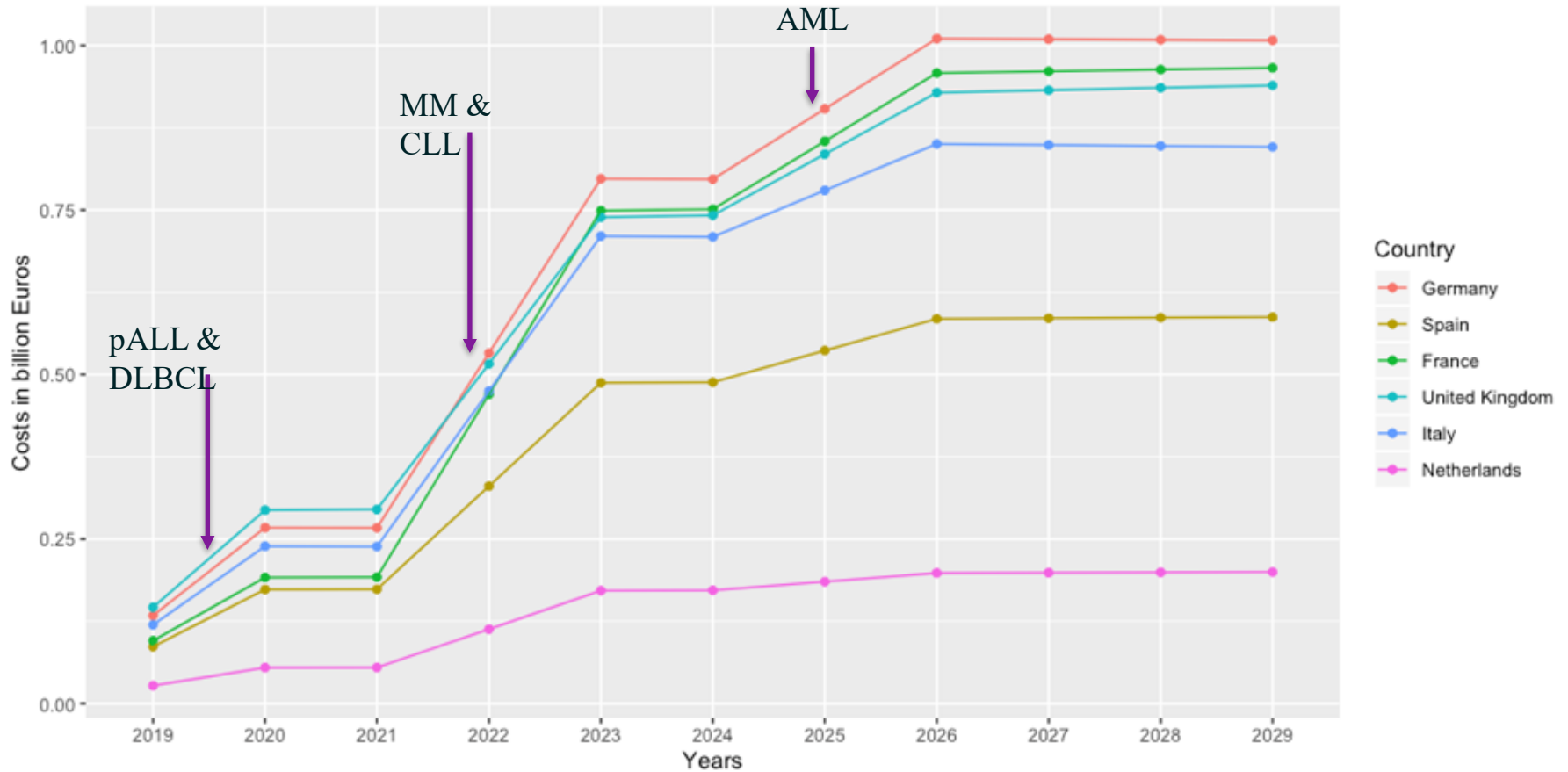
Total costs pre and post CAR-T administration

Total cost of care pre CAR-T	€ 7.146,79
Total cost lymphodepletion and administering CAR-T	€ 26.614,85
Total cost of care managing AE's	€ 10.523,59
Total cost follow up	€ 6.074,25
Total cost of pre and post CAR T care	€ 50.359,48

Review of existing cost-effectiveness studies



Expenditure forecast cost CAR T per country (all indications)



Differences in reimbursement of CAR-T across Europe

Examples:

Reimbursement cost CAR-T

Austria: no problems

NL: limited access, one indication in the 'lock' for more than 400 days

Spain: shared risk agreement. 50% paid upfront, only if patients achieve a CR, evaluations after 3 and 6 months, reimbursement rest

Reimbursement pre and post CAR-T costs

Austria: no problem

NL: separately, other DRG tariff

Germany: additional costs are not reimbursed.

