

IMPROVING TIME TO PATIENT ACCESS TO
INNOVATIVE ONCOLOGY THERAPIES IN EUROPE

EVERY DAY COUNTS



IMPROVING TIME TO PATIENT ACCESS TO
INNOVATIVE ONCOLOGY THERAPIES IN EUROPE

EVERY DAY COUNTS

Colophon

Copyright © 2020 Vintura.

Authors: Christel Jansen and Bas Amesz, Vintura

Design and illustrations: Chantal van Wessel and
Sandrine Lauret, Hague Corporate Affairs.

Citation: Vintura, 2020. Every day counts –

Improving time to patient access to innovative
oncology therapies in Europe.

The report can be downloaded [here](#)

This report was commissioned
by **EFPIA**.

July 2020

Authored by Vintura:

Christel Jansen

Bas Amesz

In collaboration with:

ASC Academics

Hague Corporate Affairs

About this report

This report presents the outcomes of the “Time to Patient Access” initiative. The ambition of this initiative is to bring together stakeholders across Europe and to establish a common understanding of causes of delays in patient access to new oncology treatments. It also intends to find the common ground regarding solutions with the potential to reduce time to patient access. The overall aim of the initiative is to make access quicker, for those therapies that are bringing added value to patients and society, without compromising on careful deliberations and evidence-based decision-making.

The project was initiated and financed by the Oncology Platform (EOP) of the European Federation of Pharmaceutical Industries and Associations (EFPIA). The EOP is a collaboration of eighteen companies from the research-based

pharmaceutical industry in Europe, launched in 2016, to combine forces and improve cancer patient outcomes in Europe.

The initiative has been carried out with the support of a consortium led by Vintura and comprising ASC Academics and Hague Corporate Affairs. The consortium worked together with two of Europe’s leading experts in health economics and HTAs: Prof. Lieven Annemans (Ghent University) and Prof. Maarten Postma (University of Groningen).

This publication is the result of a multi-stakeholder collaboration gathering views through sounding board meetings and interviews. It does not necessarily reflect the positions of the individual organisations or people involved.



The publication has the explicit endorsement from the following organisations:



DIGESTIVE CANCERS EUROPE





Executive summary

Unequal access to innovation in oncology

The unprecedented speed of innovation in oncology provides an important opportunity for further improvement of outcomes for cancer patients. Yet, no value is derived from innovation if patients for whom a new therapy is intended cannot have access to it. In fact, tremendous differences exist in patient access to innovative oncology treatments across European countries. Access to new oncology therapies varies significantly from country to country on three dimensions of access:

- Out of all oncology therapies with a European marketing authorisation, the proportion of therapies that receive **Market Access**, i.e. are reimbursed through social health insurance schemes, ranges from as low as 7% to as high as 98%.
- After receipt of a European marketing authorisation, the **time to Market Access** ranges from as low as 86 to almost 1,000 days.

- After twelve months of formal reimbursement, the relative level of **Patient Access*** ranges from as low as 22% to as high as 81%.

These differences undermine the ambition to promote equal access to healthcare and indicate opportunities for improvement.

A multi-stakeholder approach

This report represents the collective thinking of a group of over 30 organisations, covering health technology assessment (HTA) bodies, healthcare professional associations, patient organisations, policy makers, former politicians, payers and pharmaceutical companies concerned about timely and equal access throughout Europe. The aim is to bring stakeholders across Europe together around opportunities to improve time to patient access

* Calculated as the cumulative use in the first 12 months after reimbursement, relative to that of the country with the highest use. This was done for thirteen individual oncology therapies, after which the average was used as an indicator (see Section 1.3)

for innovative, value-adding oncology therapies. It focusses on the dimensions of time to Market Access and Patient Access.

To start, stakeholders aligned on gathering information through:

- Six country case studies to identify delaying factors, solution areas and best practices.
- A benchmark analysis to compare patient access after twelve months of reimbursement in ten European countries.
- A mapping of the differences in evidence requirements in the six case study countries.
- An analysis of the health gains that can be achieved if time to market access was reduced.

The findings were reviewed and discussed over a series of multi-stakeholder sounding board meetings that allowed for combining different perspectives and providing a comprehensive and unbiased overview of challenges and areas

in which joint action is needed.

For patients, every day counts

During reimbursement discussions, time to market access can become an abstract objective. Whereas for patients, every day counts. Two case studies on different oncology therapies are presented in the report to show the actual impact of reducing delays in reimbursement decision-making and hence the time it takes for patients to access new therapies. The analysis illustrates the number of patients that could have been treated and the improved quality of life they could have gained if access timelines were shortened. These two case studies serve as a reminder of our common objectives and the urgency of addressing delays where possible.

The ten key factors delaying patient access

There are ten factors that cause most delays in patient access to new cancer medications.

These are related to process, reimbursement criteria and health system readiness.

Process



Process, i.e. how stakeholders organise the series of steps to take

- 1. Late start of application and submission.** The national access process may start late compared to the European Union (EU) marketing authorisation, due to country regulations on the start of the process and/or manufacturers submission timelines under the influence of external reference pricing.
- 2. Lack of adherence to maximum timelines.** There is not always a clear set of rules around the timelines for decision-making on national pricing and reimbursement, or these rules are not complied with, despite the maximum of 180 days set by the EU Transparency Directive.
- 3. Multiple layers of decision-making.** After a national decision or recommendation on reimbursement, subnational decision-makers may make their own decisions on reimbursement or budget allocation, leading to duplication, in-country disparities and delays.

Reimbursement criteria



Reimbursement criteria, i.e. what information stakeholders use to define value

- 4. Different evidence requirements across Europe.** The extent to which evidence for the clinical assessment is considered robust or acceptable varies greatly across HTA bodies in Europe, thereby prolonging alignment and/or leading to country-specific data collection.
- 5. Lack of clarity of national requirements.** Within countries, requirements for the clinical- and cost-effectiveness assessment are not always consistently applied, which allows for a tailor-made assessment but also leads to unpredictability and prolonged alignment.
- 6. Evidence gaps.** Meeting HTA evidence requirements is getting more difficult given the characteristics of today's oncology therapies, leading to evidence gaps, uncertainty about the value of the therapy and prolonged reimbursement discussions.
- 7. Misalignment on value and price.** Uncertainty about the value of the therapy leads to misalignment and long negotiations on value and price between national decision-makers and pharmaceutical companies, especially in the absence of mechanisms to deal with uncertainty.

Health system readiness



Health system readiness, i.e. to what extent stakeholders integrate the therapy in clinical practice

- 8. Insufficient budget to implement decisions.** There is not always enough budget to implement a positive reimbursement decision, causing implementation to be delayed or resulting in budget depletion at the end of the budgeting period, putting a negative pressure on prescription and use.
- 9. Low frequency of clinical guideline updates.** Clinical guidelines do not always include the most recent therapeutic innovations, leading to delays in HTA decision-making and hampering prescription and use due to a lack of clarity on the positioning of the new therapy in the treatment pathway.
- 10. Suboptimal healthcare infrastructure.** Suboptimal organisation of healthcare systems in general and oncology care pathways in particular may lead to problems in absorbing and using a new therapy in the most optimal way.

The six priority areas for reducing the time to patient access

To address these factors, multi-disciplinary and concerted actions are needed in six priority areas. All stakeholders are invited to engage in a dialogue and to find novel ways of working together in order to:

PROCESS

1. Align dossier submission timelines

Stakeholders ought to create a joint understanding of the pros and cons of external reference pricing and explore alternatives. Furthermore, pharmaceutical companies should build HTA capabilities to prevent these from becoming the key bottleneck in aligning dossier submission timelines across countries in Europe.

2. Shorten reimbursement timelines

Optimal alignment between parties prior to European marketing authorisation, allowing for dossier submission and assessment as soon as possible after marketing authorisation, taking steps in parallel rather than sequential, and keeping the layers of decision-making to a minimum can reduce time to patient access in countries. Involving patients and making timelines transparent helps in maintaining a sense of urgency at every step of the process.

REIMBURSEMENT CRITERIA

3. Align evidence requirements

Much like the European Medicines Agency (EMA) has improved the efficiency for granting market authorisations, European HTA alignment on clinical assessment (after which appraisal takes place at national level) would improve the timelines to patient access. In addition, European cooperation and alignment would reduce duplication of efforts and allow for more efficient

use of scarce human and financial resources.

4. Be adaptive to rapidly evolving innovation

Reimbursement criteria need to be clear to allow for predictability, while at the same time they should be flexible to enable applicability to a variety of therapies and cases. Furthermore, a comprehensive system of horizon scanning, early collaboration, managed access schemes, and real-world data generation should be in place to proactively manage today's challenges and avoid delays, e.g. using novel pricing and payment models.

HEALTH SYSTEM READINESS

5. Improve healthcare infrastructures

Pricing and reimbursement decisions should lead to an update of the guidelines and budget provisions. Furthermore, to improve screening and diagnosis, clear roles and responsibilities need to be assigned. When it comes to treatment, centres of excellence for (rare) cancers should be accessible to all patients, e.g. with the use of e-health solutions.

6. Strengthen collaboration between all stakeholders

As important as it is obvious: stakeholders must collaborate. In each of these priority areas, a concerted effort is needed, as none of today's challenges can be addressed by a single stakeholder. Current early dialogues and scientific advice should evolve into early collaboration to enable a joint quest for solutions to potential access challenges. In addition, controversial topics that further constrain stakeholder relations need to be addressed proactively.

A call for further dialogue and joint problem-solving

This report provides a high-level overview in this complex domain. It is a starting point. It is a call for further dialogue, analysis and joint problem-solving by all relevant stakeholders in order to further explore the six priority areas. To reduce the immense inequalities in patient access between European countries we need to find a common understanding and a common perspective. This is needed because all stakeholders are part of the current system in which we operate and none of the stakeholders involved can solve today's challenges single-handedly. We need a collaborative approach now. For patients, every day counts.



TABLE OF CONTENT

About this report	4
Executive summary	6
1. Introduction	15
1.1 The high speed of innovation in oncology	15
1.2 Three milestones in bringing innovative therapies to patients	16
1.3 European inequalities in reimbursement and use of innovations in oncology	16
1.4 A multi-stakeholder perspective on challenges and solutions: the methodology	21
2. The diversity of European access systems	22
2.1 Economic context	22
2.2 Levels of decisionmaking involved	23
2.3 Reimbursement criteria applied	23
2.4 The five phases of access pathways in European countries	24
3. For patients, every day counts	27
3.1 The case of midostaurin in acute myeloid leukemia	28
3.2 The case of pertuzumab in early breast cancer	30
4. The ten key factors delaying patient access	32
4.1 Late start of application and submission	32
4.2 Lack of adherence to maximum timelines	37
4.3 Multiple layers of decision-making	37
4.4 Different evidence requirements across Europe	38
4.5 Lack of clarity of national requirements	39
4.6 Evidence gaps	41
4.7 Misalignment on value and price	43
4.8 Insufficient budget to implement decisions	44
4.9 Low frequency of clinical guideline updates	45
4.10 Suboptimal healthcare infrastructure	45
5. The six priority areas for reducing the time to patient access	46
5.1 Align dossier submission timelines	47
5.2 Shorten reimbursement timelines	48
5.3 Align evidence requirements	50
5.4 Be adaptive to rapidly evolving innovation	51
5.5 Improve healthcare infrastructures	54
5.6 Strengthen collaboration between all stakeholders	56
6. Working together to improve access to innovative oncology therapies	57
Contributors	60
Consortium members and academic advisors	60
Sounding Board participants	61
EFPIA members	62
Interview respondents	63
Glossary	64
Abbreviations	72
Country codes	74
References	75
Annexes	81
A. Country case studies on delaying factors and potential solutions	81
B. Patient Access Indicator	81
C. Mapping of differences in evidence requirements in various European jurisdictions	81
D. Impact analysis of improved time to market access	81



1. Introduction

1.1 The high speed of innovation in oncology

We live in times when speed of innovation for cancer patients is unprecedented. This is shown by an increasing number of European marketing authorization in oncology and the fact that nearly 40% of drugs in development* are oncology therapies (Hofmarcher, et al., 2019) (Albrecht, B; Andersen, S; Chauhan, K; Graybosch, D, 2018).

The new wave of scientific innovation is generating an unprecedented level of choice and promise in cancer treatments. Increasingly, therapy selection in oncology is tailored to the individual patient and disease characteristics, to improve the likelihood of patients responding to treatment. The body's own immune system can be activated to attack the tumor. And gene and cell-based therapies provide a potential cure.

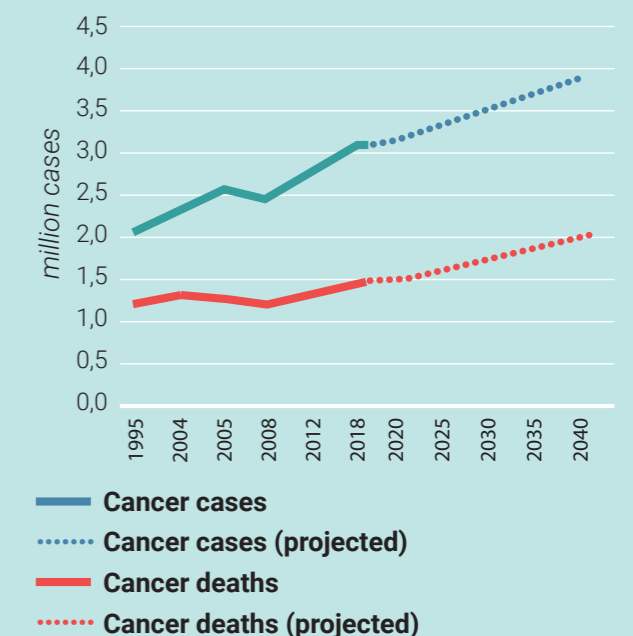
These pharmaceutical innovations contribute to significant advances in cancer outcomes, together with advances in e.g. effective prevention, screening programmes, radiotherapy and surgical care.

Today, the number of lung cancer patients that is alive one year after diagnosis is more than ten



times higher than in 1995, when only five out of 100 lung cancer patients were alive after one year (Schiller, 2018). This is just one example of how cancer survival rates have increased dramatically over the past 35 years (Cancer Research UK). As a result, the number of cancer deaths in Europe shows slower growth than the number of cancer diagnoses (Hofmarcher, et al., 2019). This is illustrated in Figure 1.

Fig. 1
Number of cancer deaths in Europe is increasing
Although at a slower pace than the number of cancer diagnoses



* Defined as Phase I – III clinical trials.

Source: Hofmarcher, et al., 2019

Nevertheless, cancer incidence is growing. The number of people diagnosed with cancer across Europe has risen by approximately 50% over the past two decades. Today, cancer is responsible for one in every four deaths in Europe, making it the second leading cause of death and disability after cardiovascular disease. The impact on individual patients, their families and society is tremendous (Hofmarcher, et al., 2019).

Still, improvements in services and treatments are leading to better outcomes. In lung cancer, for example, 13,296 more patients were alive for at least five years following a diagnosis in 2014, compared to those diagnosed in 2004 (Hofmarcher, et al., 2019). However, more efforts are needed to ensure every patient has access to the latest standard of care and treatment no matter in which European country they reside.

1.2 Three milestones in bringing innovative therapies to patients

Innovation has no value if patients for whom new therapies are intended cannot have access to them. Once a new treatment has gone through a process of ten years of research and development on average, three further milestones have to be reached before patients have access to it (see Figure 2):

1. European **Marketing Authorization** needs to be granted, confirming the quality, the safety and the efficacy of the therapy.
2. Authorities within countries have to decide on **Market Access** meaning reimbursement of the therapy under an insurance or reimbursement scheme, in order to make the intervention financially accessible to all patients*.
3. Once reimbursed, **Patient Access** must be achieved, meaning that the patients they

are intended for use the innovations after prescription by a specialist, in accordance with their marketing authorization, reimbursement guidelines and the latest scientific insights.

1.3 European inequalities in reimbursement and use of innovations in oncology

Following advice from the European Medicines Agency (EMA), the European Commission (EC) grants a centralized marketing authorization covering all European Union (EU) Member States. This takes away the need for pharmaceutical companies to seek marketing authorization for new therapies from each Member State separately.

By contrast, reimbursement decisions are organized by national and sometimes even sub-national (regional) authorities. These authorities use different processes and requirements, leading to different decisions and considerable inequalities in patient access throughout Europe. These inequalities can be found in all three dimensions of patient access:

- **Market Access**, which refers to the proportion of oncology therapies with a European marketing authorization that subsequently receive a positive reimbursement decision. This rate ranges from as low as 7% in Latvia to as high as 98% in Germany (IQVIA, 2020).
- **Time to Market Access**, which refers to the number of days between a European marketing authorisation and a formal positive reimbursement decision (this excludes early access schemes during which certain patients may receive reimbursement before the formal HTA process is finalized). The difference between the country where patients gain access reimbursement first (Denmark, 86 days on

* For the purpose of this report, reimbursement refers to a formal reimbursement decision, thereby excluding early access schemes as these schemes often provide reimbursement on a restricted or case-by-case basis without completion of the formal HTA procedure.

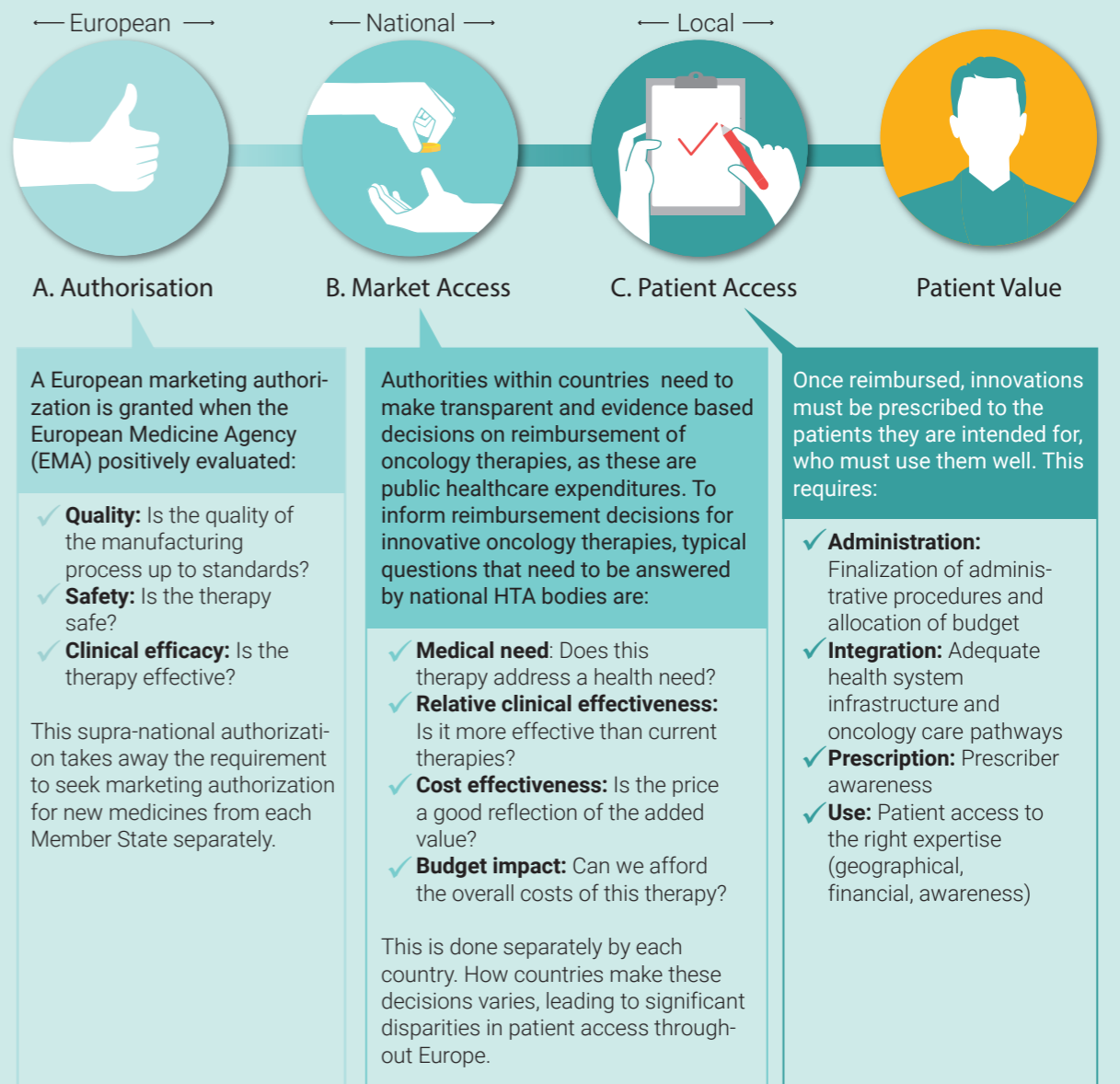
Fig. 2

After ten years of research and development:

Three milestones must be reached to bring innovative therapies to patients

Patient access milestones

Milestones A, B & C:



Source: Efpia 2020

average) and the country where patients gain access reimbursement last (Latvia, 981 days on average) is close to 2.5 years. This means that patients in Latvia had to wait 2.5 years before being able to receive treatments that benefited the lives of patients in Denmark within less than three months following marketing authorization (IQVIA, 2020).

- Relatively unexplored is the domain of Patient Access. Having reimbursement in place does not necessarily mean that the medicine is prescribed, i.e. that patients are actually treated with the new therapy. There are remarkable differences between countries in the actual use of new oncology therapies in clinical practice, once

reimbursement is in place. After twelve months of formal reimbursement, the relative cumulative use* ranges from as low as 22% in the Netherlands to as high as 81% in France. A description of the methodology used to quantify country differences in this dimension of patient access is provided in Box 1.

This report focuses on:

- **Time to Market Access**, i.e. delays in reimbursement, and
- **Patient Access**, i.e. actual prescription, and use.

Figure 3 highlights the three access challenges that patients in European countries are facing in these two dimensions. It shows that none of the countries included in this analysis has optimal access in terms of both time to Market Access and Patient Access.

A country that comes very close to this optimal situation is Germany. German patients are guaranteed immediate reimbursement after a therapy receives a European marketing authorization, while the decision-making about permanent reimbursement starts in parallel**. This explains why Germany is among the countries with the shortest time to Market Access in Europe. However, the number of patients that have access to the therapy after 12 months is relatively low. The fact that a therapy is very new when it becomes available in Germany, may explain why it takes longer before it is actually prescribed to patients: the body of evidence (scientific publications, clinical guidelines) is still developing and both prescribers and patients need to become familiar with the new therapy. Furthermore, physicians may be reluctant to prescribe the new therapy, until it has gone through the formal HTA process. Another explanation may be the

high proportion of oncology therapies with a European marketing authorization that receives a positive reimbursement decision in Germany (98%). This may imply that the number of alternative therapies in Germany is higher than in other countries, leading to a lower clinical use per individual therapy.