Germany and Spain: current reimbursement is insufficient.

Access problems



cancers



Article

Unequal Access to Newly Registered Cancer Drugs Leads to Potential Loss of Life-Years in Europe

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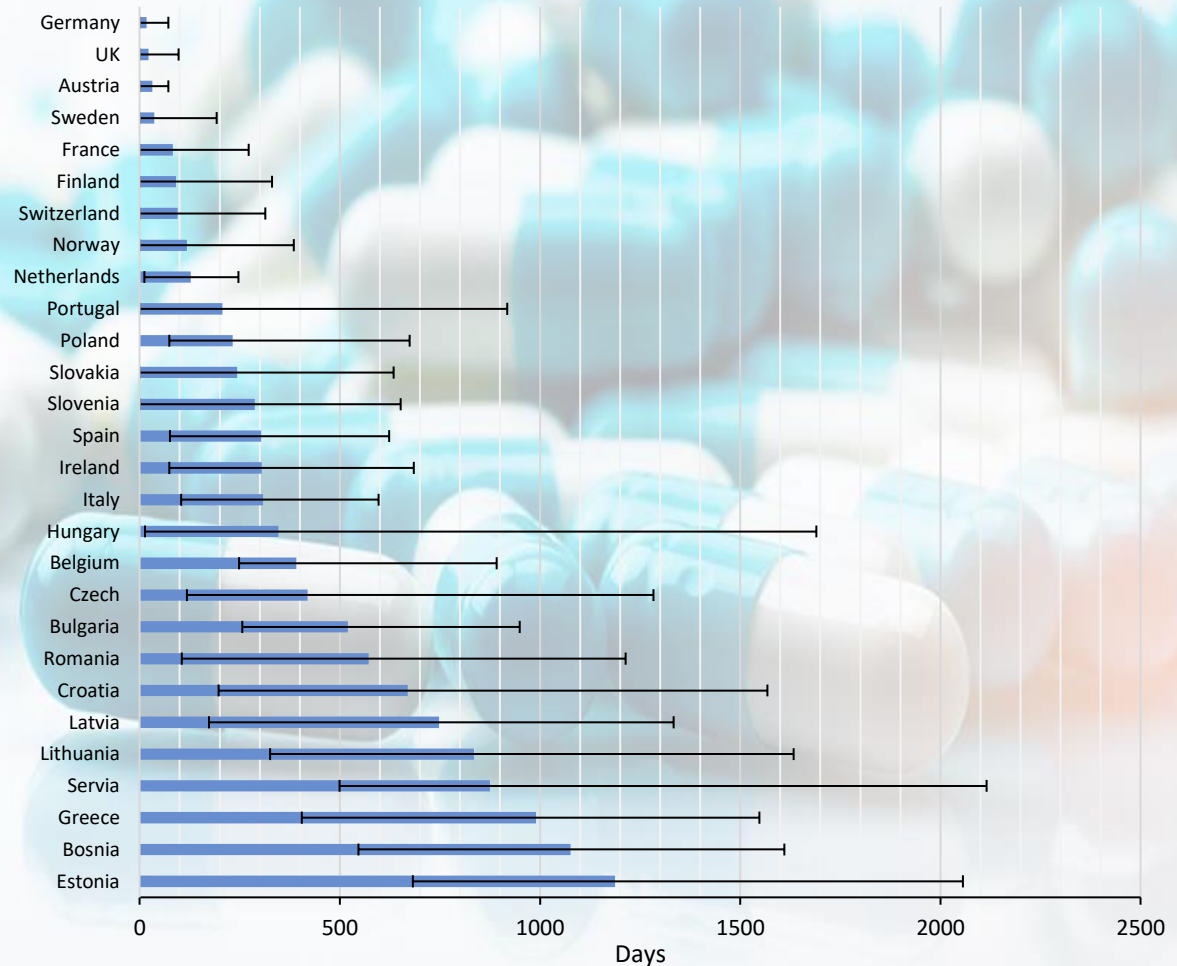
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Time between authorization and first access

Germany: early patient access 17 days on average

Netherlands: doing reasonably well 128 days

Estonia: 1187 days on average (only 4 out of 12)



Measures needed at different levels (national, European, worldwide), but barriers and limitations

Access issue is broader than discussion about drug prices

Change health systems/legislation: will take years

Patient's right to health – right to have access to optimal quality of cancer care

Collaboration between all stakeholders, including pharmaceutical companies

Encourage joint negotiations

THANK YOU