The Netherlands is an example of a country with the first access challenge: a relatively short delay but low patient access. On average, innovative oncology therapies in the Netherlands are reimbursed 234 days after European marketing authorization. However, in the 12 months following this decision, and compared to the country with the highest patient access, only 20% of the patients receives the therapy (compared to the number of patients that received the therapy in the country with the highest real-world access). This may be explained by the fact that after the national reimbursement decision, contracts need to be negotiated with individual hospitals (operating in a context of budget constraints) before the therapy can be prescribed. Another explanation could be the fact that it takes a long time for new therapies to be included in clinical guidelines.

Poland is an example of a country with the second access challenge: long delays and low patient access. In Poland, it takes on average 891 days before an innovative oncology therapy is reimbursed. And in the first 12 months after reimbursement, only 24% of the patients have access to the therapy. This may be explained by the fact that requests for reimbursement are submitted later in Poland, that the decision-making process is long, and/or that positive reimbursement decisions are made for a subgroup of the overall patient population for which a European marketing authorization was granted (which may be driven by budget impact considerations in a context of a relatively low GDP).

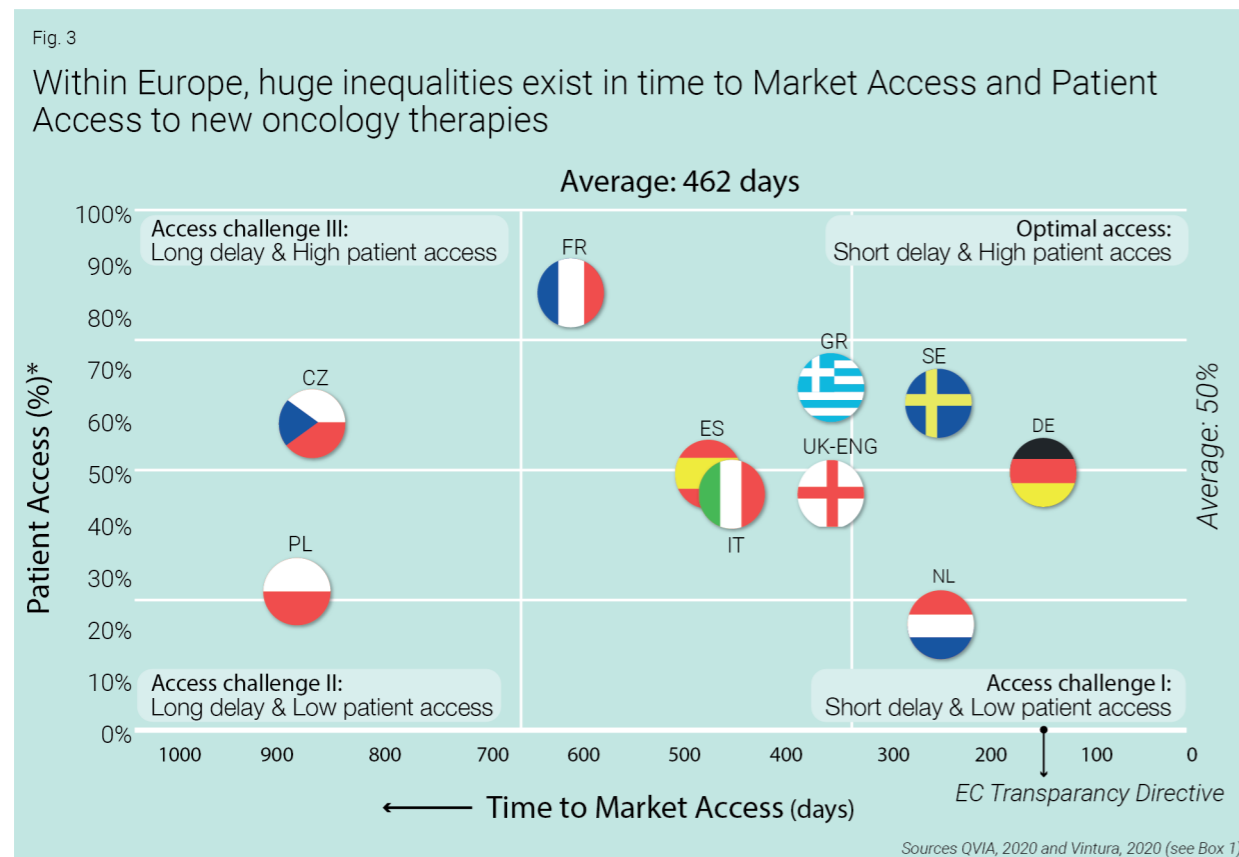
An example of a country with the third access challenge is France. In France, on average 80% of patients have access to an innovative therapy after the first 12 months of formal reimbursement. Yet it takes a long time before this formal reimbursement is in place: 579 days on average. Both characteristics may be explained by the French 'Temporary Authorization for Use' program (ATU). This early access program does not equal formal reimbursement, as it is not preceded by a formal HTA process and is not available for all therapies or patients*. Nonetheless, it allows (some) patients to have access prior to formal reimbursement. Once this formal reimbursement is in place, patients and prescribers are more likely to be already familiar with a therapy, because they gained experience with the therapy through the ATU. This may explain the high level of patient access in the first 12 months after formal reimbursement.

The four examples provide an overview of the different access challenges that European countries are facing. A few potential factors causing delays in time to patient access are provided, but more research is needed to assess the specific factors at play in a specific country.

The present report can help in this endeavor. It provides an overview of the 10 key factors delaying time to patient access across European countries. It also provides six solution areas for eliminating these delays. It can be used by stakeholders to make a detailed assessment of the factors at play in their country and the relevant solutions to deploy: an endeavor that requires an effort from all stakeholders in the healthcare system.

* Calculated as the cumulative use in the first 12 months after reimbursement, relative to that of the country with the highest use. This was done for thirteen individual oncology therapies, after which the average was used as an indicator.

** Within six months, a health technology assessment is conducted, after which the actual reimbursement price is negotiated. This price replaces the initial price (list prices set by pharmaceutical companies) one year after launch.



* In fact, this early and temporary access mechanism may sometimes even delay a formal reimbursement decision (Degraat-Théas, Paubel, Parent de Curzon, Le Pen, & Sinègre, 2013)

The Patient Access Indicator

Whilst we know the rate of Market Access and time to Market Access for innovative oncology therapies quite well based on the annual EFPIA W.A.I.T. Indicator Study (IQVIA, 2020), no analysis was available of European differences in actual use after reimbursement (Patient Access). To address this information gap, a European benchmark analysis was made to compare post-reimbursement use between countries, for a set of innovative oncology therapies.

For this benchmark, 'use' was measured by analysing volume sold per month (or patients treated per month, based on volume sold), per capita, using routinely collected business information from pharmaceutical companies and data providers. 'Post-reimbursement' was defined as the phase that starts when the first patient is treated under a formal reimbursement scheme. Therefore, early access schemes are excluded, as these schemes often reimburse on a case-by-case or restricted basis without completion of the formal HTA process.

Ten countries were included: Czech Republic, England, France, Germany, Greece, Italy, Netherlands, Poland, Spain and Sweden. The thirteen oncology therapies included cover Leukaemia (n=4), Breast cancer (n=3), Lung cancer (n=3), Bladder cancer (n=1), Multiple myeloma (n=1), Melanoma (n=1), Non-melanoma skin cancer (n=1) and Ovarian cancer (n=1): alectinib, atezolizumab, cobimetinib, daratumumab, ibrutinib, midostaurin, olaparib, osimertinib, pertuzumab, trastuzumab-emtansine, venetoclax, and vismodegib. Annex B provides a detailed description of how countries and therapies were selected.

Furthermore, the country figures were standardized to correct for epidemiological differences. However, this correction is not included in the findings presented, because the reliable and comprehensive epidemiological data from the IARC Global Cancer

Observatory are available at the level of the main cancer types. Using this data would not provide an accurate correction for epidemiological differences between countries, given the specific indications of the therapies in scope of this analysis.

Subsequently, per therapy, the cumulative use at twelve months post-reimbursement was expressed as a relative use, compared to the country with the highest use of that therapy. And finally, per country, the average relative use across all therapies was calculated to arrive at one single indicator of post-reimbursement use compared to other countries. This information was combined with the latest information on delays in reimbursement (IQVIA, 2020; see Figure 3).

Two important aspects should be considered when interpreting the findings of the analysis. First, **the benchmark illustrates differences rather than best practices**. High clinical use for a specific therapy does not equal optimal access. High clinical use can also be a symptom of a suboptimal access situation, e.g. when a more advanced treatment option such as stem cell transplantation (in the case of haematology) is not available or accessible. Countries with the highest clinical use per therapy were set as the benchmark country (100%) to enable comparison, not to set a standard or best practice. However, since the benchmark covers multiple therapies in multiple indications, it provides a good indication of health system factors posing a barrier to patient access.

Second, the outcomes serve as the start of further research and discussions on European inequalities regarding post-reimbursement clinical use. They give a quantitative overview of the differences, without explaining the reasons behind these variances.

A detailed description of the methodology can be found in Annex B.

1.4 A multi-stakeholder perspective on challenges and solutions: the methodology

In order to connect all relevant stakeholders, this report combines the different perspectives and provides a comprehensive and unbiased overview of challenges and areas in which joint action is needed. It is the result of a collaborative approach by health technology assessment (HTA) bodies, healthcare professional associations, patient organizations, policy makers, former politicians, payers and pharmaceutical companies. Different methodologies and sources of information were used to develop and validate the content of this report.

Country case studies on delaying factors and solutions

Little is known about the reasons behind variances and delays in time to patient access. Therefore, case studies were conducted in six European countries which together represent the diverse access contexts in Europe. Together, the group of six countries should represent the diverse access contexts in Europe and a set of selection criteria was defined to guide the country selection. Countries selected were England, Italy, the Netherlands, Poland, Portugal and Sweden. Document reviews and interviews with regulators, payers, former politicians, HTA bodies, healthcare professional associations, patient organizations, industry organizations and experts allowed for an in-depth understanding of delaying factors, best practices and potential solution areas in these countries. Content analysis of the country findings allowed for identification of a first set of delaying factors and solution areas, potentially applicable to a broader European context. Details about the methodology and summaries of the six country profiles can be found in Annex A.

Patient Access Indicator

An analysis of patient access was undertaken to identify European differences in the use of

new oncology therapies twelve months after reimbursement. Outcomes are presented in Chapter 1, section 1.3 (Figure 3). The methodology is described in detail in Annex B.

Mapping of European differences in evidence requirements

One cause for delays in patient access is the differences in evidence requirements across Europe. A comparative analysis of evidence requirements was performed for EMA and HTA bodies in the six case study countries. A detailed account of the differences and the level of alignment and predictability across agencies is provided in sections 4.4 and 4.5 (Figures 9 and 10). The methodology is described in detail in Annex C.

Impact analysis of improved time to market access

To make the potential impact of reducing delays in reimbursement decision-making and hence the time it takes for patients to access new therapies more tangible, an impact analysis was performed. The findings are presented in sections 3.1 and 3.2. They serve as a reminder of our common objective and the urgency of addressing delays where we can. The methodology is described in detail in Annex D.

Multi-stakeholder Sounding Board

A European multi-stakeholder sounding board was established to discuss and validate the project set-up and findings, and to place the information generated from case study countries into the larger perspective of all European Member States. In addition, the sounding board allowed for capturing different perspectives to ensure balanced outcomes. Over the course of the initiative, over 25 organizations operating at the European and/or national level participated in one or more sounding board meetings. An overview of all stakeholders that contributed to the initiative, e.g. through participation in interviews or one or more sounding board meetings, can be found in the list of Contributors at the end of this report.



2. The diversity of European access systems

CONTRARY to the unified marketing authorization process for EU Member States, reimbursement decisions are made by authorized bodies within the Member States. This is because medical need, effectiveness compared to the current standard of care, cost-effectiveness and budget impact are often influenced by local characteristics and are in the remit of each Member State.

The national settings in which these reimbursement decisions are made vary, in terms of economic context, levels of decision-making involved and main criteria for reimbursement.

2.1 Economic context

The latest data from the Organization for Economic Cooperation and Development (OECD) from 2017 clearly shows the European

differences in economic context:

- Absolute healthcare spending ranges from EUR 5,300 per capita in Germany to EUR 1,300 per inhabitant in Romania.
- Relative healthcare spending as a % of overall GDP, is more than 2 times higher in France (11.3%) than in Romania (5.2%).
- Absolute pharmaceutical spending ranges from EUR 286 per inhabitant in Denmark to EUR 740 per inhabitant in Germany.
- Relative pharmaceutical expenditures as a % of overall GDP, is 3.5 to over 5 times higher in Greece or Bulgaria (2.2% and 3.3% respectively) compared to Luxembourg (0.62%)*.

* In these figures (OECD, 2020), based on 2017 data, healthcare spending includes government spending, compulsory and voluntary insurance schemes. Out-of-pocket payments are excluded. Pharmaceutical spending covers prescription medicines and over-the-counter products. Pharmaceuticals consumed in intramural settings are excluded.

2.2 Levels of decision-making involved

The Treaty of the Functioning of the EU leaves the budget and the management of the health system in the remit of Member States (Art. 168), in contrast to other areas of policy such as the internal market. Therefore, the way in which Member States organize and finance their health systems differs considerably. Consequently, European countries have different ways of organizing their reimbursement decision-making. As shown in Figure 4, some countries such as Iceland and Croatia organize price negotiations, assessment, appraisal and budget































allocation on a national level. Other countries organize these decisions partly at a national level and partly at a regional level. In most European countries price negotiations, assessment and appraisal take place on a national level but budgets are allocated by healthcare insurers (a single payer institution or different health insurers) or on a hospital level. (WHO, 2018).

2.3 Reimbursement criteria applied

Although HTA bodies generally ask similar questions to inform reimbursement decisions, the specific assessment criteria differ, as does

Fig. 4

The context in which patients access takes place differs significantly between European countries: levels of decision-making involved for in-patient therapies

Decision-making level for in-patient therapies	National	National & Regional	Regional & National	National & HCI/Hospital	HCI/Hospitals & National
Pricing	National	National	National	National	National
Assessment and appraisal	National	National	Regional	National	Insurer
Budget allocation	National	Regional	Regional	Insurer/Hospital	Insurer/Hospital
Countries	IS  HR  LV  MT  UK 	IT  NO  ES 	AT  DK  FI  SE 	BE  BG  CZ  DE  GR  HU  IE  LT  PL  PT  RO  CH 	EE  FR  LU  NL  SK  SI 

Sources WHO, 2018, OECD/ European Observatory on Health Systems and Policies, 2017, Huic, 2016*

* In Cyprus (CY), pricing negotiations, assessment and appraisal are done at the national level. The level responsible for budget allocation is unknown.

their relative weight in the final appraisal and decision-making. Figure 5 below illustrates the dissimilarities in main reimbursement criteria for European countries. It provides more detail for the six case study countries that focus on different elements such as clinical effectiveness (e.g. Portugal and Italy), cost effectiveness (e.g. England and Sweden), both (e.g. the Netherlands), or clinical effectiveness, cost effectiveness and budget impact (e.g. Poland).

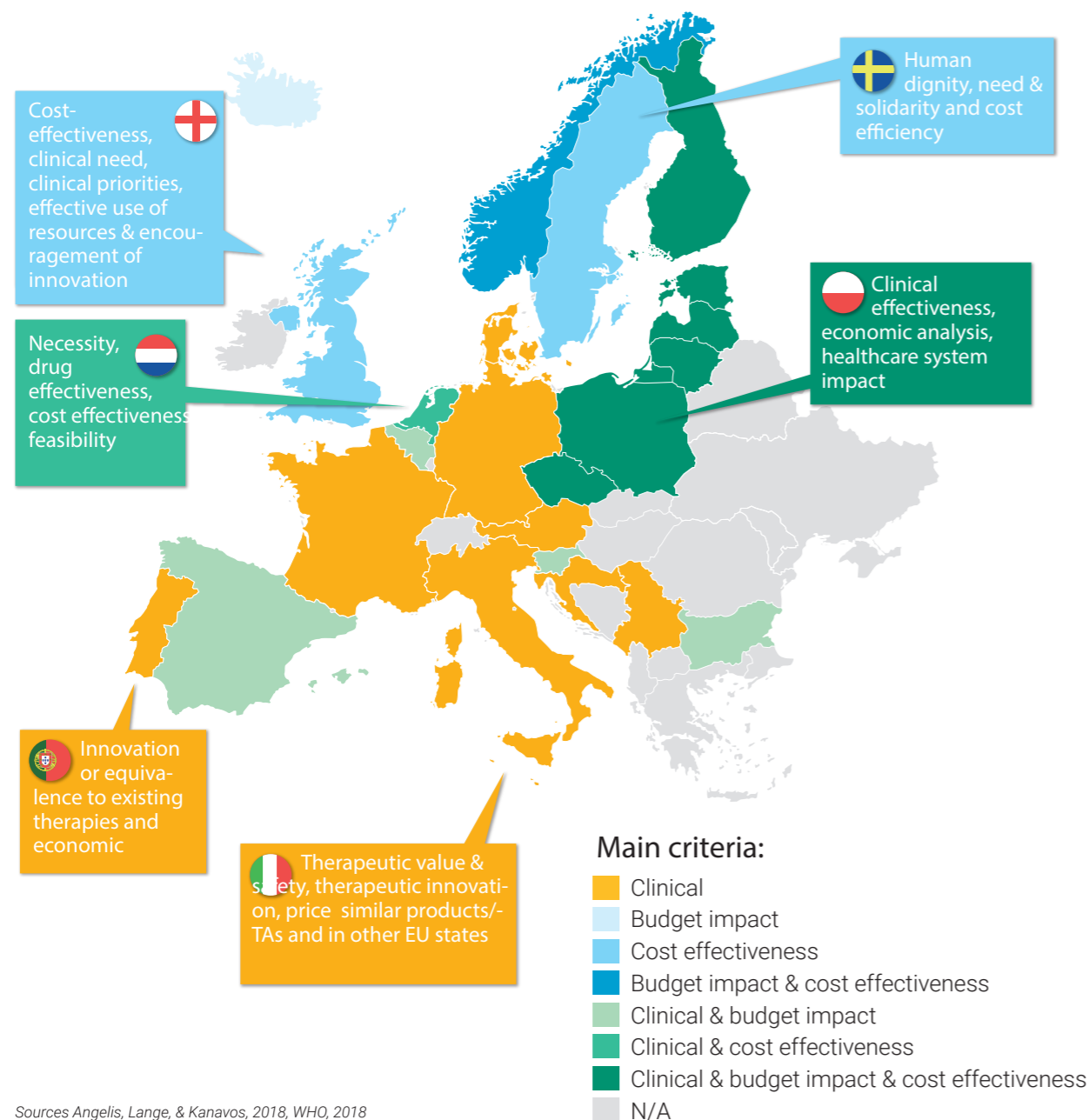
2.4 The five phases of access pathways in European countries

Despite different contexts, European countries generally follow an access pathway comprised of five phases. For governments and payers, these phases form the basis to make evidence-based decisions on public healthcare expenditures.

Fig. 5

Main reimbursement criteria

The context in which reimbursement decisions are made differs significantly between European countries: main reimbursement criteria applied



Sources Angelis, Lange, & Kanavos, 2018, WHO, 2018

1. Preparation: Early in the clinical development phase (prior to Phase 3), the early dialogue is an opportunity for pharmaceutical companies to discuss and receive early advice on the development plan. Furthermore, national HTA bodies and payers can apply horizon scanning to identify therapies in the clinical development phase in order to appropriately plan for the potential future assessment, budget implications and use of the therapy.

2. Application & submission: An application from the pharmaceutical company and direction from the HTA body on the reimbursement route to follow kick off the national reimbursement process. The HTA dossier is submitted, in line with the country-specific procedures and

requirements. Companies can also decide to submit (a part of) their dossier through EUnetHTA, a European collaboration on joint clinical assessments.

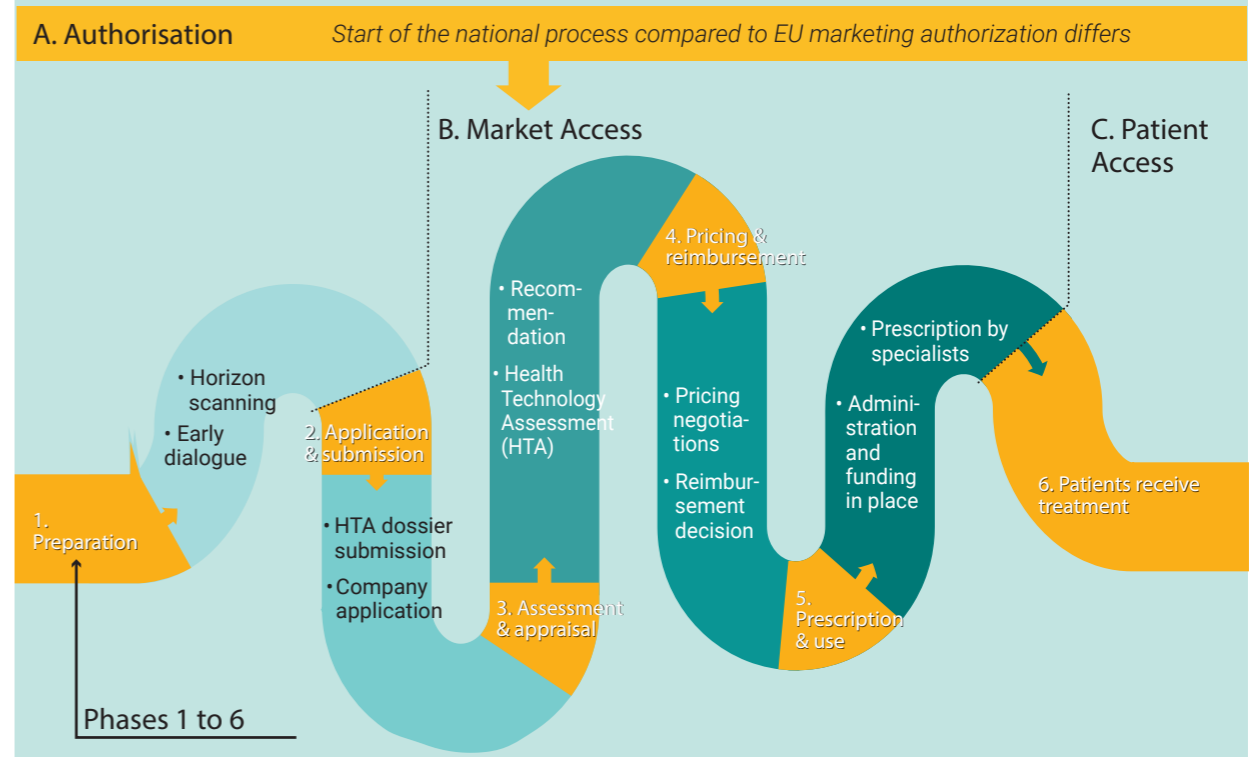
3. Assessment & appraisal: Often one committee within an HTA agency is responsible for critically reviewing evidence submissions or synthesizing evidence. Subsequently, another committee considers the wider context and provides advice or a recommendation. Likewise, in the case of EUnetHTA assessments, EUnetHTA synthesizes the evidence on clinical effectiveness, but refrains from conclusions or recommendations as this is done at the national level.

4. Pricing & reimbursement: Based on the findings and the recommendation, price

Fig. 6

Despite different contexts, in general European countries follow an access pathway comprising Five phases to make evidence-based decisions on public healthcare expenditures

Milestones (A, B, C)



negotiations with the pharmaceutical company will start. The pricing negotiations take place with different parties, depending on each country. This could for example be with the government, an organization representing all insurers, or an appointed agency established solely for pricing negotiations.

5. Prescription & use: Once the decision on reimbursement has been made, additional steps are often required to implement the decision. These steps take various forms in countries from an official decree, signature, publication, or addition to reimbursement lists, to regional or hospital agreements to procure the drug. In theory, after completion of this process, eligible patients should finally have access to the newly approved medication. This reimbursed access can only materialize when the health system infrastructure and oncology care pathways are adequate, when oncologists have the latest knowledge and expertise, and patients are able to access this expertise.

Phase one can be used to reduce the time needed for phases two to five. Any form of delay in the first four phases therefore ultimately results in a delay in reimbursement. In the last phase of prescription and use, delays or barriers hamper effective access and clinical use (see Figure 6).

3. For patients, every day counts



DURING reimbursement discussions, time to patient access can become an abstract objective. Whereas for patients, every day counts. To make more tangible the potential impact of reducing delays in reimbursement decision-making and hence the time it takes for patients to access new therapies, an impact analysis was carried out to answer the

question: what could be gained by ensuring earlier Market Access? The methodology of this analysis is introduced in Box 2.

The findings show the immense gains from improving time to market access and serve as a reminder of our common objective and the urgency of addressing delays where we can.

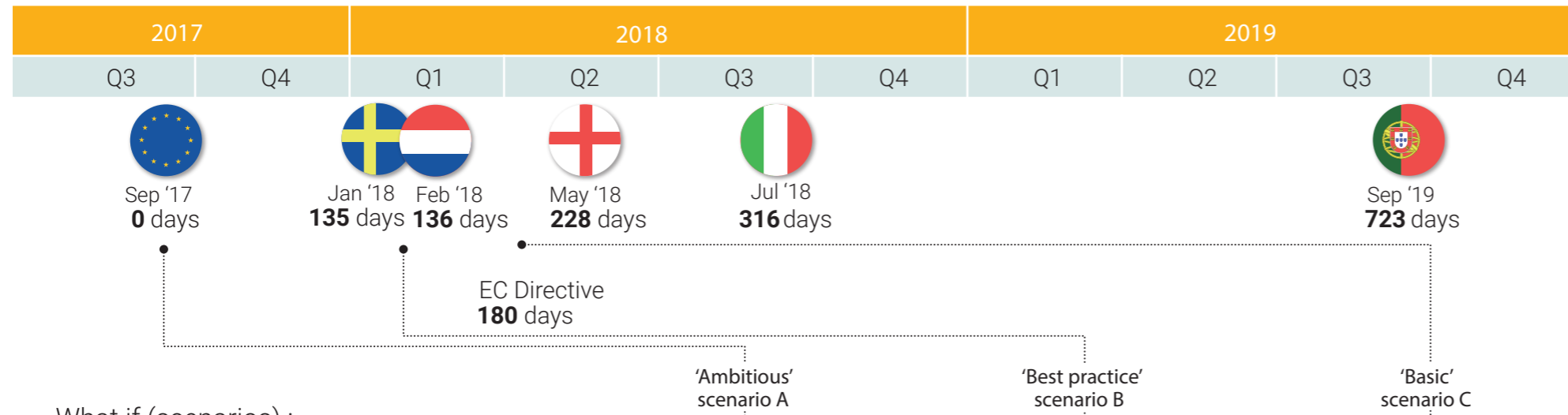
3.1 The case of midostaurin in acute myeloid leukemia

Impact of earlier time to reimbursement for patients with a rare disease - the case of midostaurin in acute myeloid leukemia*

Midostaurin

Acute myeloid leukaemia (AML): rapid growth of abnormal blood cells that build up in the bone marrow and blood and interfere with normal blood cells. As an acute leukaemia, AML progresses rapidly and is typically fatal within weeks or months if left untreated. Around 80% of patients diagnosed with AML pass away within five years.

Market Access: dates at which the therapy was reimbursed under a formal reimbursement scheme



What if (scenarios) :

days between EC authorization and patient access:

Country

additional patients treated

OS ## added months of life

EFS ## added months of life without AML getting worse

Scenario	SE	NL	UK-ENG	IT
'Ambitious' scenario A Directly after EC authorization: 0	71	34	1,423	161
'Best practice' scenario B As fast as the fastest country: 135	n/a	0	580	92
'Basic' scenario C Cf. EC Transparency Directive: 180	n/a	n/a	300	69

Gains versus standard-of-care:

* Midostaurin for AML is not reimbursed in Poland. In Portugal it was only reimbursed as of September 2019, resulting in too little uptake information for inclusion in the analysis.



In a highly ambitious scenario, if midostaurin had been reimbursed in Sweden, the Netherlands, England and Italy directly after EC marketing approval:

1,689 more patients with AML could have been treated.

They could have lived altogether an additional **82,920 months.**

This would have corresponded to **8,665 months** without the disease getting worse.



In the 'best practice' scenario, if midostaurin had been reimbursed in the Netherlands, England and Italy after 135 days, like in Sweden:

673 more patients with AML could have been treated.

They could have lived altogether an additional **33,033 months.**

This would have corresponded to **3,433 months** without the disease getting worse.



In the 'basic scenario', if midostaurin had been reimbursed in England and Italy as fast as agreed in the EC Transparency Directive (a condition fulfilled by the Netherlands and Sweden):

369 more patients with AML could have been treated.

They could have lived altogether an additional **18,107 months.**

This would have corresponded to **1,876 months** without the disease getting worse.

3.2 The case of pertuzumab in early breast cancer

Impact of earlier time to reimbursement for a therapy in the neo-adjuvant setting - the case of pertuzumab in early breast cancer*,**

Pertuzumab (pre-surgery or 'neoadjuvant')

Early stage breast cancer: the cancer is contained in the breast or it has only spread to the lymph nodes in the underarm area. In this stage, it is highly treatable, through a combination of surgery and treatment, and often radiation. Almost 90% of all patients diagnosed still live after five years.

Market Access: dates at which the therapy was reimbursed under a formal reimbursement scheme



What if (scenarios):

days between EC authorization and patient access:

'Ambitious' scenario A

Directly after EC authorization 0

'Best practice' scenario B

As fast as the fastest country: 126

'Basic' scenario C

Cf. EC Transparency Directive: 180

Country	'Ambitious' scenario A			'Best practice' scenario B			'Basic' scenario C		
	NL	SE	UK-ENG	NL	SE	UK-ENG	NL	SE	UK-ENG
## additional patients treated	339	147	1,695	n/a	42	1,138	n/a	26	1,056
LMG ## added months of life	1,910	1,250	9,558	n/a	354	6,418	n/a	223	5,959
QALM ## added months of healthy life	1,382	546	6,914	n/a	154	4,643	n/a	97	4,310

Gains versus standard-of-care:

* The added months of life represent an average that includes patients who were cured and had no cancer recurrence.

** Pertuzumab for early breast cancer is not reimbursed in Italy and Portugal. In Poland it was only reimbursed as of September 2019, resulting in too little uptake information for inclusion in the analysis.

★★★★★ In a highly ambitious scenario, if pertuzumab had been reimbursed in the Netherlands, Sweden and England directly after EC marketing approval:

2,180 more patients with early breast cancer could have been treated.

They could have lived altogether an additional **12,718 months**.

This would have corresponded to **8,842 months** when adjusted for the quality of life.

★★★★☆ In the 'best practice' scenario, if pertuzumab had been reimbursed in Sweden and England after 126 days, like in the Netherlands:

1,180 more patients with early breast cancer could have been treated.

They could have lived altogether an additional **6,772 months**.

This would have corresponded to **4,798 months** when adjusted for the quality of life.

★★★★☆ In the 'basic scenario, if pertuzumab had been reimbursed in Sweden and England as fast as the EC Transparency Directive (a condition fulfilled by the Netherlands):

1,083 more patients with early breast cancer could have been treated.

They could have lived altogether an additional **6,181 months**.

This would have corresponded to **4,408 months** when adjusted for the quality of life.

Box 2 Impact analysis of improved time to market access – summary of methodology

For the impact analysis, the number of new patients on the therapy (uptake) per month were retrieved from the routinely collected business information of the companies involved, as of the date of formal reimbursement. Subsequently, three hypothetical scenarios were applied. In these scenarios, the number of new patients per month remained equal. But time to reimbursement (start of uptake) changed.

- **Scenario A:** at the time of the EC marketing authorisation. In this 'highly ambitious' scenario, time to market access as short as possible. In this scenario, market access is achieved at the time of the European Commission's (EC) marketing authorisation.
- **Scenario B:** as fast as the fastest country. In this 'best practice' scenario, the potential gains are assessed for a situation in which all countries ensure market access as fast as the fastest country.
- **Scenario C:** at 180 days after the EC marketing authorisation. In this 'basic' scenario, dossiers are submitted directly after EC marketing authorisation and all stakeholders involved adhere to a timeline of max. 180 days to achieve market access, in conformity with the EC Transparency Directive (European Commission, 1988).

The scenarios were researched in all six case study countries. A health economic model was developed to calculate for each therapy and country the impact of the three scenarios on the number of patients that could have been treated, and the resulting health impact. This was done using three steps (more details are provided in Annex D):

1. Calculate the improvement in time to patient access: determine the difference in days between the optimised scenario and the actual scenario.
2. Calculate the additional number of patients that could have been treated if the uptake

curve would have started at this new date (the endpoint for both uptake curves was set at five years).

3. Calculate the health gains per month based on the information in the country-specific reimbursement dossiers: multiply the number of patients with the incremental health gains per month, expressed in terms of overall survival (OS, per month), event-free survival (EFS, per month), life-years gained (LYG, translated into life-months gained, LMG) and/or quality-adjusted life years (QALYs, translated into quality-adjusted life-months, QALMs) gained versus the comparator.

4. The ten key factors delaying patient access

TEN reasons explain why many patients in European countries tend to have longer waiting times than needed to access new cancer medicines. These reasons are the result of the current systems in which stakeholders operate and can be categorized as factors related to:

- **Process, i.e. how stakeholders organize the series of steps to take**

Three key process-related factors delaying patient access are: late start of application and submission, lack of adherence to maximum timelines and a multitude of layers involved in the decision-making process.

- **Reimbursement criteria, i.e. what information stakeholders use to define value**

In this category, delays take place due to different evidence requirements across Europe and a lack of clarity of national assessment requirements. These are followed by gaps between evidence submitted and evidence required, and subsequent misalignment of views on value and price.

- **Health system readiness, i.e. to what extent**

stakeholders

integrate the therapy in clinical practice

Once a positive reimbursement decision has been made, integration in clinical practice may be hampered due to prescriber's depleted budgets before the end of the fiscal period, a low frequency at which clinical guidelines are updated and the state of the healthcare infrastructure.

Each of these factors is described in detail in this chapter. Applying this comprehensive framework enables a constructive dialogue and the identification of joint solutions.

4.1 Late start of application and submission

The longer it takes to initiate the national access pathway for a new therapy, the later patients will actually have access to this new therapy.

Often, countries await a positive opinion from the EMA Committee for Medicinal Products for Human Use (CHMP), or in some case the formal decision from the European Commission (EC)*,

* Following a CHMP opinion the European Commission usually adopts a legally binding authorization, within 67 days.

or the formal publication in the Official Journal of the EU before a dossier can be submitted or is assessed. In some cases, countries even await decisions from other countries (Yfantopoulos & Chantzaras, 2018).

Figure 7 shows how the moment of starting the process differs for the six case study countries.

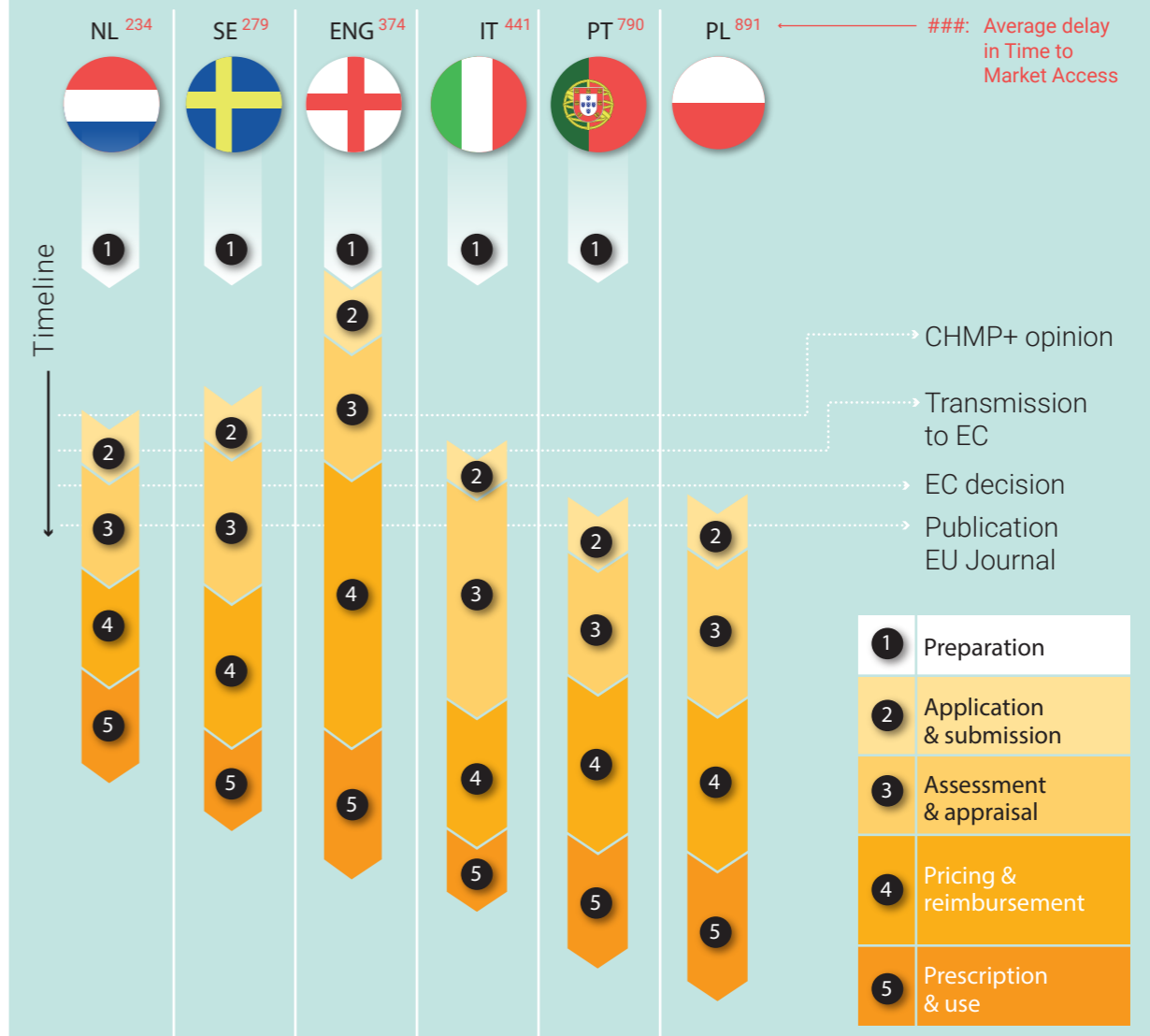
Most European countries use External Reference Pricing (ERP) to manage and negotiate pharmaceutical prices. With ERP, medicine price(s) in one or more other countries serve as a benchmark or reference price for setting or negotiating the price in a country. Here,

list prices are used rather than the net transaction prices, as the latter are generally confidential. The number of countries considered in the basket varies across countries, ranging from 3 to 30 countries. This is reflected in Figure 8. External Reference Pricing is used in Europe but European countries are also referenced by non-European countries (Holtorf, Gialama, Wijaya, & Kaló, 2019).

In some cases, higher-income countries reference lower-income countries. Consequently, establishing a reimbursement price in countries with a lower ability to pay and hence a lower price level first, before

Fig. 7

Start of the national process in the six case study countries

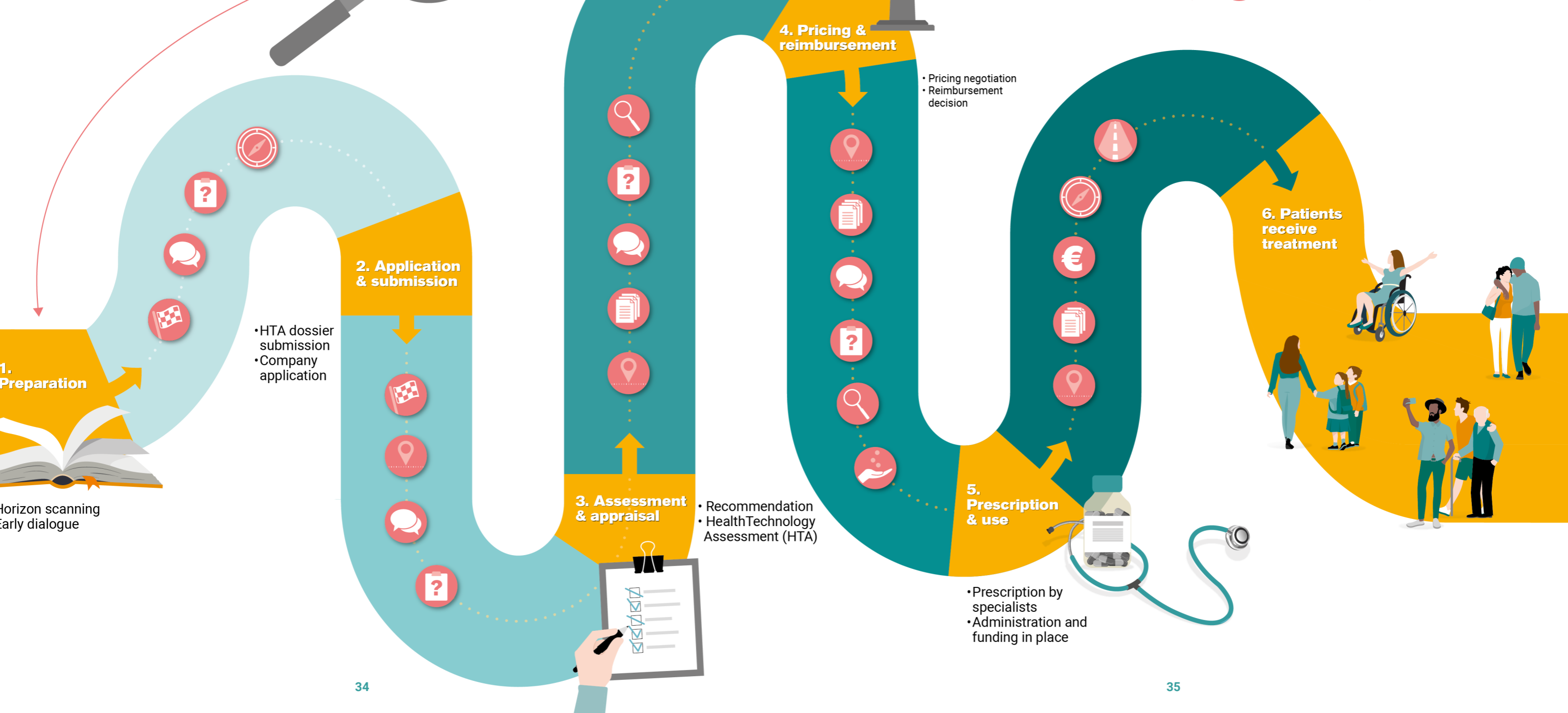
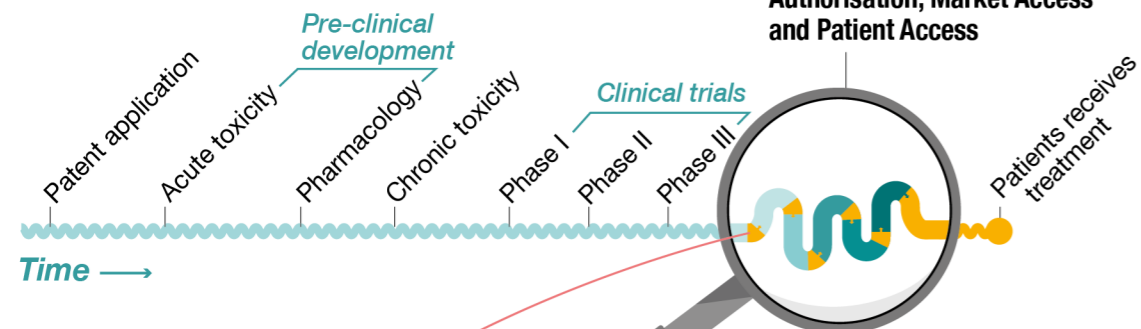


Every day counts

IMPROVING TIME TO PATIENT ACCESS TO INNOVATIVE ONCOLOGY THERAPIES IN EUROPE

The lifecycle of a medicine

This infographic shows the last milestones of the process: **Authorisation, Market Access and Patient Access**



The ten key factors delaying patient access

PROCESS

1. Late start
2. Undefined timelines
3. Multiple layers

REIMBURSEMENT CRITERIA

4. Different requirements
5. Lack of clarity
6. Evidence gaps
7. Misalignment on value and price

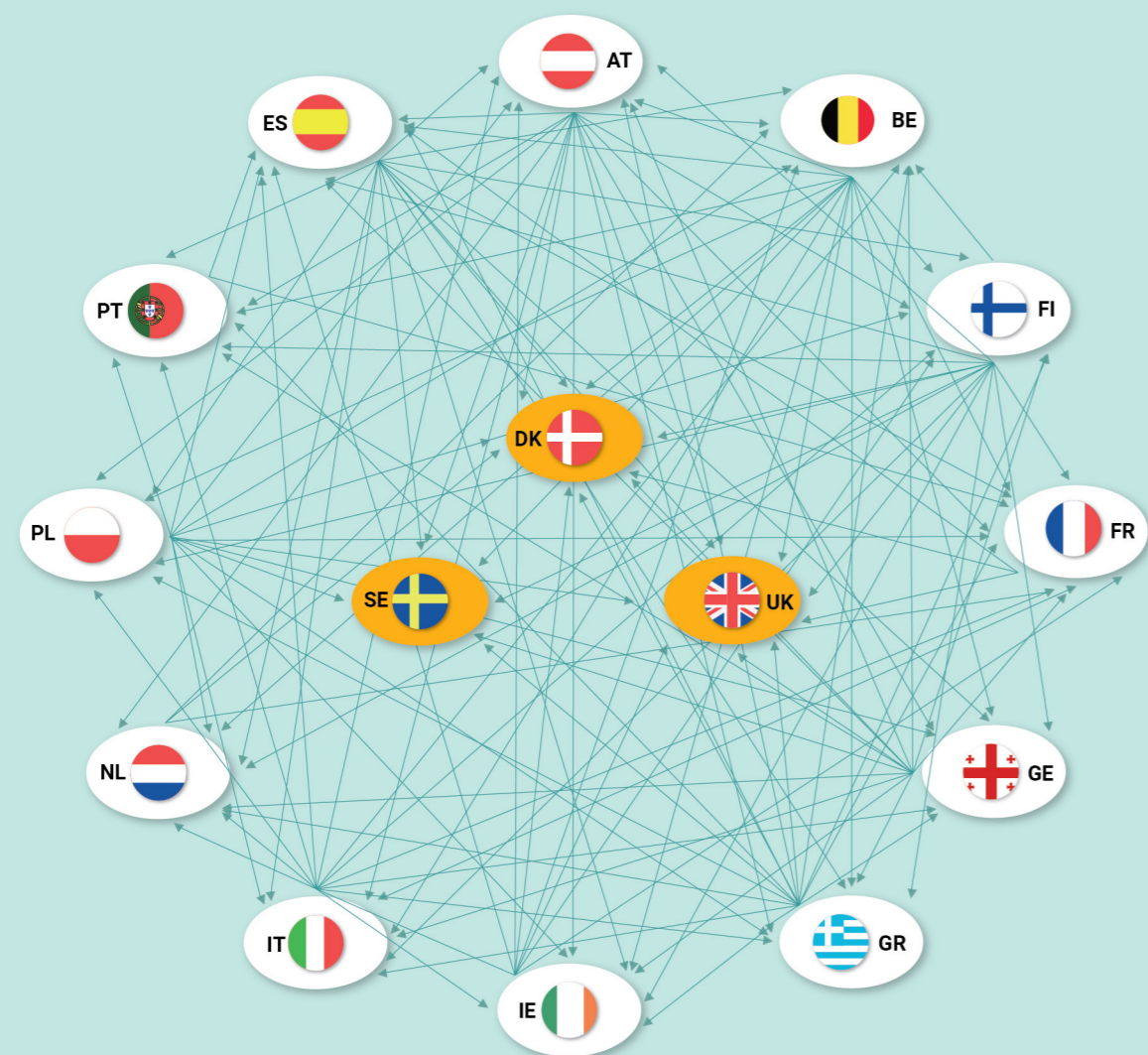
HEALTH SYSTEM READINESS

8. Budget restraints
9. Outdated clinical guidelines
10. Suboptimal healthcare infrastructure

Fig. 8

Due to ERP, price-setting in countries with lower prices negatively impacts on overall prices

○ Countries with ERP
● Countries without ERP



Source: Pantelli, et al., 2016

are often inclined not to accept an application for reimbursement until authorization to enter the European market has been confirmed. Similarly, companies (especially smaller and mid-sized companies) do not have the capacity to submit all national dossiers in parallel throughout Europe, as every single country requires the development of a tailor-made dossier in local language and compliance with a country-specific trajectory.

national timeline of max. 180 days. This timeline starts from the moment a dossier is submitted and excludes time needed by companies to provide additional information ('clock stops').

4.2 Lack of adherence to maximum timelines

Most European countries do not follow a clear set of rules around the timelines for decision-making on national pricing and reimbursement. Even when countries have such rules in place, compliance can be challenging.

4.3 Multiple layers of decision-making

Figure 4 (section 2.2) summarizes how European countries have a different way of organizing their reimbursement decision-making process. The more levels of decision-making, the more duplication of efforts occurs and the higher the chances of prolonging the time before patients can access treatments.

This results in delays and unpredictability of timelines. In the case of the Netherlands for example, the average time between a European marketing authorization and a positive formal reimbursement decision is 234 days for oncology therapies. However, actual delays vary a lot between therapies and may take up to ~700 days in the case of the Netherlands (as shown in the WAIT indicator report), depending e.g. on whether or not the clock stop* procedure is used.

- **Delays related to duplication of reimbursement decisions** take place in countries such as Italy and Sweden. Here, regions (or counties) can make their own reimbursement decision. In Italy, regions can conduct the assessment themselves.
- **Delays related to duplication of budget decisions** take place in countries such as the Netherlands and Portugal. After a positive reimbursement decision at national level, individual negotiations on net price and inclusion of therapies in the hospital formulary need to take place with the hospitals themselves.
- **Delays related to implementing budget decisions** are seen in Poland for example, where budget allocation to hospitals can be delayed by several months.

Recent evidence shows how delays in reimbursement of oncology therapies vary within countries, making the process unpredictable (IQVIA, 2020).* This reflects a suboptimal implementation of the EU Transparency Directive (European Commission, 1988). The purpose of this directive is to ensure the transparency of measures that regulate pricing and reimbursement of medicinal products. It sets the maximum duration for reaching a national pricing and reimbursement decision to a strict

In addition, decentralized decision-making also increases the risk of inequalities in access within a country.

* It is important to note that timelines presented in this publication capture three delays which are excluded from the 180 days prescribed by the EU Transparency Directive. First, the delay between marketing authorization and dossier submission, since the 180 days start from the moment of dossier submission. Second, delays during the assessment due to 'clock stops', as the 180 days exclude time needed by companies to provide additional information. And third, delays due to putting formalities in place, as the Transparency Directive stops at the moment of the decision.

doing so in countries with higher ability to pay, will result in a general price decrease across European countries. This creates an incentive for companies to launch in high-income countries first (and hampers application of differential prices), to avoid lower prices cascading from one country to another (Kanavos, Fontrier, Gill, & Efthymiadou, 2020).

Another important factor at play behind these dynamics is the scarcity of human resources

within both HTA bodies and pharmaceutical companies. Significant advances in medical science and deeper understanding of diseases have led to an acceleration of drug development in all disease areas. With the number of EU marketing authorizations increasing, even more capacity will be required. HTA bodies struggle to compete with private sector salaries and to ensure they have the required expertise in a rapidly advancing field (O'Rourke, Werkö, Merlin, Huang, & Schuller, 2019). For that reason, they

4.4 Different evidence requirements across Europe

Throughout Europe, different evidence is required for a **clinical assessment**, depending on the assessment agencies. Evidence required by the EMA to demonstrate safety and clinical efficacy and inform a marketing authorization decision differs from the evidence required by national HTA bodies to demonstrate clinical effectiveness and inform reimbursement decisions. This makes sense, as both agencies have different objectives.

Yet, even among HTA bodies, who all aim to answer similar evaluation questions, evidence

requirements vary. When evaluating clinical effectiveness, HTA bodies look at the strength of the evidence generated by the manufacturer in a clinical trial. They assess whether the evidence is robust enough to demonstrate the effectiveness compared to existing alternatives (e.g. the current standard of care). They look at the patient population that was studied, the comparator therapy that was used, the clinical endpoints (outcomes) that were measured, the way in which the trial was set-up, and the statistical analyzes that were run.

However, the extent to which this evidence (coming from the same clinical trial) is

considered robust or acceptable varies greatly across HTA bodies. This is demonstrated in Figure 9, which maps the self-reported level of acceptance of 19 trial characteristics for the HTA bodies in England, Italy, the Netherlands, Poland, Portugal and Sweden.

The level of alignment is highest for the use of biomarkers and real-world evidence (RWE) for example. These elements are “often accepted” by all HTA bodies. The level of alignment is lowest when HTA bodies are asked for acceptance of surrogate endpoints other than progression-free survival (PFS)*. Every agency looks at the use of surrogate endpoints other than OS or PFS in a different way: these are accepted in Poland and often accepted in Sweden; not accepted in the Netherlands and often not accepted in Portugal. England and Italy determine acceptance on a case-by-case basis.

These differences prolong discussions and alignment between pharmaceutical companies and HTA bodies at a national level, especially when no early discussions took place to align on evidence generation in advance. It may even lead to additional, country-specific data collection, thereby seriously extending patients’ waiting times.

4.5 Lack of clarity of national requirements

In addition to a lack of coherence on evidence requirements between HTA bodies, also within countries the evidence requirements for the clinical assessment and the cost-effectiveness assessment are often difficult to predict. Although case-dependency allows for a tailor-made assessment, it also results in an unpredictable evaluation. The absence of clearly defined criteria and requirements,

or their inconsistent application, perpetuates national discussions and misalignment between pharmaceutical companies and HTA bodies, thereby delaying access for patients.

Unclear evidence requirements for clinical assessments, within countries

Figure 10 demonstrates the difficulty of predicting evidence requirements for the clinical assessment with national HTA bodies.

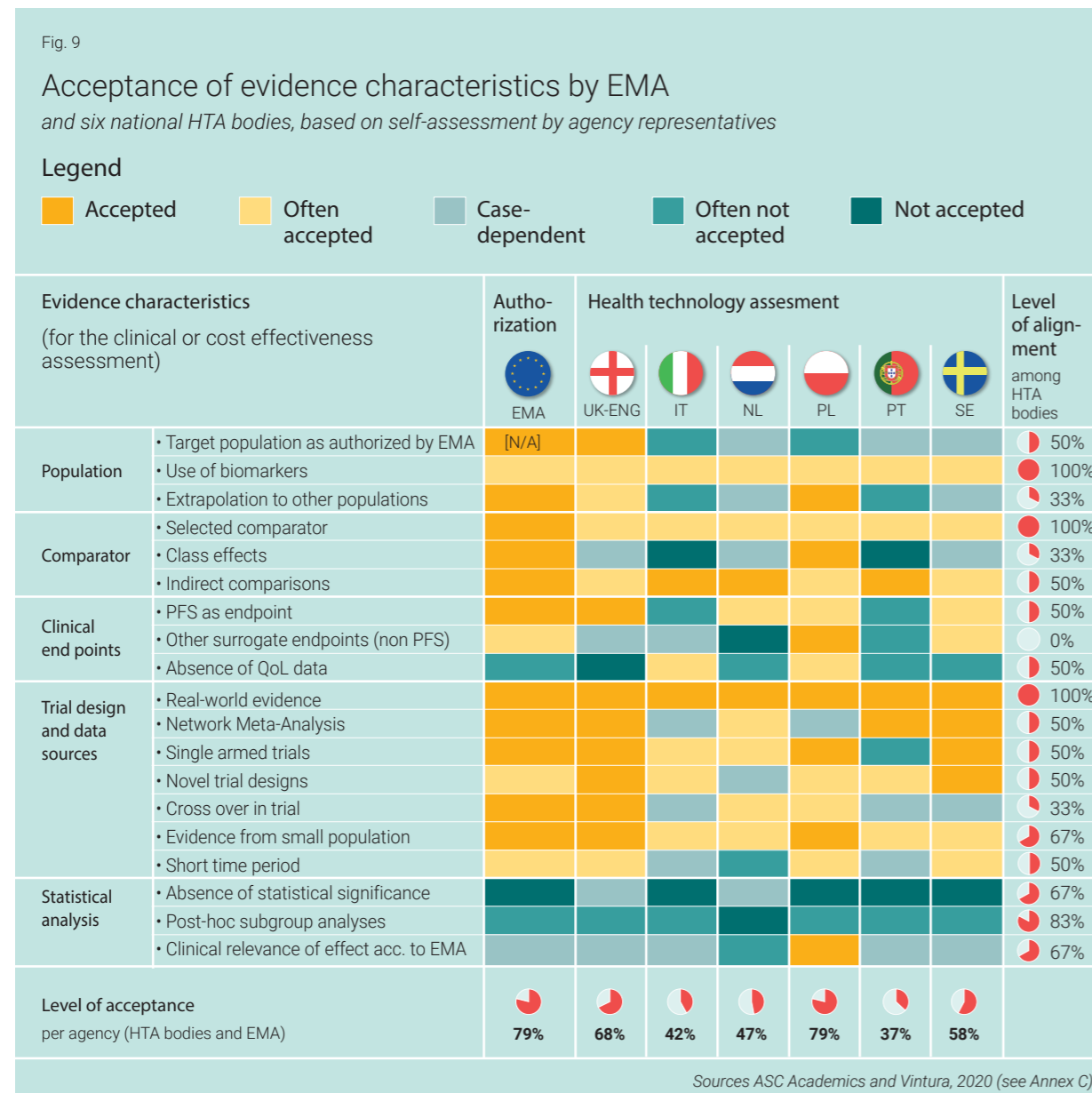
In Figure 9, the grey color code reflects acceptance on a case-by-case basis. The blue color code (“often not accepted”) and lighter orange color (“often accepted”) also reflect a certain level of unpredictability. To highlight the level of predictability more clearly, in Figure 10 the information from Figure 9 is translated into levels of predictability, using the general rules**:

- ‘accepted’ and ‘not accepted’ are classified as ‘predictable’
- ‘often accepted’ and ‘often not accepted’ are classified as ‘not fully predictable’
- ‘case-dependent’ are classified as ‘highly unpredictable’.

Mapping the information in this way shows how the level of predictability of evidence requirements is particularly low for the accepted patient population, the selected comparator, the use of PFS as an endpoint, cross-over in trials, a short time period of a trial (e.g. because of promising results and early, conditional marketing authorization) and post-hoc subgroup analyses.

Unclear criteria for cost-effectiveness assessments, within countries

Similarly, criteria for the cost-effectiveness assessment are not always defined in a clear manner, nor is the definition used in a



* As shown in the Table, also PFS as an endpoint is not always accepted, e.g. in Italy and Portugal.

** This was adapted when needed, e.g. in the case of acceptance of biomarkers or indirect comparisons which are often accepted (“accepted when validated” and “accepted when needed and done in accordance with guidelines” respectively), yet fully predictable.

Fig. 10

Predictability of evidence requirements from EMA

and six national HTA bodies, based on self-assessment by agency representatives

Legend

- Highly unpredictable (Case-dependent)
- Not fully predictable (Often accepted; Often not accepted)
- Predictable (Accepted; Not accepted)

Evidence characteristics (for the clinical or cost effectiveness assessment)	Author-ization	Health technology assessment						Level of predicta-bility across HTA bodies
		EMA	UK-ENG	IT	NL	PL	PT	
Population	• Target population as authorized by EMA	[N/A]						17%
	• Use of biomarkers							100%
	• Extrapolation to other populations							17%
Comparator	• Selected comparator							0%
	• Class effects							50%
	• Indirect comparisons							100%
Clinical end points	• PFS as endpoint							17%
	• Other surrogate endpoints (non PFS)							33%
	• Absence of QoL data							50%
Trial design and data sources	• Real-world evidence							100%
	• Network Meta-Analysis							50%
	• Single armed trials							33%
	• Novel trial designs							33%
	• Cross-over in trial							17%
	• Evidence from small population							33%
	• Short time period							17%
Statistical analysis	• Absence of statistical significance							67%
	• Post-hoc subgroup analyses							17%
	• Clinical relevance of effect acc. to EMA							33%
Level of acceptance per agency (HTA bodies and EMA)		68%	58%	32%	37%	53%	32%	37%

Sources ASC Academics and Vintura, 2020 (see Annex C.)

manner suitable for consistent application across situations. During a cost-effectiveness assessment, countries aim to answer the question: is price of the therapy a good reflection of its value? Countries apply different methodologies for determining cost-effectiveness, as shown in Figure 14.

HTA bodies in countries like England, the Netherlands and Poland apply a clear maximum price per quality-adjusted life year (QALY), also referred to as an incremental cost-effectiveness ratio (ICER). To a varying extent, they define different thresholds







to allow applicability in different settings.

In England, specific thresholds are set for end-of-life settings and very rare diseases, to indicate a higher willingness to pay in these instances. In the Netherlands, willingness to pay is higher when the burden of the disease for patients is higher. These differences demonstrate the difficulty of defining and consistently applying clear thresholds in specific situations. In most countries, thresholds have not changed for many years (in some cases they have never been adjusted).

Fig. 11

Countries apply different methodologies for determining cost-effectiveness

Even when clear thresholds are defined, they are often not suitable for consistent application across situations

COUNTRY	PRICE LEVEL CRITERIA	DETAILS	THRESHOLD
 UK-ENG	Maximum ICER (price / QALY)	<ul style="list-style-type: none"> A general ICER threshold is applied. A higher threshold is applied for (i) innovations delivering life extension in the later stages of terminal diseases and (ii) innovations targeting very rare diseases. 	<ul style="list-style-type: none"> General: £20k - £30k per QALY End-of-life: £50k per QALY Very rare diseases: £100k - £300k per QALY
 IT	No clear criterium	<ul style="list-style-type: none"> Pricing is done based on the degree of therapeutic innovation, the price of similar products within the same or similar therapeutic category, and product prices in other EU Member States. 	• N/A
 NL	Maximum ICER (price / QALY)	<ul style="list-style-type: none"> Three different ICER thresholds are applied, depending on the disease burden being addressed. The disease burden ranges from 0,0 (no loss of future life years or quality of life) to 1,0 (complete loss of future life years and quality of life). 	<ul style="list-style-type: none"> Disease burden 0,1 – 0,4: €20k per QALY Disease burden 0,41 – 0,7: €50k per QALY Disease burden 0,71 – 1,0: €80k per QALY
 PL	Maximum ICER (price / QALY)	<ul style="list-style-type: none"> A general ICER threshold is applied. All medicines (incl. orphan drugs) must meet a strict ICER threshold of €40,485/QALY, which represents three times the GDP per capita. A current late-stage initiative intends to allow for a less strict ICER threshold for orphan drugs. 	• €40k per QALY
 PT	No clear criterium	<ul style="list-style-type: none"> Pricing is done based on the level of innovation and economic advantage compared to existing therapies and product prices in 3 reference countries. 	• N/A
 SE	No clear criterium	<ul style="list-style-type: none"> TLV conducts the economic assessments of pharmaceuticals used in the specialized in-patient care and provides a report which includes a health economic 	• N/A

Sources Nanavaty, et al., 2015; Paulden, 2017; Zorginstituut Nederland, 2018

Other European countries do not define clear thresholds at all.

In Sweden, the HTA body assesses the price per QALY at different price levels but does not use a standard maximum price to reflect what is considered a reasonable price per QALY (Svensson, Nilsson, & Arnberg, 2015). Countries like Italy or Portugal also do not have a formal ICER threshold. In order to decide on an acceptable price, they compare the price of a new therapy to prices of similar therapies and/or prices in other countries (Iannazzo, et al., 2016). The differences are summarized Figure 11.

4.6 Evidence gaps

Increasingly, reimbursement dossiers for oncology therapies risk not meeting evidence requirements from HTA bodies, leading to evidence gaps and uncertainty about the real-world value of these therapies. This can be due to non-robust evidence generation, but also due to the fact that meeting traditional HTA evidence requirements is getting more difficult given the characteristics of today's oncology therapies. This is especially the case when oncology therapies are:

Table 1

How oncology therapies inherently bring challenges in meeting evidence requirements for the clinical assessment, leading to gaps and uncertainty

THERAPY CHARACTERISTIC	CLINICAL TRIAL CHARACTERISTIC	UNCERTAINTY
Therapy-characteristic	<ul style="list-style-type: none"> Selected comparator: The standard of care at the start of the trial has already been replaced at the time of evidence submission. 	Uncertainty about effectiveness compared to country's standard of care.
Targeting life-threatening or highly debilitating disease	<ul style="list-style-type: none"> Single-arm trial: The absence of alternative treatment makes it unethical to use a control group of patients not receiving the potentially effective therapy. Cross-over in trial: The absence of alternative treatment makes it unethical to keep patients in the control arm when their disease progresses. Short time period: The promising effect makes it unethical to await all phases of the clinical trial before applying for marketing authorisation and reimbursement, meaning that 'hard' data on overall survival may not be available at the time of reimbursement discussions. 	Uncertainty about validity of findings. Uncertainty about the relation between the observed effect and mortality or morbidity.
Targeting rare cancers (orphan drugs), molecular targets, or genomic alterations (targeted therapies and tumor-agnostic therapies)	<ul style="list-style-type: none"> Evidence from small populations: As the disease, targeted molecule, or genomic alteration is rare, there are too few patients for: having information on natural course of disease as comparison developing a validated questionnaire to measure the effect measuring a statistically significant effect size Post-hoc subgroup analysis: The targeted effect does not occur in all patients, but it is not known (yet) in which patients exactly, making it impossible to predict in advance, in what subgroup the targeted effect will take place. 	Uncertainty about statistical significance of findings.
Targeting cancers that progress slowly or have a long-term, curative effect	<ul style="list-style-type: none"> Short time period: due to the slow progression of the disease, no 'hard' data on overall survival may be available within a reasonable timeframe, or no evidence on the actual duration of the (potential) curative effect may be available within a reasonable timeframe. 	Uncertainty about the relation between the observed effect and mortality or morbidity. Uncertainty about the long-term duration of the effect.

- generally developed in a context with a high speed of innovation
- often targeting life-threatening or highly debilitating disease
- frequently targeting rare cancers, molecular targets, or genomic alterations
- sometimes targeting cancers that progress slowly (especially when targeting the cancer at an early stage when there is more potential to significantly prolong life expectancy)
- sometimes able to cure.

Table 1 describes how these characteristics result in clinical trial designs not meeting national evidence requirements for the clinical assessment. Consequently, they bring evidence gaps and uncertainty about real-world value.

This is complicated further by the fact that these therapies also pose challenges to determining cost-effectiveness. In the case of some multi-indication therapies or *tumor-agnostic therapies* for example, the same therapy is used for different types of tumors. This poses the difficulty of applying different value assessments per indication and indication-specific prices (the latter is often hampered by the way in which information on prescription is collected at the hospital level). In the case of therapies with a curative intent, the uncertainty about the duration of the effect is of particular consequence due to the upfront payment that has to be made for this one-off therapy.

4.7 Misalignment on value and price

Decision-makers are faced with the enormous challenge of striking a balance between fast patient access, uncertainty about real-world value, and a reasonable price reflecting the (potential) value. They have to do this in the context of assessment criteria and evidence requirements that are not black-and-white and

amid different views from pharmaceutical companies and the decision-makers on value and affordability.

As described in the previous sections, the evidence submitted may contain gaps compared to evidence requirements. This could be due to evidence requirements being different across Europe (section 4.4), being unpredictable within countries (section 4.5), being incompatible with the therapy characteristics, or because pharmaceutical companies underestimate the information need (section 4.6).

Whatever their cause, these evidence gaps are the source of a vicious circle:

Misalignment on value and price: pharmaceutical companies and decision-makers have difficulty in achieving a shared perspective on the value of the therapy: does it have a high added value, or does it have a highly uncertain effect? Misalignment on value hampers alignment on price: is the price reflective of an appropriate return for value and risk, or does it pose an unjustified budget risk in the absence of certainty about the real-world effect?

Long negotiations and decreasing trust: consequently, long negotiations take place that focus merely on price in the absence of mechanisms to deal with the uncertainty about value. In these price negotiations, the common ground is often simply lost. Pharmaceutical companies and decision-makers find themselves in opposing positions on price, without room for a constructive, comprehensive dialogue focused to find a shared solution.

This lack of trust is adding to the strain on the relationship between healthcare stakeholders and their growing disconnect, caused by:

- Increasing pressure on healthcare budgets, due to aging populations, higher incidence

of chronic diseases and the rapid evolution of therapeutic options, targeting smaller populations (implying higher list prices per patient).

- (Perceived) asymmetry of information due to lack of insights in costs involved in research and development of a therapy.
- Examples of bad decisions by individual companies and instances of negative media exposure and framing.

Subsequently, during new reimbursement

trajectories, there is less trust when value and price are being discussed.

4.8 Insufficient budget to implement decisions

Once a reimbursement decision has been made, there are still factors that can delay the time to patient access. One of these factors includes ensuring enough budget is available to implement the decision in practice, and/or to fund the medicine for the remainder of the

financial year. When an insufficient budget is in place, this delays access or hampers access by putting negative pressure on the prescription and use of the new medication.

In England for example, although the National Health Service (NHS) is required to fund reimbursement recommendations from the National Institute for Health and Care Excellence (NICE) nationally through NHS England and locally through Clinical Commissioning Groups (CCGs), in practice “postcode prescribing” (geographical variation in access) occurs because of local budget constraints (Edwards, Appleby, & Timmins, 2019).

In the Netherlands, the same “postcode prescribing” may occur when prescribers need to refer patients to other care centers because of “selective purchasing” (healthcare insurers reimburse certain medicines only when prescribed in specific hospitals), or because a reimbursement cap set by healthcare insurers is reached (NZa, 2019).

In Poland, new patient enrolment in the Drug Program may be delayed because of budget depletion for the ongoing budget period.

4.9 Low frequency of clinical guideline updates

As shown in Figure 12, clinical guidelines do not always include the most recent therapeutic innovations, even for Europe’s five main cancer types (WHO International Agency for Research on Cancer, 2020). The absence of clinical guidelines may cause prescribers to hold back from starting to use new therapies due to a lack of clarity on the positioning of the new therapy in the treatment pathway. Pharmaceutical companies have an important role to play in developing the required body of evidence and creating awareness to inform clinical guidelines.

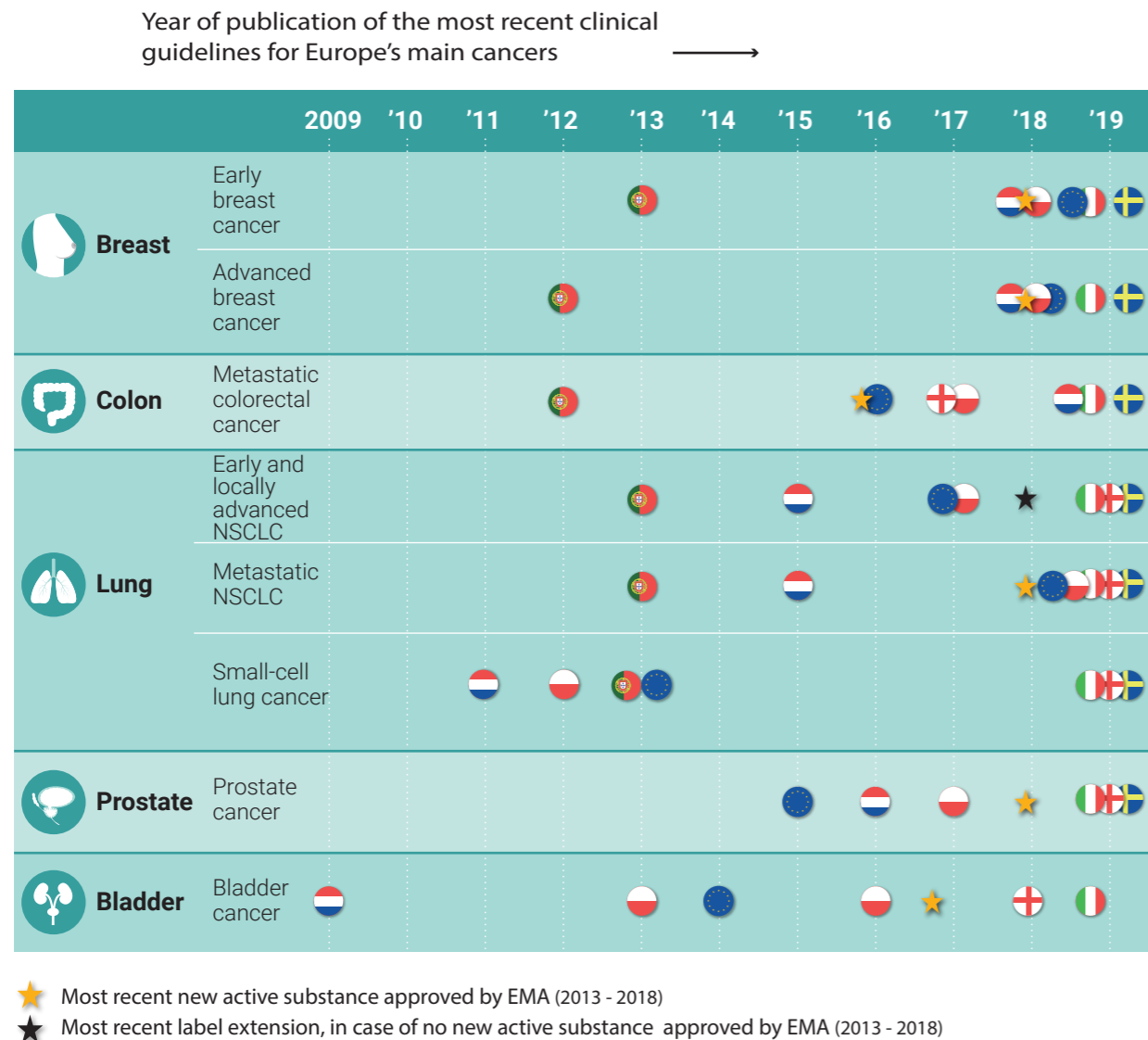
4.10 Suboptimal healthcare infrastructure

The health infrastructure faces constraints in many European countries, leading to a suboptimal organization of oncology pathways. For that reason, even after reimbursement, healthcare systems may face difficulties absorbing and using a new therapy in the most optimal way. As basic conditions, patients need to have access to high quality health facilities, diagnostic centres and health personnel. More specifically, the oncology care pathway should facilitate the optimal use of innovative therapies through:

- **Screening:** focus on early detection and the use of the growing evidence on risk factors (e.g. inherited genetic mutations).
- **Diagnosis:** the availability of rapid diagnostic centers and reimbursement of appropriate (genetic/biomarker) testing methods.
- **Referral and treatment:** timely access to centers of excellence specialized in (rare) cancers, access to the latest information on accessibility of innovative oncology therapies, and absence of financial considerations with prescribers and patients when selecting a therapy.
- **Follow-up:** optimal adherence to (chronic and/or extramural) treatment regimens and monitoring of investments and (patient-relevant) outcomes to inform future prescriptions.

Fig. 12

Clinical guidelines do not always include the most recent therapeutic innovations Even for Europe’s 5 main cancer types



Source NICE, 2020, Associazione Italiana di Oncologia Medica, 2020, Integraal Kankercentrum Nederland, 2020, Serviço Nacional de Saúde, 2020, Regionala Cancercentrum, 2020, European Society for Medical Oncology, 2020.

5. The six priority areas for reducing the time to patient access

THESE are six priority areas to address the ten factors causing delays in patient access. In each of these priority areas, a concerted effort is needed. It is not a matter of individual stakeholders taking responsibility within their respective areas of work. It requires stakeholders to break through comfort zones and to actively look for common ground with other stakeholders.

The six priority areas shown in Table 2 serve as a starting point for a further and constructive dialogues and joint problem-solving.

Each of these areas are described in more detail below. After a short description, recommendations for tangible next steps are exemplified using best practices that already exist. Together, these priority areas for action

Table 2

Category	#	Priority area
PROCESS	1	Align dossier submission timelines
	2	Shorten reimbursement timelines
REIMBURSEMENT CRITERIA	3	Align evidence requirements
	4	Be adaptive to rapidly evolving innovation
HEALTH SYSTEM READINESS	5	Improve healthcare infrastructures
	6	Strengthen collaboration between all stakeholders

address all ten factors causing cancer patients in Europe to wait longer to get access to new cancer medicines.

5.1 Align dossier submission timelines

Almost all European countries apply external reference pricing, i.e. set maximum prices based on the prices of other countries. In some cases, higher-income countries reference lower-income countries, creating an incentive for companies to launch in high-income countries first (Kanavos, Fontrier, Gill, & Efthymiadou, 2020). As a result, external reference pricing leads to countries with a lower ability to pay waiting much longer for the introduction of new medications.

This is partly mitigated through highly confidential discounts which allow for differential pricing without impacting on list prices that are used for ERP. However, a negative side effect is that a lack of transparency on actual prices increases mistrust with stakeholders who were not involved in the national pricing and reimbursement discussions.

If countries could address external reference pricing and its unintended consequences, the need for later introduction in countries with a lower ability to pay and confidential discounts




would be greatly reduced. This would facilitate earlier submission in these countries, whilst increasing transparency and trust in the system at the same time.

To realize this, stakeholders ought to evaluate current strategies and their impact on dossier submission timelines and explore improvements or alternatives. An alternative could e.g. be a European solidarity system, wherein prices are differentiated explicitly, based on a single reference price and objective and previously agreed parameters reflecting the economic situation of a country. This should be accompanied by efforts to reduce differences in healthcare expenditures by countries that currently spend less on healthcare compared to the European average, to avoid erosion of this solidarity system. An aspect to consider is the cross-border trade of oncology medicines that may follow from important price differences between countries. And finally, also HTA capacity within pharmaceutical companies should allow for parallel dossier submission across European countries once the bottleneck of ERP is addressed.

Delaying factor(s) addressed

- (#1) Late start of application and submission, due to external reference pricing.

Align dossier submission timelines - recommended next steps

Stakeholders	Next steps
 National authorities & Multi-stakeholder collaborations	Evaluate the advantages and disadvantages of current ERP strategies and explore improvements or alternatives.
 Academics and experts	Identify alternative solutions for ERP, e.g. based on explicit differential pricing (solidarity) and smaller differences in healthcare expenditures.
 Pharmaceutical companies	Build HTA capabilities to allow for more dossier submissions in parallel across European countries once ERP as a bottleneck is addressed.

Best practices

The United Kingdom, Denmark and Sweden do not apply external reference pricing to determine and negotiate prices (Panteli, et al., 2016).

Kanavos et al. evaluated the impact of ERP on key health policy objectives in different national contexts. They concluded ERP has not regulated prices efficiently and has unintended consequences that reduce benefits arising from it (Kanavos, Fontrier, Gill, & Efthymiadou, 2020).

Poland decided to increase healthcare spending as % of GDP with 25% by 2024, thereby reducing differences in healthcare expenditures between European countries, an important prerequisite in the case of a differential pricing system based on solidarity (Sowada, Sagan, & Kowalska-Bobko, 2019).

5.2 Shorten reimbursement timelines

In the preparation phase, early dialogues, horizon scanning and early collaboration allow for optimal preparation already prior to European marketing authorization. Pre-alignment in this stage provides a great opportunity for quicker alignment during the subsequent phases (e.g. on requirements, evidence gaps, value and price).

Dossier submission could start earlier than the moment a European marketing authorization is formally granted. It could also start much earlier by avoiding waiting for decisions from other countries. During the process, steps could be taken in parallel instead of sequentially and the layers of decision-making could be reduced to a minimum to reduce time to patient access. This requires enough HTA capacity within HTA bodies.

A key challenge of the medicine reimbursement process is that the traditional provider-consumer

transaction is distorted. The patient as the consumer of the final product is represented by collective payer institutions. As a result, the patient perspective is easily replaced by an administrative and financial dialogue. The demand for urgency is not structurally included in the process. Informed patients should be engaged in every step of the decision-making process, as a continuous reminder to all stakeholders that for patients, every day counts. Last but not least, making timelines transparent helps in maintaining a sense of urgency at every step of the process.

There are many opportunities to improve reimbursement timelines and countries can learn a lot from other countries. In Germany for example, an access pathway is used whereby therapies are reimbursed directly after marketing authorization, prior to the HTA, based on list prices set by pharmaceutical companies. Within six months, an HTA is conducted, after which the actual reimbursement price is negotiated. This price replaces the initial price one year after launch. In England, dossiers can be submitted prior to a positive CHMP opinion, to allow for taking as many steps in the process in advance.




Delaying factor(s) addressed

- (#1) Late start of application and submission, due to national timelines
- (#2) Lack of adherence to maximum timelines
- (#3) Multiple layers of decision-making

In particular by preparing well in advance of EU marketing authorization, delays due to the following factors can be addressed:

- (#4) Different evidence requirements across Europe
- (#5) Lack of clarity of national requirements
- (#6) Evidence gaps
- (#7) Misalignment on value and price

Shorten reimbursement timelines - recommended next steps

Stakeholders	Next steps
 National authorities	Evaluate the access pathway from a process-optimisation perspective and identify opportunities to shorten timelines. Build HTA capabilities. Involve informed patients to maintain a sense of urgency at every step of the access pathway.
 Pharmaceutical companies	Have the dossier ready in time and submit as soon as national timelines permit.
 Patient organisations	Educate and support authorities regarding the engagement of informed patients at every step of the access pathway.

Best practices

In **Germany**, patient access is granted prior to HTA, at the time of EU marketing authorization. After authorization, companies set their list price and submit their dossier to the Joint Federal Committee (G-BA). Within six months, G-BA assesses the added benefit, after which the reimbursement price is negotiated. This price replaces the initial price one year after launch (OECD, 2018).

In the **Netherlands**, a pilot is ongoing to evaluate a parallel instead of sequential procedure for authorization and reimbursement (Zorginstituut Nederland, 2019).

In **Belgium, Denmark, and the Netherlands**, multi-year, multi-indication agreements include light-touch or no assessments for new indications, and the price and impact on budget of new indications are discussed at the beginning of the agreement (Wilson, Voncina, Breen, & Roediger).

In **England**, NICE proactively invites manufacturers to submit their dossiers before a positive CHMP opinion is in place. Assessment timelines are published on the NICE website (NICE, 2018). All decisions are made at the

central level and will also be recognized in Wales. For positive reimbursement decisions the NHS is obliged to ensure budget for local implementation (Edwards, Appleby, & Timmins, 2019). For cancer drugs that are recommended for use within the Cancer Drugs Fund (CDF), the NICE appraisal process starts much earlier with the aim of publishing draft guidance prior to a drug receiving its marketing authorization and then final guidance within 90 days of marketing authorization (NHS England, 2016).

Italy's fund for innovative oncology drugs enables faster patient access by removing budgetary barriers at the regional level (Flume, et al., 2018).

The **European Patients' Academy (EUPATI)** has launched a training course for academia and industry professionals on the principles of good patient engagement and helps participants plan for including the right patients at the right time for the right purpose. In this way, EUPATI supports engagement of informed patients and strengthening a sense of urgency at every step of the access pathway (EUPATI, 2020).

5.3 Align evidence requirements

Much like the EMA has improved the efficiency for granting market authorizations, European HTA alignment on clinical assessment (after which appraisal takes place at the national level) would improve the timelines to patient access. In addition, European cooperation and alignment would reduce duplication of efforts and allow for more efficient use of scarce human and financial resources (Huic, 2016). The European Network for Health Technology Assessment (EUnetHTA) started in 2009 following a call from the European Commission. It has become the network for HTA collaboration across Europe and joint clinical assessments (JCAs). It has been put in place until 2021 and currently works on establishing a permanent HTA working structure for Europe, with a focus on the clinical assessment. In follow-up to EUnetHTA, in 2018 the European Commission published a Proposal for a Regulation on Health Technology Assessment, to formalize European collaboration further and introduce Joint Clinical Assessments (European Commission, 2018). The Proposal has since been extensively discussed but divergent positions remain (Vella Bonanno, et al., 2019).

However, given the serious delays caused by differences in evidence requirements in the various European jurisdictions, all stakeholders

should contribute to approval of a fit-for-purpose EC Regulation on HTA. At the very least, countries should exchange their views on requirements and assessment methodologies, particularly for new generations of medicines.

Delaying factor(s) addressed

- (#4) Different evidence requirements across Europe
- (#5) Lack of clarity of national requirements (clinical assessment)

Best practices

Since 1995, single European marketing authorizations are granted based on an opinion from EMA and a legally binding decision from the European Commission (EMA, 2020).

EUnetHTA facilitates HTA collaboration across Europe and joint clinical assessments (EUnetHTA, 2020).

The European Commission Proposal for a Regulation on Health Technology Assessment aims to formalize European collaboration further and introduce JCAs after the expiry of EUnetHTA's mandate (European Commission, 2018).

To help generate optimal and robust evidence that satisfies the needs of both regulators and

Align evidence requirements - recommended next steps

Stakeholders	Next steps
 National authorities	Politically support joint clinical assessments and approval of a fit-for-purpose EC Regulation on HTA.
 HTA bodies	Internationally exchange and create consensus on requirements and assessment methodologies.
 Pharmaceutical companies	Submit pharmacotherapeutic dossiers through EUnetHTA or a future European HTA coordination mechanism. Design trials which fit the joint requirements.

Table 3

Example of reimbursement criteria in France

Category	Level of actual benefit	Price level
ASMR V	No improvement	Lower price/overall cost than comparators.
ASMR IV	Minor improvement	Parity price (for same population) or higher (for more restricted population).
ASMR III	Moderate improvement	Faster access (price notification instead of negotiation) and price consistency with rest of Europe.
ASMR II	Important improvement	
ASMR I	Major improvement	

HTA bodies, EMA and EUnetHTA offer joint scientific advice on development programmes (Tafari, et al., 2016).

Since its start, pharmaceutical companies have submitted seven oncology therapies through EUnetHTA (Joint Action 1, 2 and 3), thereby contributing to the strengthening of joint clinical assessments in Europe: pazopanib, sorafenib, ramucirumab, midostaurin, regorafenib, alectinib and the combination of polatuzumab vedotin, bendamustine and rituximab (EUnetHTA, 2020).

5.4 Be adaptive to rapidly evolving innovation

All countries struggle with the same questions: how to define and assess value? How to manage uncertainty about the real-world value of therapies with high prices and/or high budget impact? How to assess cost-effectiveness of tumor-agnostic therapies and combination therapies? And how to manage the budget impact of one-off, curative therapies? These questions need to be answered in advance, to prevent delays when a new generation of therapies is brought forward for reimbursement.

Clear criteria reflecting society's definition of value

Reimbursement criteria need to be clear to allow for predictability, while at the same they should

be flexible to enable applicability to a variety of therapies and cases.

The 'value-informed and affordable' pricing model provides an example of clear, yet flexible set of reimbursement criteria. It makes explicit which criteria influence decision-making and how. In this case, the theoretical model departs from the concept of 'value-based' pricing (as opposed to 'cost-based' pricing) and the aspects of disease severity and affordability are added. Cost-effectiveness thresholds are applied based on these dimensions: what does the payer consider good value for money for this disease severity, and given the size of the patient population (budget impact)? By allowing for cost-effectiveness thresholds that differ depending on disease severity and budget impact, the model makes explicit a higher societal willingness to pay in the case of a higher disease burden to patients and/or a small patient population and lower overall budget impact (Annemans, 2019).

The assessment framework used in France provides another example of clear reimbursement criteria. The framework also departs from 'value-based' pricing, with value being defined as the actual benefit compared to the standard of care (*l'amélioration de service médical rendu*, ASMR).

This is measured based on:

- Severity of the disease and its impact on morbidity and mortality
- Clinical efficacy/effectiveness and safety of the therapy
- Aim of the therapy: preventive, symptomatic or curative
- Therapeutic alternatives
- Impact on public health

Assessment against these criteria allows for determining the level of actual benefit, and thereby the appropriate price level (see Table 3).

A comprehensive system to manage uncertainties

Once reimbursement and assessment criteria are clear, the next challenge is to deal with uncertainty about the real-world value

of therapies, due to evidence gaps that are increasingly inherent to today's oncology therapies.

A comprehensive system of horizon scanning, early collaboration, managed access schemes, and RWD generation should be in place to proactively manage today's challenges and avoid delays arising from them (see Figure 13).

Although European countries currently have different levels of implementing the four elements above, no comprehensive systems exist yet, in which:

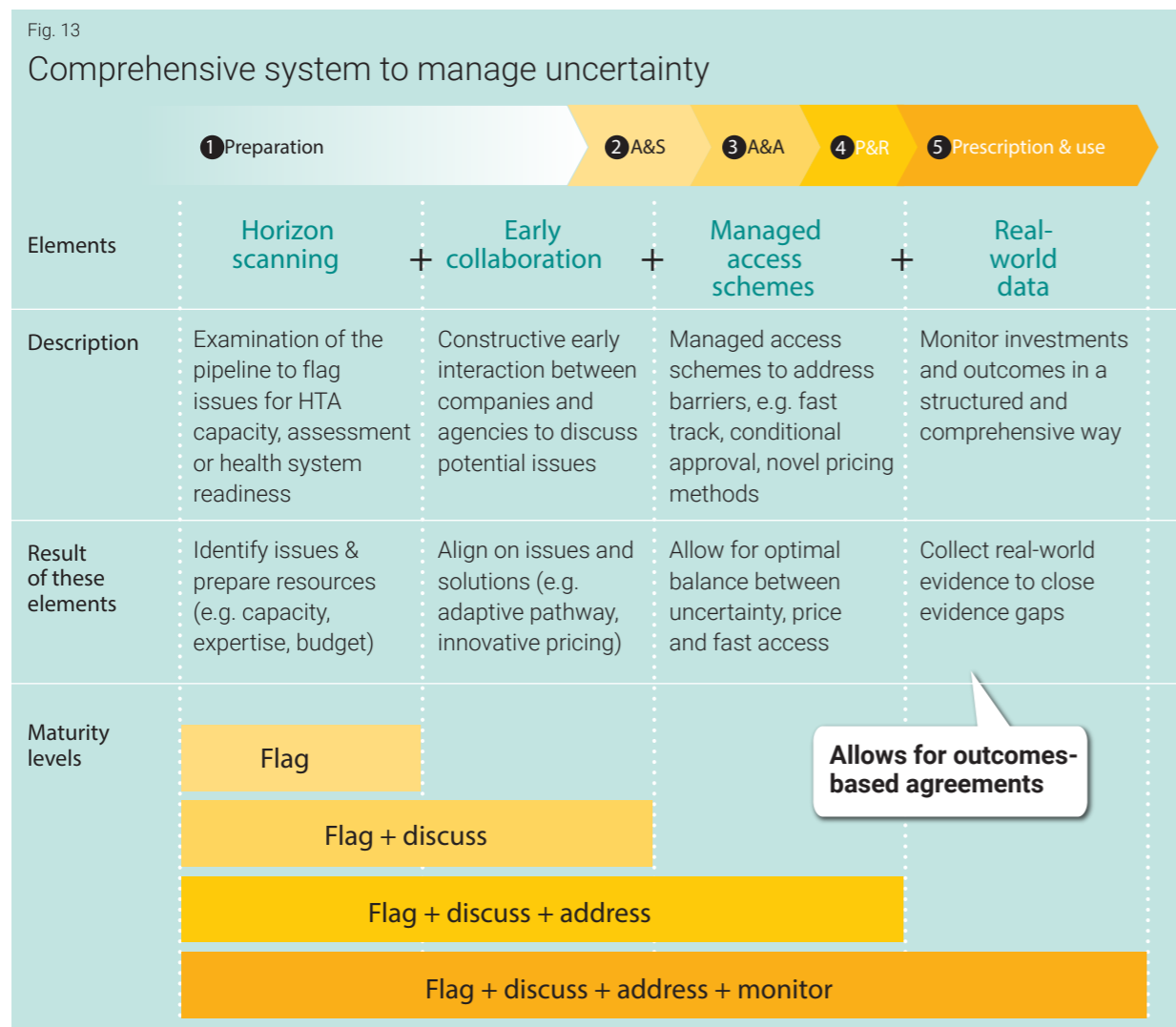
- 1. Horizon scanning** is used to identify and prepare for challenges related to assessment, reimbursement, and use after reimbursement.

- 2. Early collaboration** supersedes today's early dialogue, symbolizing a move from early scientific advice towards broader discussions between stakeholders prior to EU marketing authorization, with the aim of aligning on challenges and jointly finding solutions (e.g. managed access scheme, novel payment models).
- 3. Managed access schemes** allow for addressing access barriers and finding an optimal balance between uncertainty, price and fast access (e.g. fast track, conditional approval, novel payment models).
- 4. Real-world data** is collected in a harmonized way, to develop evidence of real-world value (and costs) in a structured and comprehensive way to allow for closing of evidence gaps and novel payment models such as outcome-based agreements.

Novel payment models include innovative financial agreements to spread costs over time, allowing payers to control budget impact over the long term (in the case of high upfront costs for therapies with curative intent, as described in section 4.6). Additionally, outcome-based agreements, such as paying for results or value, can manage uncertainty and share risks related to real-world value (Vintura, 2019). While the actual system differs in each country, all countries should work towards a new, dynamic system.

Delaying factor(s) addressed

- (#5) Lack of clarity of national requirements (clinical- and cost-effectiveness assessment)
- (#6) Evidence gaps



Be adaptive to rapidly evolving innovation - recommended next steps

Stakeholders	Next steps
National authorities	Collaborate to define clear joint reimbursement criteria. Make real-world data (RWD) collection integral to the introduction of new innovations.
Regulators, HTA bodies and payers	Develop a comprehensive system of horizon scanning, early collaboration, managed access schemes, and RWD generation to be ready for novel therapies.
Multi-stakeholder collaborations	Harmonise and align the collection of RWD.
Pharmaceutical companies	Prepare strong evidence-generation plans for effective early collaborations. Prepare well-substantiated pricing and financing proposals that address payer concerns.
Academics and experts	Support the development of clear reimbursement criteria.
Patient organisations	Generate and publish real-world, patient-generated data.

Best practices

In **Sweden**, a working group specifies the HTA methodology for e.g. CAR-T therapies. Another initiative aims to harmonize and expand patient registries to collect patient outcome data.

In **Poland**, an ongoing initiative aims to differentiate HTA/Reimbursement criteria for orphan from other innovative drugs, allowing for more flexible ICER and more transparency of decision-making criteria.

Since 2016, **NHS England's** Cancer Drugs Fund (CDF) allows for reimbursement of oncology therapies for which clinical uncertainties exist at the time of reimbursement discussions. This allows for evidence gaps to be closed during interim funding from CDF, until permanent reimbursement can be granted (NHS England, 2016).

In the **Netherlands**, the Drug Rediscovery Protocol (DRUP) provides an alternative data generation and reimbursement pathway for oncology precision drugs targeting small populations. In small cohorts, evidence is gathered to identify activity for off-label therapies. When activity has been demonstrated, outcome-based reimbursement is put in place (Van der Velden, et al., 2019).

The **Belgian** payer INAMI/RIZIV initiated the "Tool for Reducing Uncertainties in the evidence generation for Specialized Treatments for Rare Diseases" (TRUST-4RD) concept on the potential of RWE to close evidentiary gaps for HTA/payer decisions. Key in this concept is an early dialogue and collaboration to determine together the (real-world) evidence needed before and after reimbursement (TRUST-4RD, 2018).

The **International Consortium for Health Outcome Measurement (ICHOM)** develops standard sets of outcomes that matter most

to patients. These sets cover five main cancer types, thereby providing a basis for harmonized and aligned real-world data collection (ICHOM, 2020).

The **Innovative Medicines Initiative** supports projects such as the European Health Data and Evidence Network (EHDEN), GetReal and Big Data for Better Outcomes (BD4BO) that support the transition towards more outcomes-focused and sustainable healthcare systems in Europe, making optimal use of real-world data (IMI, 2020).

5.5 Improve healthcare infrastructures


Even after reimbursement, patient access is not a given. Outdated guidelines prevent the adoption of innovations into practice, as do budgets when not aligned with reimbursement decisions.

Pricing and reimbursement decisions should lead to an update of the guidelines. A direct and continuous update of guidelines would be ideal, but an annual update should be considered a minimum. Given the high speed of innovation in oncology, these guidelines are an important tool to inform oncologists of new developments, especially in peripheral settings.

Similarly, pricing and reimbursement decisions should be reflected in (updated) budget provisions to ensure budget for immediate implementation and until the end of the financial year. Much of the information on delays in patient access due to budget scarcity or preliminary budget depletion is anecdotal, suggesting that these potential barriers and their impact on patient access should be monitored more closely.

To improve screening and diagnosis, clear roles and responsibilities need to be assigned. Whilst this sounds obvious, in practice limited accountability limits optimal screening and

Improve healthcare infrastructures - recommended next steps

Stakeholders	Next steps
 Professional associations	Define a streamlined process to allow for regular updates of clinical guidelines and ensure the resources required.
 Patient organisations	Monitor the impact of budget scarcity/depletion on patient access.
 Payers	Identify centres of excellence and ensure optimal accessibility of expertise.
 National authorities	Appoint an authority for improving screening and diagnosis.
 Pharmaceutical companies	Ensure robust clinical data to enable decisions on inclusion in the guidelines. Take payer concerns into account when developing price proposals.

diagnosis. Furthermore, patients (especially with rare diseases) often do not have access to centres with the required specific expertise. Assigning clear centres of excellence for (rare) cancers and ensuring their accessibility (e.g. using e-health solutions) is key.

Delaying factor(s) addressed

- (#8) Low frequency of clinical guideline updates
- (#9) Insufficient budget to implement decisions
- (#10) Suboptimal healthcare infrastructure

Best practices

In the **United States**, the National Comprehensive Cancer Network (NCCN) allows companies to submit a request for review of data for a specific indication, either before or after approval from the Food and Drug Administration (FDA).

In **England**, NICE developed interactive flowcharts comprising the content of both the

latest clinical guidelines as well as additional treatment information based on recent technology appraisals.

In **Italy**, clinical guidelines are updated on an annual basis. Likewise, in Sweden, a Regional Cancer Centre developed guidelines for close to 40 cancer diseases/conditions that are updated on an annual basis.

The International Horizon Scanning Initiative (IHSI) is a collaboration of Belgium, Denmark, Ireland, the Netherlands, Norway, Portugal, Sweden and Switzerland that started in October 2019. The joint horizon scan should provide insight into which new innovations and products are reaching the market, thereby enabling decision-makers to effectively manage budgetary resources ahead of time (International Horizon Scanning Initiative, 2020).

In **the Netherlands**, the Dutch Healthcare Authority (NZA) monitors impact of budget on

delays on access to hospital therapies on an annual basis through hospital surveys (NZa, 2019).

Spain created a dedicated department to coordinate treatment with cell and gene therapies at all stages of treatment, from diagnosis, through rapid confirmation of reimbursement, to ensure delivery of care within 28 days.

In **Germany**, the concept of the tumor conference was established to facilitate access to the center of expertise at the Charité campus of the University Hospital of Berlin. The interdisciplinary online tumor board meetings bring together cancer specialists and practitioners. Following a systematic approach, patient data, relevant external clinical evidence and therapy preference are presented to the participants. An individual therapy recommendation for each patient is reached by consensus discussion (Schroeder, et al., 2011).

5.6 Strengthen collaboration between all stakeholders

As important as it is obvious: stakeholders must collaborate. In each of these priority areas, a concerted effort is needed.

Early collaboration is a crucial instrument to address today's challenges. Current early dialogues and scientific advice should evolve

into early collaboration to enable a joint quest for solutions to potential access challenges.

In addition, controversial topics that further constrain stakeholder relations need to be addressed proactively. These comprise questions such as: What do we consider 'true' innovation or value? What are relevant endpoints to measure 'true' innovation? What is a 'fair' price? Where could we increase transparency, and thereby trust, in our current operating system?

Delaying factor(s) addressed


- (#1-10) All delaying factors require stakeholder collaboration
- (#7) Misalignment on value and price: this delaying factor in particular needs to be addressed by stronger collaboration and alignment

Best practices

In **England**, "safe harbour" discussions are used for early engagements between NICE (Early Scientific Advice and Office of Market Access), NHS England and pharmaceutical companies (NICE, 2020).

The **World Health Organization** (WHO) convenes a series of Fair Pricing Forums to enable stakeholders to discuss options for a fairer pricing system for pharmaceuticals (WHO, 2020).

Strengthen collaboration between all stakeholders - recommended next steps

Stakeholders	Next steps
 <p>Multi-stakeholder collaborations</p>	<p>Define requirements and platforms for high quality early collaborations focused on problem-solving.</p> <p>Define the aspects (what), objectives (why), pros and cons (how) of transparency.</p> <p>Align on what constitutes 'real' innovation or value and a 'fair' price.</p>

6. Working together to improve access to innovative oncology therapies

TO reduce the immense inequalities in patient access between European countries we need to find a common understanding and a common perspective. This is needed because all stakeholders are part of the current system in which we operate and none of the stakeholders involved can solve today's challenges single-handedly.








As described in Chapter 5, all stakeholders have a role to play in realizing the objectives of the six solution areas. They cannot do this in isolation, as actions from one stakeholder

are needed for actions by other stakeholders to be successful. In each of the six priority areas, a concerted effort is needed to design and further strengthen effective solutions.

The efforts are summarized per stakeholder and per solution area in Table 4. This overview serves as a starting point. It is a call for further dialogue, analysis and joint problem-solving by all relevant stakeholders in order to further explore the six priority areas.

We need a collaborative approach now. Because for patients, every day counts.

Table 4 None of the priority areas can be realized by one stakeholder in isolation

	1. Align dossier submission timelines	2. Shorten reimbursement timelines	3. Align evidence requirements	4. Be adaptive to rapidly evolving innovation	5. Improve healthcare infrastructures	6. Strengthen collaboration between all stakeholders
 Policy makers	Together with all relevant stakeholders, evaluate the advantages and disadvantages of current ERP strategies and explore improvements or alternatives.	Evaluate the access pathway from a process-optimisation perspective and identify opportunities to shorten timelines. Build HTA capabilities. Involve informed patients to maintain a sense of urgency at every step of the access pathway.	Politically support joint clinical assessments and approval of a fit-for-purpose EC Regulation on HTAs.	Collaborate to define clear joint reimbursement criteria. Make real-world data (RWD) collection integral to the introduction of new innovations.	Appoint an authority for improving screening and diagnosis.	Work with national authorities to evaluate the advantages and disadvantages of current ERP strategies and explore improvements or alternatives. Harmonise and align the collection of RWD. Define requirements and platforms for high quality early collaborations focused on problem-solving.
 Regulators and HTA bodies			Internationally exchange and create consensus on requirements and assessment methodologies.	Develop a comprehensive system of horizon scanning, early collaboration, managed access schemes, and RWD generation to be ready for novel therapies.		
 Payers					Identify centres of excellence and ensure optimal accessibility of expertise.	
 Pharmaceutical companies	Build HTA capabilities to allow for more dossier submissions in parallel across European countries once ERP as a bottleneck is addressed.	Have the dossier ready in time and submit as soon as national timelines permit.	Submit pharmacotherapeutic dossiers through EUnetHTA or a future European HTA coordination mechanism. Design trials which fit the joint requirements.	Prepare strong evidence-generation plans for effective early collaborations. Prepare well-substantiated pricing and financing proposals that address payer concerns.	Ensure robust clinical data to enable decisions on inclusion in the guidelines. Take payer concerns into account when developing price proposals.	Define the aspects (what), objectives (why), pros and cons (how) of transparency. Align on what constitutes 'real' innovation or value and a 'fair' price.
 Healthcare professionals/ Scientific associations					Define a streamlined process to allow for regular updates of clinical guidelines and ensure the resources required.	Involve patient organisations and representatives in all parts of decision-making and create clarity on what is required when from patient representatives in terms of knowledge, role, and commitment.
 Patient organisations		Educate and support authorities regarding the engagement of informed patients at every step of the access pathway.		Generate and publish real-world, patient-generated data.	Monitor the impact of budget scarcity/depletion on patient access.	
 Academics and experts	Identify alternative solutions for ERP.			Support the development of clear reimbursement criteria.		

Sounding Board participants

#	Organisation	First name	Last name
1.	Association Internationale de la Mutualité (AIM)	Thomas	Kanga-Tona
2.	European Commission (EC) - DGSANTE	Fabio	D'Atri
3.	European Regional and Local Health Authorities (EUREGHA)	Valentina	Polylas
4.	National Institute for Health and Disability Insurance (RIZIV INAMI)	Francis	Arickx
5.	National Institute for Health and Disability Insurance (RIZIV INAMI)	Vinciane	Knappenberg
6.	Agence fédérale des médicaments et des produits de santé (AFMPS)	Olga	Kholmanskikh
7.	Central and Eastern European Society of Technology Assessment in Health Care (CEESTAHC)	Magdalena	Władysiuk
8.	Centre Fédéral d'Expertise des Soins de Santé (KCE)	Frank	Hulstaert
9.	National Health Care Institute (ZIN), the Netherlands	Ly	Tran
10.	EUnethTA	Anne	Willemsen
11.	Norwegian Medicines Agency (Statens legemiddelverket)	Karen Marie	Ulshagen
12.	Belgian Society of Medical Oncologists (BSMO)	Joelle	Collignon
13.	European Association of Nuclear Medicine (EANM)	Wolfgang	Wadsak
14.	European CanCer Organization (ECCO)	Ian	Banks
15.	European Hematology Association (EHA)	Robin	Doeswijk
16.	European Oncology Nursing Society (EONS)	Eleonora	Varntoutmian
17.	European Public Health Alliance (EPHA)	Yannis	Natsis
18.	European Public Health Alliance (EPHA)	Fiona	Godfrey
19.	European Union of Private Hospitals (UEHP)	Ilaria	Giannico
20.	Italian Association of Medical Oncology (AIOM)	Roberto	Bordonaro
21.	Portuguese Association of Oncologic Nurses (AEOP)	Joana	Silva
22.	Acute Leukemia Advocates Network (ALAN)	Zack	Pemberton-Whitely
23.	Association of European Cancer Leagues (ECL)	Ward	Rommel
24.	Association of European Cancer Leagues (ECL)	Anna	Prokupkova
25.	Dutch Cancer Society (KWF)	Guy	Muller
26.	Digestive Cancers Europe (DICE)	Stefan	Gijssels
27.	European Cancer Patient Coalition (ECPC)	Robert	Greene
28.	European Cancer Patient Coalition (ECPC)	Kathi	Apostolidis
29.	EVITA - Hereditary Cancer	Tamara	Hussong
30.	Lymphoma Coalition Europe (LCE)	Natacha	Bolaños
31.	Lymphoma Coalition Europe (LCE), Hodgkin and Non-Hodgkin VZW	Frederik	Vernimmen
32.	Portuguese Leukaemia and Lymphoma Association (APLL)	Isabel	Leal Barbosa
33.	WECAN	Susanna	Leto di Priolo
34.	Youth Cancer Europe (YCE)	Šarūnas	Narbutas
35.	Comité de Transparence (CT) / Mediqualité	Ladislava	Wolff
36.	Ex-member of parliament, Netherlands	Arno	Rutte
37.	Ex-Ministry of Health, Poland	Krzysztof	Łanda

Contributors

Disclaimer: this publication is the result of a multi-stakeholder collaboration but does not necessarily reflect the views of individual organisations or persons involved through sounding board meetings.

Consortium members and academic advisors

#	Organisation	Name	Function
1.	Vintura	Bas Amesz	<i>Partner</i>
2.	Vintura	Christel Jansen	<i>Manager</i>
3.	Vintura	Silvia Rohr	<i>Senior Consultant</i>
4.	Vintura	Lisette van Eijck	<i>Consultant</i>
5.	ASC Academics	Evgeni Dvortsin	<i>CEO</i>
6.	ASC Academics	Sharon Wolters	<i>HEOR Consultant</i>
7.	Hague Corporate Affairs	Sandrine Lauret	<i>Account Director European Affairs</i>
8.	Hague Corporate Affairs	Chantal van Wessel	<i>Graphic Designer</i>
9.	University of Groningen	Prof. Maarten Postma	<i>Academic Advisor</i>
10.	Ghent University	Prof. Lieven Annemans	<i>Academic Advisor</i>

EFPIA members

# Organisation	First name	Last name
1. European Federation of Pharmaceutical Industries and Associations (EFPIA)	Mihai	Rotaru
	Thomas	Allvin
	Edith	Frénoy
2. Association of the British Pharmaceutical Industry (ABPI)	Andrew	Miniuks
	Paul	Catchpole
3. Apifarma Portugal	Heitor	Costa
	Paula	Costa
4. Farmindustria Italy	Antonella	Moroni
	Carlo	Riccini
5. Infarma Poland	Ewa	Kiersztyn
6. Pharmaceutical Industry Association Service Sweden (LIF)	Johan	Brun
7. Association for Innovative Medicines Netherlands (VIG)	Dineke	Amsing
	Wim	de Haart
8. Abbvie	Minxian	Congé
	Philip	Schwab
	Marie-Charlotte	Le Goff
	Tatiana	Arzul
	Ines	Bartolim
9. Amgen	Marie-Helene	Fandel
	Tessa	Scharringhausen
	Marie-Sharmila	Blandino
10. Astellas	Barbara	McLaughlan
11. AstraZeneca	Sarah	Mee
	Paul	Naish
	Suzanne	Håkansson
12. Bayer	Tobias	Helmstorf
13. Boehringer Ingelheim	Simone	Lenhard
14. Eli Lilly	Sonia	Ujupan
15. GSK	Aikaterini	Fameli
16. Ipsen	Olivier	Ponet
	Jan	Swiderski
17. Johnson & Johnson	Aleksandra	Krygiel-Nael
	Agnieszka	Krukowska
	Stefan	Mees
18. Merck	Hugh	Pullen
19. MSD	Alexander	Roediger
	Christian	Sellars
	Matthijs	Van Meerveld
	Ilana	White
	Raphael	Normand
20. Novartis	Ivana	Cattaneo
	Kalitsa	Filioussi
	Lamis	Chahoud
21. Pfizer	Franjo	Caic
	Rickard	Sandin
22. Roche	Borna	Mueller
	Federico	Manevy

Interview respondents

# Country	Organisation	First name	Last name
1. EU	One of the EMA Human Medicines Committees	Anonymous	Anonymous
2. England	Acute Leukemia Advocates Network (ALAN)	Zack	Pemberton-Whiteley
3.	NHS Eastern Cheshire Clinical Commissioning Group (CCG)	Graham	Duce
4.	Salus Alba HTA Consultancy	Andrew	Walker
5.	Association for Cancer Surgery (BASO)	Zaed	Hamady
6.	ABPI	Paul	Catchpole
7.	National Institute for Health and Care Excellence (NICE)	Zoe	Garrett
8. Italy	L'Agenzia Italiana del Farmaco (AIFA)	Armando	Genazzani
9.	Associazione Contro il Melanoma	Antonella	Romanini
10.	Italian Association of Medical Oncologists (AIOM)	Roberto	Bordonaro
11.	University of Rome and University of Ferrara	Fabrizio	Gianfrate
12.	Farmindustria	Antonella	Moroni
13. The Netherlands	National Health Care Institute (ZIN)	Jolanda	De Boer
14.	National Health Care Institute (ZIN)	Pauline	Pasman
15.	Medicines Evaluation Board (CBG)	Kevin	Liebrand
16.	Medicines Evaluation Board (CBG)	Paula B.	van Hennik
17.	Dutch Society of Medical Oncology (NVMO)	Haiko	Bloemendal
18.	Royal Dutch Pharmacists Association	Laurien	Rook
19.	Royal Dutch Pharmacists Association	Aad	Noordermeer
20.	Netherlands Association of Cancer Patients (NFK)	Pauline	Evers
21.	Agendia	Caroline	van der Meijden
22.	Association for Innovative Medicine (VIG)	Wim	De Haart
23. Poland	Alivia - Oncology Foundation	Wojciech	Wiśniewski
24.	Central and Eastern European Society of Technology Assessment in Health Care (CEESTAHC)	Magdalena	Wladysiuk
25.	Meritum L.A. Ltd	Krzysztof	Łanda
26.	Warsaw Institute of Mother and Child	Marcin	Czech
27.	INFARMA	Ewa	Kiersztyn
28. Portugal	Assembly of the Republic, Portugal	Ricardo	Baptista Leite
29.	EUPATI	Natacha	Vaz Liti
30.	EVITA - Hereditary Cancer	Tamara	Hussong Milagre
31.	Infarmed	Rita	Bastos
32.	Infarmed	Claudia	Furtado
33.	Portugese Association of Hospital Administrators (APAH)	Alexandre	Lourenco
34.	Apifarma	Paula	Costa
35. Sweden	Dental and Pharmaceutical Benefits Agency (TLV)	Niklas	Hedberg
36.	New Therapies Council (NT Council)	Gerd	Larfars
37.	Swedish Council for Health Technology Assessment (SBU)	Jan	Lillemark
38.	Assessment (SBU)	Jan	Lillemark
39.	LIF	Johan	Brun



Glossary

Access

Access refers to patients having access to the right therapies at the right time. For the purpose of this report, access is measured by:

- Market Access: the proportion of oncology therapies that received a European marketing authorisation and are reimbursed in a country.
- Time to Market Access: the number of days elapsing from the date of EU marketing authorisation to the day of completion of administrative processes related to a positive reimbursement decision.
- Patient Access: the actual use in the first twelve months after the first patient is treated under a reimbursement scheme.

Reimbursement refers to a formal reimbursement scheme, thereby excluding early access schemes as these schemes often reimburse on a case-by-case or restricted basis without completion of the formal HTA procedure.

Agnostic therapy

See 'Tumor-agnostic therapy'.

Biomarker

A biological molecule found in blood, other body fluids, or tissues that is a sign of a normal or abnormal process, or of a condition or disease. A biomarker may be used to see how well the body or a patient responds to a treatment for a disease or condition. An example is the prostate-specific antigen (PSA), which is measured to screen for prostate cancer, as high PSA levels could be a sign of prostate cancer. The key issue at hand is determining the relationship between any given measurable biomarker and relevant clinical endpoints.

Budget impact

The impacts of the new therapy on the health budget.

CAR-T

CAR T-cell therapy is a cancer treatment that uses a patient's own immune system cells (T cells), after these cells have been modified to better recognise and kill the patient's cancer. The T cells are engineered in the laboratory and then expanded to large numbers and infused back into the patient. CAR stands for

chimeric antigen receptor, which represents the genetically engineered portion of the T cell. Once in the body, the CAR T cells can further grow to large numbers, persist for long periods of time, and provide ongoing tumour control and possible protection against recurrence.

Clinical endpoint

An endpoint is the primary outcome that is being measured by a clinical trial. Overall survival (OS) is often considered the most common and most meaningful clinical endpoint in cancer.

Clinical efficacy

Clinical efficacy describes how a medication performs in an idealized or controlled setting: a clinical trial.

Clinical effectiveness

Clinical effectiveness describes how medication performs in a real-world setting where patient populations and other variables cannot be controlled.

Clinical guideline

Recommendations on how to diagnose and treat a medical condition, often written by and for doctors but also used by other health care professionals. Guidelines summarize the current medical knowledge, weigh the benefits and harms of diagnostic procedures and treatments, and give specific recommendations based on this information, supported by scientific evidence. Because of the evolving medical knowledge and scientific evidence, clinical practice guidelines must be updated regularly. Guidelines aren't legally binding, but deviations from guidelines must be justified.

Clinical trial

Clinical trials are studies to test new treatments and evaluate their effects on

human health outcomes. They need to be approved before they can start, and people (called subjects) volunteer to take part. There are 4 phases of biomedical clinical trials:

- Phase I studies usually test new drugs for the first time in a small group of people to evaluate a safe dosage range and identify side effects.
- Phase II studies test treatments that have been found to be safe in phase I but now need a larger group of human subjects to monitor for any adverse effects.
- Phase III studies are conducted on larger populations and in different regions and countries, often the last step right before a new treatment is approved.
- Phase IV studies take place when, after approval, there is a need for further testing in a wide population over a longer timeframe. The Randomised Controlled Trial (RCT) is considered the most powerful form of a clinical trial (see: 'Randomised Controlled Trial').

Clock stop

A period of time during which the evaluation of a medicine is officially stopped, while the manufacturer prepares responses to questions from the agency. The counting of the number of days resumes when the applicant has sent its responses.

Companion diagnostics

A companion diagnostic is a diagnostic test, used in combination with a therapeutic drug, to prospectively help predict likely response or severe toxicity or to monitor patients' responses for the purpose of adjusting treatment. Companion diagnostics assist in making optimal treatment decisions.

Cost-based pricing

An approach for determining prices for pharmaceutical products, based on costs incurred for research and development. In

doing so, costs incurred for research and development are rewarded rather than the added value for patients (see: 'value-based pricing'). The starting point for price negotiations should be an agreement among all parties about how much it costs to develop a new medicine. Another challenge is that the approach may lead to the wrong incentives: the higher the R&D costs (e.g. based on medicines that failed to make it to patients), the higher the price that theoretically could be justified.

Cost-effectiveness

Cost-Effectiveness Analysis (CEA) quantifies the gains, or regressions, in population health as a result of an innovative therapy against the cost of this therapy. The gains are typically measured in quality-adjusted life years (QALYs). Subsequently, the net costs of the therapy per QALY are quantified. It provides a method for prioritizing the allocation of resources to therapies, by identifying therapies that have the potential to yield the greatest improvement in health for the least resources.

Cross-over

In oncology randomised controlled trials (RCTs) offering patients the opportunity to cross over to treatment from the other arm at disease progression is a routine practice to address ethical issues. In this situation, it is common to justify that the intervention has a PFS benefit but not an overall survival (OS) benefit due to the crossover. However, some argue that "real" innovations could impact in OS despite crossover, and that minor gain in PFS should not be considered relevant.

Dossier

A reimbursement or value dossier presents a summary of the clinical, economic, and societal value and supporting evidence (studies) for a new therapy, as well as

background information on that disease (i.e., burden of illness, epidemiology, etc.) in line with the agency requirements.

Drug Rediscovery Protocol (DRUP)

In 2016, the Drug Rediscovery Protocol was launched in the Netherlands. This is an innovative pan-cancer clinical trial that seeks to expand the use of EMA and/or FDA-approved targeted therapies beyond their approved indications. In the DRUP, patients with metastasized cancer, with a specific tumour and mutational profile, and without any further treatment options, are given a medicine that was registered for another cancer type. The aim is to identify and provide access to potentially effective therapies. Patients are enrolled in parallel groups (cohorts) defined by study drug, tumour type and tumour profile. A cohort starts with eight patients and is doubled in size when efficacy targets are met. If the larger cohort also meets efficacy targets, the study continues. Manufacturers finance the first studies in eight and sixteen patients. When the study continues, the therapy is reimbursed for patients benefiting from it.

Early Access Schemes

In many European countries, patients can gain access to oncology medicines through early access schemes before the medicine/indication is covered or sometimes before it is approved. Such schemes may be limited to medicines treating severe diseases, for which no effective treatments are available. Oncology products often meet these criteria, making them eligible for early access mechanisms. The programs are called "early access scheme", "compassionate use program", "temporary authorisations for use", or "named patient programs". The various programs can be differentiated based on their breadth (available to a large cohort of patients vs. for individual patients only) and source

of funding (donation from pharmaceutical companies vs. financed by the authorities). These programs are no substitute for general coverage, since prior authorisation is required for individual patients thereby limiting the breadth of access and making access significantly more complex for prescribers and patients (e.g. in named patient programs) and/or because the financing is based on donation from pharmaceutical companies.

Early collaboration

An updated form of today's early dialogue, symbolizing a move from scientific advice on clinical development plans towards broader discussions between stakeholders prior to EU marketing authorisation, with the aim of aligning on challenges and jointly finding solutions (e.g. managed access scheme, novel payment models). Ideally, early dialogues are used to (i) arrive at an equal level of understanding of the therapy, (ii) jointly identify potential access barriers and solutions, and (iii) identify implications for the assessment and set-up of the clinical trial and phase IV evidence generation plans.

Early dialogue (or Scientific Advice)

Early dialogues (or scientific advice procedures) are a fee-based service offered by regulators and HTA agencies to manufacturers. During early dialogues, a non-binding scientific advice is provided before the start of a pivotal clinical trial, in order to improve the quality and appropriateness of the data produced by the manufacturer in view of future HTA assessment.

European marketing authorisation

A European marketing authorisation is granted when the European Medicines Agency (EMA) has positively evaluated i) Quality: Is the quality of the manufacturing process up to standards? ii) Safety: Is the therapy safe? iii) Clinical efficacy: Is the therapy effective?

This regional authorisation takes away the requirement to seek marketing authorisation for new medicines from each Member State separately.

Event-free survival (EFS)

The length of time, after finalising an oncology therapy, that the patient remains free of certain complications or events that the treatment was intended to prevent or delay. These events may include the return of the cancer or the onset of certain symptoms, such as bone pain from cancer that has spread to the bone. In a clinical trial, EFS is one clinical endpoint that can be used to see how well a new treatment works.

Evidence gap

Gaps between the evidence presented in a reimbursement dossier and the evidence requirements from an HTA agency. Evidence gaps may lead to a negative reimbursement decision, a delayed decision due to additional data collection, or a positive decision on the condition that a Phase IV study takes place for further evidence generation and to close the evidence gap.

Evidence requirements

Evidence requested by HTA agencies in order to inform a (positive) reimbursement decision.

External Reference Pricing

The use of medicine price(s) in one or more other countries to serve as a benchmark or reference price for setting or negotiating the price of the product in a given country. List prices are used rather than the net transaction prices. The number of countries considered in the basket varies across countries (ranging from 3 to 30 countries), as does the frequency of price revisions. External Reference Pricing is used in Europe, but European countries are also referenced by non-European countries.

Also referred to as International Reference Pricing.

Health Technology Assessment

A multidisciplinary process that assesses and appraises information about the medical, social, economic and ethical issues related to the use of a health technology in a systematic, transparent, unbiased, robust manner. It informs the final reimbursement decision.

Horizon scanning

The process of identifying new medicines or new uses of existing medicines that are expected to receive marketing authorisation in the near future and gathering preliminary information about their clinical properties, costs, expected benefits, and broader health system impact. Horizon scanning is often used to systematically assess the potential impact of new technologies, to identify which technologies will be subject to a national HTA process and to strategically plan for HTA and health system resources and capabilities.

Incremental Cost-Effectiveness Ratio (ICER)

The incremental cost-effectiveness ratio (ICER) is a statistic used in cost-effectiveness analysis to summarise the cost-effectiveness of a health care intervention. It is defined by the difference in cost between two possible interventions, divided by the difference in their effect. Costs are usually described in monetary units, while effects can be measured in terms of health status or another outcome of interest. A common application of the ICER is in cost-utility analysis, in which case the ICER is synonymous with the cost per quality-adjusted life year (QALY) gained.

Indication

Specific setting in which a medicine is used. One medicine can receive multiple EMA authorisations for different tumour locations,

types or stages (indications).

Joint Advice (or Parallel Advice)

Scientific advice from a range of agencies at the same time.

Life-Years Gained (LYG)

Life Years gained (LYG) is a mortality measure where remaining life expectancy is considered. This method accrues more weight to a younger patient. It expresses the additional number of years of life that a person lives as a result of receiving a treatment. It is used in economic evaluation to assess the value of medical interventions.

List price

The formal price a drug manufacturer initially sets and that is publicly available. The list price of a drug greatly differs from the net price, which incorporates discounts and rebates. These discounts and rebates can be mandated by governments during reimbursement discussions, negotiated with insurers and hospitals, and/or voluntarily offered to patients. The discounts and rebates are confidential, to avoid any negative impact on prices in other countries based on external reference pricing, which is most often based on publicly available list prices.

Managed access schemes

Alternative, prospectively planned, iterative approaches to medicines development and data generation for a specific set of medicines to which the criteria for a managed access scheme apply. The aim is to achieve an optimal balance between timely access for patients who are likely to benefit most from the medicine and the need to provide adequate evolving information on the benefits and risks of the medicine itself. It often refers to the generation of evidence after marketing authorisation for therapies for which clinical uncertainties exist at the

time of reimbursement discussions, e.g. with the use of patient registries or performance-based agreements. So far, most of the agreements are financial in nature and aim to mitigate risks on budget impact (e.g. volume-price agreements) (OECD, 2020).

Medical need (unmet medical need)

Chronically or seriously debilitating diseases or diseases considered to be life threatening and that cannot be treated satisfactorily by an existing (approved and reimbursed) pharmaceutical product are considered and area of high (unmet) medical need.

Morbidity

Morbidity refers to the degree of adverse health. It is not directly related to mortality but may over time increase the risk of death.

Mortality

Mortality refers to the risk of death.

Net price

The price that is received by a drug manufacturer, after deduction of discounts and rebates. These confidential discounts and rebates can be mandated by governments during reimbursement discussions, negotiated with insurers and hospitals, and/or voluntarily offered to patients. The discounts and rebates are confidential, to avoid any negative impact on prices in other countries based on external reference pricing.

Network Meta-Analysis (NMA)

A network meta-analysis (NMA) combines numerical data from multiple separate studies, to compare three or more treatments. It uses direct comparisons within randomized controlled trials (RCTs) and indirect comparisons across trials based on a common comparator.

Orphan designation

A status assigned by the EMA to a medicine intended for use for a rare condition, typically based on prevalence criteria as per the EU Orphan Regulation No 141/2000. This regulation was introduced to incentivize research for rare diseases, through e.g. protocol assistance, fee waivers and 10 years market exclusivity.

Overall survival (OS)

The length of time from either the date of diagnosis or the start of treatment for a disease, such as cancer, that patients diagnosed are still alive. In a clinical trial, measuring the overall survival (OS) is one way to see how well a new treatment works. It is often considered the most common and most meaningful clinical endpoint in cancer.

Parallel Advice

See "Joint Advice".

Post-hoc subgroup analysis

The analysis of subgroups in clinical trials is essential to assess differences in treatment effects for distinct patient groups. It is done

- i) to demonstrate consistent results over e.g. male and female, young and elderly patients;
- ii) to identify patient subsets with a particular treatment effect, either positive or negative; or
- iii) to identify patient subsets with a significant treatment effect when this treatment effect is not present in the overall patient population.

Especially with targeted therapies, manufacturers do not always know upfront which subgroup responds best to the treatment. However, these subgroup analyses specified after trial completion are met with concerns, as the number of patients may be too small to arrive at generalisable conclusions ('limited statistical power'), or because it may be chosen to best fit a

hypothesis whilst in fact being a result of statistical play of chance.

Progression Free Survival (PFS)

The length of time during and after the treatment of a disease, such as cancer, that a patient lives with the disease but it does not get worse. In a clinical trial, measuring Progression Free Survival (PFS) is one way to see how well a new treatment works.

Quality-Adjusted Life Year (QALY)

The quality-adjusted life year (QALY) is a generic measure of disease burden, including both the quality and the quantity of life lived. It is used in economic evaluation to assess the value of medical interventions. One QALY equates to one year in perfect health. QALY scores range from 1 (perfect health) to 0 (dead).

Randomised Controlled Trial (RCT)

A study in which people are allocated at random (by chance alone) to receive one of several clinical interventions. One of these interventions is the standard of comparison or control. The control may be the standard of care, a placebo (“sugar pill”), or no intervention at all. RCTs seek to measure and compare the outcomes after the participants receive the interventions.

Relative clinical effectiveness

The extent to which an intervention does more good than harm compared with one or more alternative interventions under the usual circumstances of healthcare practice.

Real-World Data (RWD)

Data obtained outside the context of randomized controlled trials (RCTs) and generated during routine clinical practice.

Real-World Evidence (RWE)

Evidence obtained from real world data (RWD).

Reimbursement

European countries need to make evidence-based decisions on public healthcare expenditures. To inform reimbursement decisions for innovative oncology therapies, typical questions that need to be answered by national HTA bodies are:

- i) Medical need: Does this therapy address a health need?
- ii) Relative clinical effectiveness: Is it more effective than current therapies?
- iii) Cost-effectiveness: Is the price a good reflection of the added value?
- iv) Budget impact: Could we afford the overall costs of this therapy?

This is done separately by each country. How countries make these decisions varies, leading to significant disparities in patient access throughout Europe.

Reimbursement criteria

Health Technology Assessment (HTA) should be an unbiased and transparent exercise. Therefore, predefined decision-making criteria are formulated to allow for rational, consistent and transparent reimbursement decisions based on e.g. (unmet) medical need, relative clinical effectiveness, cost-effectiveness, budget impact, societal value and ethical considerations.

Scientific Advice

See: “Early Dialogue”.

Standard of care

A treatment process that a clinician should follow for a certain type of patient, illness, or clinical circumstance according to the latest standards. It is the level at which the average, prudent provider in a given community would practice. Or how similarly qualified practitioners would have managed the patient’s care under the same or similar circumstances.

Statistical significance

Statistical significance is the likelihood that a relationship between two or more variables (e.g. the effect of a therapy) is not likely to occur randomly or by chance but is instead likely to be attributable to a specific cause.

Surrogate endpoint

A surrogate endpoint is a substitute for a clinical endpoint used in trials where the use of a clinical endpoint might not be possible or practical. Surrogate endpoints do not represent direct clinical endpoints such as overall survival (OS), but instead predict them. For example, tumor shrinkage could be used as a surrogate endpoint for OS. Some surrogates are said to be “established” or “validated,” meaning they have been proven to predict clinical benefit. Other surrogates have not been validated but are “reasonably likely” to predict clinical benefit.

Time to Patient Access

Time to Patient Access refers to the time needed for patients to have access to the right therapies. For the purpose of this report, it is measured by:

- Time to Market Access: the number of days elapsing from the date of EU marketing authorisation to the day of completion of administrative processes related to a positive reimbursement decision.
- Patient Access: the actual use in the first twelve months after the first patient is treated under a reimbursement scheme. Reimbursement refers to a formal reimbursement scheme, thereby excluding early access schemes as these schemes often provide reimbursement on a case-by-case or restricted basis without completion of the formal HTA procedure.

Tumor-agnostic therapy

A cancer treatment based on the cancer’s genetic and molecular features without

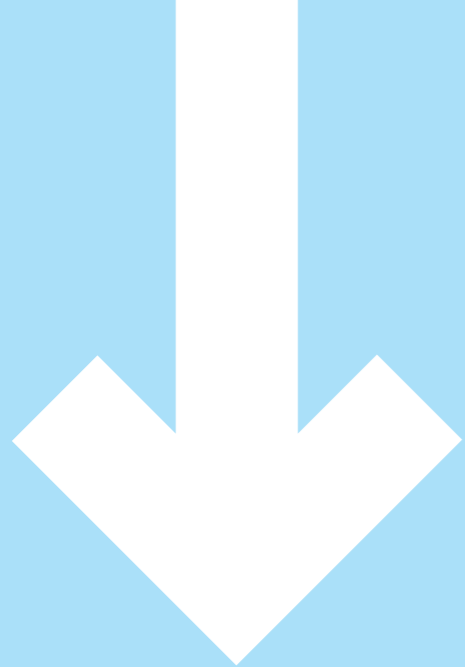
regard to the cancer type or where the cancer started in the body. Tumor-agnostic therapy uses the same drug to treat all cancer types that have the genetic mutation (change) or biomarker, regardless of the tissue or location in which the tumor is located.

Transparency Directive

The EU ‘Transparency Directive’ (Directive 89/105/EEC) aims to ensure the transparency of measures regulating the pricing and reimbursement of medicinal products. It describes the obligation of Member States to adhere to a strict national timeline of max. 180 days between the moment a dossier is submitted and the final decision on pricing and reimbursement. The 180 days exclude time that passes between EU marketing authorisation and dossier submission, as well as time needed by companies to provide additional information (‘clock stops’).

Value-based pricing

An approach for determining reasonable prices for pharmaceutical products based on the general economic concept that prices of new goods indicate the difference between the value of currently available goods and the value that the new goods provide. In doing so, value is rewarded, rather than e.g. costs incurred for research and development (see: ‘cost-based pricing’).



Abbreviations

AIFA	Italian Medicines Agency (Italy)
AML	Acute Myeloid Leukaemia
AOTMiT	Agency for Health Technology Assessment and Tariffs (Poland)
ASM	Advanced Systemic Mastocytosis
ASMR	Actual Benefit (L'Amélioration de Service Médical Rendu)
ATU	Temporary Authorisations for Use (Autorisation Temporaire d'Utilisation)
CBG	Medicines Evaluation Board (Netherlands)
CDF	Cancer Drugs Fund
CEA	Cost-Effectiveness Analysis
CHMP	Committee for Medicinal Products for Human Use
CTS	Technical Scientific Committee (Italy)
CUP	Compassionate Use Program
DRUP	Drug Rediscovery Protocol (Netherlands)
EAS	Early Access Scheme
EC	European Commission
EFPIA	European Federation of Pharmaceutical Industries and Associations
EFS	Event-Free Survival
EMA	European Medicines Agency
EOP	EFPIA Oncology Platform
EQ-5D	EuroQol Five Dimensions Health Questionnaire
ERP	External Reference Pricing
EU	European Union
EUnetHTA	European Network for Health Technology Assessment
EUPATI	European Patients' Academy
FDA	Food and Drug Administration (United States of America)
G-BA	Federal Joint Committee (Germany)
GDP	Gross Domestic Product
HTA	Health Technology Assessment

ICER	Incremental Cost-Effectiveness Ratio
ICHOM	International Consortium for Health Outcome Measurement
INAMI/RIZIV	National Institute for Health and Disability Insurance (Belgium)
JCA	Joint Clinical Assessment
LMG	Life-Months Gained
LYG	Life-Years Gained
NCCN	National Comprehensive Cancer Network (United States of America)
NHS	National Health Service (United Kingdom)
NICE	National Institute for Health and Care Excellence (England)
NMA	Network meta-analysis
NPP	Named Patient Program
NT	New Therapies (Sweden)
NZa	Dutch Healthcare Authority (Netherlands)
OECD	Organization for Economic Co-operation and Development
OS	Overall Survival
pCR	Pathological Complete Response
PFS	Progression Free Survival
PRIME	PRiority MEdicines scheme under EMA
PSA	Prostate-Specific Antigen
QALM	Quality-Adjusted Life Months
QALY	Quality-Adjusted Life Years
QoL	Quality of life
RCT	Randomised Controlled Trial
RWD	Real-world data
RWE	Real-world evidence
SEED	Shaping European Early Dialogue
TLV	Dental and Pharmaceutical benefits board (Sweden)
ZIN	National Health Care Institute (Netherlands)



Country codes

AT	Austria
BE	Belgium
BG	Bulgaria
CH	Switzerland
CY	Cyprus
CZ	Czech Republic
DE	Germany
DK	Denmark
EE	Estonia
ES	Spain
FI	Finland
FR	France
GE	Georgia
GR	Greece
HR	Croatia
HU	Hungary
IE	Ireland
IS	Iceland
IT	Italy
LT	Lithuania
LU	Luxembourg
LV	Latvia
MT	Malta
NL	Netherlands
NO	Norway
PL	Poland
PT	Portugal
RO	Romania
SE	Sweden
SI	Slovenia
SK	Slovakia
UK	United Kingdom
UK-ENG	England
UK-SCT	Scotland



References

- Albrecht, B; Andersen, S; Chauhan, K; Graybosch, D;. (2018). Pursuing breakthrough in cancer drug development. McKinsey. Retrieved January 29, 2020, from <https://www.mckinsey.com/industries/pharmaceuticals-and-medical-products/our-insights/pursuing-breakthroughs-in-cancer-drug-development>
- Angelis, A., Lange, A., & Kanavos, P. (2018). Using health technology assessment to assess the value of new medicines: results of a systematic review and expert consultation across eight European countries. *Eur J Health Econ.*, 19(1). Retrieved January 29, 2020, from <https://link.springer.com/content/pdf/10.1007%2Fs10198-017-0871-0.pdf>
- Annemans, L. (2019). A proposal for value informed, affordable (“via”) prices for innovative medicines. *Journal of Medical Economics*. Retrieved March 23, 2020, from https://www.crig.ugent.be/sites/default/files/inline-files/20190821_LievenAnnemans_article.pdf
- Associazione Italiana di Oncologia Medica. (2020, January 23). AIOM Linee Guida. Retrieved from <https://www.aiom.it/linee-guida-aiom/>
- Cancer Research UK. (n.d.). Survival trends over time for common cancers. Retrieved March 23, 2020, from <https://www.cancerresearchuk.org/health-professional/cancer-statistics/survival/common-cancers-compared#heading-Three>
- Degrassat-Théas, A., Paubel, P., Parent de Curzon, O., Le Pen, C., & Sinègre, M. (2013). Temporary Authorization for Use: Does the French Patient Access Programme for Unlicensed Medicines Impact Market Access After Formal Licensing? *Pharmacoeconomics*, 31(4), 335-43. Retrieved March 29, 2020, from <https://pubmed.ncbi.nlm.nih.gov/23529210/>
- Deloitte. (2019). Patient access to innovative medicines in Europe. Retrieved March 23, 2020, from <https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/life-sciences-health-care/deloitte-uk-patient-access-to-innovative-medicine-in-europe.pdf>
- Edwards, N., Appleby, J., & Timmins, N. (2019). NICE at 20. *BMJ*, 364. Retrieved March 23, 2020, from <https://www.bmj.com/content/364/bmj.l1343>

- EFPIA. (2020, March 24). Data center. Retrieved from Phases of the research and development process: <https://www.efpia.eu/publications/data-center/the-pharma-industry-in-figures-rd/rd-process/>
- EMA. (2020, March 16). EU/3/04/214. Retrieved from <https://www.ema.europa.eu/en/medicines/human/orphan-designations/eu304214>
- EMA. (2020). Obtaining an EU marketing authorisation, step-by-step. Retrieved April 28, 2020, from <https://www.ema.europa.eu/en/human-regulatory/marketing-authorisation/obtaining-eu-marketing-authorisation-step-step>
- EUnetHTA. (2017). Midostaurin with standard chemotherapy in FTL3 positive Acute Myeloid Leukaemia. Retrieved March 10, 2020, from <https://eunetha.eu/wp-content/uploads/2018/01/PTJA01-Midostaurin-Final-Assessment-Report.pdf>
- EUnetHTA. (2019). EUnetHTA WP7: Implementation report May 2019. Retrieved March 23, 2020, from <https://eunetha.eu/wp-content/uploads/2019/06/Implementation-Report-May-2019-FINAL.pdf>
- EUnetHTA. (2020). About EUnetHTA. Retrieved April 28, 2020, from <https://eunetha.eu/about-eunetha/>
- EUnetHTA. (2020). Assessments. Retrieved April 28, 2020, from <https://eunetha.eu/assessments/>
- EUPATI. (2020). Training. Retrieved April 28, 2020, from <https://www.eupati.eu/training/>
- Eurocare. (2020, March 16). 5 Survival Analysis 2000 - 2007. Retrieved from <https://w3.iss.it/site/EU5Results/forms/SA0007.aspx>
- European Commission. (1988, December 21). Council Directive 89/105/EEC relating to the transparency of measures regulating the pricing of medicinal products for human use and their inclusion in the scope of national health insurance systems. Official Journal of the European Communities. Retrieved March 23, 2020, from <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A31989L0105>
- European Commission. (1988, December 21). Council Directive 89/105/EEC relating to the transparency of measures regulating the pricing of medicinal products for human use and their inclusion in the scope of national health insurance systems. Official Journal of the European Communities. Retrieved March 23, 2020, from <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A31989L0105>
- European Commission. (2018). EUR-Lex Access to European Union law. Retrieved from Document 52018PC0051: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52018PC0051>
- European Commission. (2018, January 18). Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on health technology assessment and amending Directive 2011/24/EU. Retrieved March 23, 2020, from <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=COM:2018:51:FIN>
- European Society for Medical Oncology. (2020, January 23). ESMO Guidelines. Retrieved from <https://www.esmo.org/guidelines>
- Flume, M., Bardou, M., Capri, S., Sola-Morales, O., Cunningham, D., Levin, L., . . . Touchot, N. (2018). Approaches to manage 'affordability' of high. *Journal of Market Access & Health Policy*. Retrieved April 28, 2020, from <https://www.tandfonline.com/doi/pdf/10.1080/20016689.2018.1478539>
- Hofmarcher, T., Brådvik, G., Svedman, C., Lindgren, P., Jönsson, B., & Wilking, N. (2019). Comparator Report on Cancer in Europe 2019 – Disease Burden, Costs and Access to Medicines. IHE. Retrieved February 14, 2020, from <https://efpia.eu/media/413449/comparator-report-on-cancer-in-europe-2019.pdf>
- Holtorf, A., Gialama, F., Wijaya, K., & Kaló, Z. (2019). External Reference Pricing for Pharmaceuticals—A Survey and Literature Review to Describe Best Practices for Countries With Expanding Healthcare Coverage. *Value in Health Regional Issues*, 122-131. Retrieved March 23, 2020, from <https://www.sciencedirect.com/science/article/pii/S2212109919300688>
- Huic, M. (2016). Health Technology Assessment (Hta) In Croatia: National And International View. *Clinical Therapeutics*. Retrieved March 25, 2020, from [https://www.clinicaltherapeutics.com/article/S0149-2918\(16\)30567-7/abstract](https://www.clinicaltherapeutics.com/article/S0149-2918(16)30567-7/abstract)
- Iannazzo, S., Santoni, L., Saleri, C., Puma, E., Vestri, G., Giuliani, L., . . . Centonze, D. (2016). Cost-effectiveness analysis of peginterferon beta-1a in Italian relapsing remitting multiple sclerosis management. *Farmeconomia. Health economics and therapeutic pathways* volume, 13-36. Retrieved March 23, 2020, from <https://scite.ai/reports/cost-effectiveness-analysis-of-peginterferon-beta-1a-58g1rp>
- ICHOM. (2020). Malignant neoplasms. Retrieved April 28, 2020, from Standard sets: <https://www.ichom.org/standard-sets/#malignant-neoplasms>
- IMI. (2020). Project results. Retrieved April 28, 2020, from <https://www.imi.europa.eu/projects-results/project-factsheets>
- Integraal Kankercentrum Nederland. (2020, January 23). Tumorspecifieke richtlijnen voor oncologische zorg. Retrieved from Oncoline: <https://www.oncoline.nl/>
- International Horizon Scanning Initiative. (2020). Mission. Retrieved April 28, 2020, from <https://ihsi-health.org/>
- IQVIA. (2020). EFPIA Patients W.A.I.T. Indicator 2019 Survey.
- Jørgensen, J., Hanna, E., & Kefalasa, P. (2020). Outcomes-based reimbursement for gene therapies in practice: the experience of recently launched CAR-T cell therapies in major European countries. *Journal of Market Access and Health Policy*. Retrieved April 28, 2020, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7006635/>
- Kanavos, P., Fontrier, A., Gill, J., & Efthymiadou, O. (2020). Does external reference pricing deliver what it promises? Evidence on its impact at national level? *Eur J Health Econ*(21), 129–151. Retrieved January 29, 2020, from <https://link.springer.com/article/10.1007/s10198-019-01116-4>

- Nanavaty, M., Kaura, S., Mwamburi, M., Proach, J., Nyandege, A., & Khan, Z. (2015). The Use of Incremental Cost-Effectiveness Ratio Thresholds in Health Technology Assessment Decisions. *Journal of Clinical Pathways*, 29-36. Retrieved March 23, 2020, from <https://www.journalofclinicalpathways.com/article/use-incremental-cost-effectiveness-ratio-thresholds-health-technology-assessment-decisions>
- Natsis, Y. (2018). Getting it right: EPHA recommendations on how to improve the European Commission proposal on Health Technology Assessment (HTA). European Public Health Alliance (EPHA). Retrieved March 23, 2020, from <https://epha.org/epha-recommendations-ec-health-technology-assessment-hta/>
- NHS England. (2016). Appraisal and Funding of Cancer Drugs from July 2016 (including the new Cancer Drugs Fund). Retrieved April 28, 2020, from <https://www.england.nhs.uk/wp-content/uploads/2013/04/cdf-sop.pdf>
- NICE. (2018, May 30). Guide to the processes of technology appraisal. Retrieved April 28, 2020, from <https://www.nice.org.uk/process/pmg19/chapter/selecting-technologies>
- NICE. (2020, March 25). NICE Pathways. Retrieved from <https://pathways.nice.org.uk/>
- NICE. (2020). Safe harbour engagement meetings. Retrieved April 28, 2020, from <https://www.nice.org.uk/about/what-we-do/life-sciences/office-for-market-access/safe-harbour-engagement-meetings>
- NZa. (2019). Monitor Geneesmiddelen in de medisch-specialistische zorg. Utrecht: NZa. Retrieved March 23, 2020, from https://puc.overheid.nl/nza/doc/PUC_264248_22/1/
- OECD. (2018). Pharmaceutical reimbursement and pricing in Germany. doi:<https://www.oecd.org/health/health-systems/Pharmaceutical-Reimbursement-and-Pricing-in-Germany.pdf>
- OECD. (2020). Addressing Challenges in Access to Oncology Medicines. Retrieved April 28, 2020, from <https://www.oecd.org/health/health-systems/Addressing-Challenges-in-Access-to-Oncology-Medicines-Analytical-Report.pdf>
- OECD. (2020). Health spending (indicator) and Pharmaceutical spending (indicator). Retrieved January 20, 2020, from Health spending: <https://data.oecd.org/healthres/health-spending.htm#indicator-chart>
- OECD/European Observatory on Health Systems and Policies. (2017). Romania: Country Health Profile 2017, State of Health in the EU. OECD Publishing, Paris/European Observatory on Health Systems and Policies, Brussels. Retrieved January 29, 2020, from <https://www.oecd-ilibrary.org/docserver/9789264283534-en.pdf?expires=1585124677&id=id&accname=guest&checksum=033FA14D1B49BAE92C1DCF6DCD0BDBD4>
- O'Rourke, B., Werkö, S., Merlin, T., Huang, L., & Schuller, T. (2019). The 'Top 10' Challenges for Health Technology Assessment: INAHTA Viewpoint. *International Journal of Technology Assessment in Health Care*, 1-4. Retrieved February 24, 2020, from <https://www.cambridge.org/core/journals/international-journal-of-technology-assessment-in-health-care/article/top-10-challenges-for-health-technology-assessment-inahta-viewpoint/FB11BD79D922FA66B9F2F63EE05E07CC/share/ad32c950d39e2bdb1b1d79b8be7b6ee1410376>
- Panteli, D., Arickx, F., Cleemput, I., Dedet, G., Eckhardt, H., Fogarty, E., . . . Busse, R. (2016). Pharmaceutical regulation in 15 European countries: Review. *Health Systems in Transition*, 1-118. Retrieved March 23, 2020, from http://www.euro.who.int/__data/assets/pdf_file/0019/322444/HiT-pharmaceutical-regulation-15-European-countries.pdf?ua=1
- Paulden, M. (2017). Recent amendments to NICE's value-based assessment of health technologies: implicitly inequitable? *Expert Review of Pharmacoeconomics & Outcomes Research*, 239-242. Retrieved March 23, 2020, from <https://www.tandfonline.com/doi/full/10.1080/14737167.2017.1330152>
- Regionala Cancercentrum. (2020, January 23). *Nationella vårdprogram cancer*. Retrieved from <https://www.cancercentrum.se/samverkan/vara-uppdrag/kunskapsstyrning/varprogram/>
- Schiller, J. (2018, 05 01). A New Standard of Care for Advanced Lung Cancer. *The New England Journal of Medicine*.
- Schroeder, J., Kuemmel, S., Pietzner, K., Hector, J., Sehouli, J., & Chekerov, R. (2011). Optimizing the Clinical Management of Gynecological and Breast Cancer via Online Tumor Conferences. *Anticancer Research*. Retrieved April 28, 2020, from <http://ar.iijournals.org/content/31/8/2669.full.pdf>
- Serviço Nacional de Saúde . (2020, January 23). *Direção-Geral da Saúde - Normas Clínicas*. Retrieved from <https://www.dgs.pt/normas-clinicas/normas-clinicas.aspx>
- Sowada, C., Sagan, A., & Kowalska-Bobko, I. (2019). Poland Health System Review. *Health Systems in Transition*. Retrieved April 28, 2020, from <https://apps.who.int/iris/bitstream/handle/10665/325143/18176127-eng.pdf?sequence=1>
- Svensson, M., Nilsson, F., & Arnberg, K. (2015). Reimbursement Decisions for Pharmaceuticals in Sweden: The Impact of Disease Severity and Cost Effectiveness. *Pharmacoeconomics*, 1229-1236. Retrieved March 23, 2020, from <https://www.ncbi.nlm.nih.gov/pubmed/26093889>
- Tafari, G., Pagnini, M., Moseley, J., Massari, M., Petavy, F., Behring, A., . . . Vamvakas, S. (2016). How aligned are the perspectives of EU regulators and HTA bodies? A comparative analysis of regulatory-HTA parallel scientific. *British Journal of Clinical Pharmacology*. Retrieved September 28, 2019, from <https://www.ncbi.nlm.nih.gov/pubmed/27245362>
- TRUST-4RD. (2018). Tool for Reducing Uncertainties in the evidence generation for Specialised Treatments for Rare Diseases. *Presentations*. ISPOR. Retrieved April 28, 2020, from <https://www.ispor.org/docs/default-source/presentations/89644pdf.pdf>

Van der Velden, D., Hoes, L., Van der Wijngaart, H., Van Berge Henegouwen, J., Van Werkhoven, E., Roepman, P., . . . Voest, E. (2019). The Drug Rediscovery protocol facilitates the expanded use of existing anticancer drugs. *Nature*. Retrieved April 28, 2020, from <https://www.nature.com/articles/s41586-019-1600-x>

Vella Bonanno, P., Bucsics, Simoens, S., Martin, A., Oortwijn, W., Gulbinovič, J., . . . Godman, B. (2019). Proposal for a regulation on health technology assessment in Europe – opinions of policy makers, payers and academics from the field of HTA. *Expert Review of Pharmacoeconomics & Outcomes Research*, 19(3). Retrieved March 23, 2020, from <https://www.tandfonline.com/doi/abs/10.1080/14737167.2019.1575730>

Vintura. (2019). *Working together towards a new pharma business model. Role and potential of innovative agreements and partnerships*. Baarn: Vintura. Retrieved March 23, 2020, from <https://www.vintura.com/en/life-science-consulting/publications/new-pharma-business-model-iap/>

WHO. (2018). *Medicines reimbursement policies in Europe*. Copenhagen: World Health Organization, Regional Office for Europe .

WHO. (2020). *Fair pricing of medicines*. Retrieved April 28, 2020, from Essential medicines and health products: https://www.who.int/medicines/access/fair_pricing/en/

WHO International Agency for Research on Cancer. (2020, March 16). *Estimated number of new cases in 2018, Europe, both sexes, all ages* . Retrieved from <http://gco.iarc.fr/today/online-analysis-table?v=2018&mode=cancer&modepopulation>

[=continents&population=900&populations=908&key=asr&sex=0&cancer=39&type=0&statistic=5&prevalence=0&population_group=0&ages_group%5B%5D=0&ages_group%5B%5D=17&group_cancer=1&in](https://gco.iarc.fr/today/online-analysis-table?v=2018&mode=cancer&modepopulation)

Wilson, T., Voncina, L., Breen, C., & Roediger, A. (n.d.). Redefining access to innovative oncology therapies: can managed entry agreements help? *Value & Outcomes Spotlight*. Retrieved April 28, 2020, from https://www.ispor.org/docs/default-source/publications/value-outcomes-spotlight/november-december-2019/defining-access-to-innovative-oncology-therapies-can-managed.pdf?sfvrsn=1b77245e_0

Yfantopoulos, J., & Chantzaras, A. (2018). Chantzaras,. *Value in Health Regional Issues*, 66-73. Retrieved March 23, 2020, from [https://www.valuehealthregionalissues.com/article/S2212-1099\(18\)30116-X/fulltext](https://www.valuehealthregionalissues.com/article/S2212-1099(18)30116-X/fulltext)

Zorginstituut Nederland. (2018). *Ziektelast in de praktijk. De theorie en praktijk van het berekenen*. Diemen: Zorginstituut Nederland. Retrieved March 23, 2020, from https://www.zorginstituutnederland.nl/binaries/zinl/documenten/rapport/2018/05/07/ziektelast-in-de-praktijk/Ziektelast+in+de+praktijk_definitief.pdf

Zorginstituut Nederland. (2019, May 09). *The Medicines Evaluation Board and the National Health Care Institute start pilot to accelerate access to innovative medicines*. Retrieved April 28, 2020, from <https://english.zorginstituutnederland.nl/latest/news/2019/05/09/cbg-meb-and-zin-have-started-the-%E2%80%99cbg-zin-parallel-procedures-pilot%E2%80%9D-to-accelerate-access-to-innovative-medicines>



Annexes

Four analyses were carried out to inform the findings presented in this report. The methodologies are described in the following annexes:

A. Country case studies on delaying factors and potential solutions

Authors: Silvia Rohr (Vintura), Christel Jansen (Vintura)

B. Patient Access Indicator

Authors: Christel Jansen (Vintura), Bas Amesz (Vintura)

C. Mapping of differences in evidence requirements in various European jurisdictions

Authors: Sharon Wolters (ASC Academics), Christel Jansen (Vintura), Prof. Maarten Postma (University of Groningen)

D. Impact analysis of improved time to market access

Authors: Sharon Wolters (ASC Academics), Evgeni Dvortsin (ASC Academics), Christel Jansen (Vintura), Bas Amesz (Vintura), Prof. Maarten Postma (University of Groningen)

THE unprecedented speed of innovation in oncology provides an important opportunity for further improvement of outcomes for cancer patients. Yet, no value is derived from innovation if patients for whom a new therapy is intended cannot have access to it. In fact, tremendous differences exist in patient access to innovative oncology treatments with in Europe.

This report brings stakeholders across Europe together around opportunities to improve time to patient access for innovative, value-adding oncology therapies. It focusses on reducing European inequalities in terms of delays in ensuring reimbursement and delays in ensuring actual access once reimbursement is in place.

The report is the result of a collaborative approach by health technology assessment (HTA) bodies, healthcare professional associations, patient organisations, policy makers, former politicians, payers and pharmaceutical companies. Its purpose is to provide a comprehensive and unbiased overview of challenges and solutions, thereby moving away from polarised debates which often occur nowadays.

It describes the ten factors delaying time to patient access and six priority areas to address these delays. In each of these priority areas, a concerted effort is needed. It is not a matter of individual stakeholders taking responsibility within their respective areas of work. It requires stakeholders to break through comfort zones and to actively look for common ground with other stakeholders.

To reduce the important inequalities in patient access between European countries we need to find this common ground and a common perspective. Because all stakeholders are part of the current system and none of the stakeholders involved can solve today's challenges single-handedly. We need a collaborative approach now. Because for patients, every day counts.

The publication is endorsed by the following organisations:

Association of Medical Oncologists (AIOM), Italy
Association of Oncology Nurses (AEOP), Portugal
**Central and Eastern European Society of Technology Assessment in
Health Care (CEESTAHC)**
Digestive Cancers Europe (DICE)
European Association of Nuclear Medicine (EANM)
European Cancer Patient Coalition (ECPC)
European Federation of Pharmaceutical Industries and Associations (EFPIA)
European Patients' Academy (EUPATI), Portugal
European Union of Private Hospitals (EUHP)
EVITA - Hereditary Cancer, Portugal
Hodgkin and Non-Hodgkin VZW, Belgium
Lymphoma Coalition Europe (LCE)
Youth Cancer Europe (YCE)