KCE REPORT 219Cs

Federaal Kenniscentrum voor de Gezondheidszorg
Centre Fédéral d'Expertise des Soins de Santé
Belgian Health Care Knowledge Centre

## SYNTHESIS

# ORGANISATION OF CARE FOR ADULTS WITH A RARE OR COMPLEX CANCER

# Belgian Health Care Knowledge Centre

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KCE REPORT 219Cs
HEALTH SERVICES RESEARCH

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## SYNTHESIS

# ORGANISATION OF CARE FOR ADULTS WITH A RARE OR COMPLEX CANCER

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Further, it should be noted that all experts and stakeholders, as well as the validators consulted within this report were selected because of their expertise in the field of oncology. Therefore, by definition, all consulted experts, stakeholders and validators have a certain degree of conflict of interest to the main topic of this report.

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# FOREWORD

Paradoxical as it may seem, rare cancers are not that uncommon. All together, they affect around 4 000 new patients each year and thus, the special attention paid to such cancers appears to be justified on public health grounds. However, these 4 000 patients represent many different forms of tumors, and consequently, offering a support which does not take into consideration this diversity would be unacceptable. For each tumor type, a specific combination of knowledge and skills is necessary. This remains true for 'complex cancers' which are also the subject of this study.

One can easily understand that patients confronted with such cancers would be eager to learn where they can get access to the best possible care. We can also understand just as easily that faced with a complex or rare health problem, common sense would guide patients towards an experienced provider. Nevertheless, in our country, every acute hospital can handle any type of cancer, which generates a significant dispersion of knowledge. Patients have no idea of which hospital treats a case per year or which one treats more than twenty and so they are obliged to make a choice between all available centers without all the necessary information. In doing so, patients become de facto responsible for the quality of care they receive, while this responsibility should remain with the authorities and providers.

Moreover, intuition based on common sense is reinforced by a body of knowledge that demonstrates that the management of rare and complex health problems by ' experienced hands ' results in a significant quality of care improvement while offering patients significantly better chances of survival. Some continue to have doubts with regard to the above mentioned conclusions because the benefits of centralization of health care in the context of rare or complex cancers have not yet been clearly demonstrated for each cancer type.

Many have meanwhile understood that centralisation is nevertheless the way to go. Thus, 220 specialists from all Belgian regions and areas of expertise in oncology have collaborated to produce this report. We appreciate their commitment and are very grateful for their input. We remain hopeful that any measures deemed necessary will be able to be drawn from the results of this work. For any future patient, considerable challenges persist.

Christian LÉONARD
Deputy general director

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General director

# ABSTRACT


## BACKGROUND

In Belgium, patients with a rare and/or complex cancer can be treated in any hospital registered with a care program for basic oncology care and/or an oncology care program. No reference centre with recognized clinical expertise for specific rare cancers or a group of rare cancers is yet designated as such. As a consequence, patients diagnosed with a rare and/or complex cancer do not know where they have to go to be offered optimal care.

A few European countries have already adopted a differentiated model of care: adults with rare and/or complex cancers are referred to reference centres (also called centres of excellence or centres of expertise). These centres have to meet a set of criteria that not only focus on procedural volume, but also on the available infrastructure, specialization of medical professionals, and outcome measures which have to be reported on a regular basis. Health care facilities are officially recognized when care is delivered by multidisciplinary teams with subspecialty training and distinguished clinical expertise in treating complex and rare subtypes of cancer,. The goals are universal: to raise the quality of care delivered to patients with rare and complex cancers and to help them find specialty care at facilities proven to have delivered better outcomes.

# OBJECTIVES

The overall aim of this report is to propose a coherent strategy for the management of **adult patients** with **rare cancers** and cancers that require **complex care** in Belgium. A cancer requiring complex care is defined as a cancer on an extremely difficult to reach anatomic localisation (e.g. some brain tumours or an ocular tumour), a cancer occurring during a specific condition (e.g. during pregnancy), a cancer requiring a high level of expertise, for its adequate diagnosis and/or treatment (e.g. a soft tissue sarcoma, an oesophageal cancer), a cancer requiring very high-tech or costly technical infrastructure (e.g. Hyperthermic Intra-Peritoneal Chemotherapy for cancers of the peritoneum (HIPEC)).

The KCE was commissioned by the Minister of Health and Social Affairs to perform a study with the following objectives:

1. to establish the threshold to define rare cancers in Belgium,
2. to define the competences required to manage patients with rare/complex cancers,
3. to propose a scenario for the organisation of care for patients with rare cancers and cancers that require complex care, taking into account the current Belgian situation and relevant foreign experiences.

The present report does focus on adults facing cancer, as the organisation of care for children with cancer has already been addressed in the soon to be published Royal Decree on haemato-oncology for children.

The results of this study are intended to be used as input for the development of a care programme for patients with rare/complex cancers, a process that could be initiated by the National Institute for Health and Disability Insurance (RIZIV - INAMI) and the Federal Public Service Health, Food Chain Safety and Environment (FOD - SPF).

# METHODS

This study combined various approaches. A scoping literature review including peer-reviewed articles and grey literature allowed the identifiaction of(inter-)national best practices in organisation of care for rare cancers. The analysis of the dispersion of some complex procedures in Belgium was performed, based on national claims data collected in 2011. It was coupled with an evaluation of the dispersion of cancer care in Belgium, based on a review of previous KCE reports.

The RARECARE typology was applied to data of the Belgian Cancer Registry to analyze incidence and 5-year relative survival of patients with rare/complex cancers in Belgium on a 7-year period (2004-2010).

A major part of the report was done by 14 multidisciplinary working groups composed of medical experts and pathologists who elaborated concrete recommendations for the organisation of care for patients with specific rare/complex cancers. A panel of pathologists with expertise in rare cancer diagnosis proposed concrete recommendations in order to improve the diagnosis of rare cancers. Different stakeholders involved in the organisation of care, the delivery of care and advocacy of patients with rare/complex cancers were also consulted to collect their suggestions and concerns about the organisation of care around reference centres.

# RESULTS

## Facts

- In Belgium almost 62 000 new cancers are each year diagnosed in the adult population.
- The **number of adults** in Belgium being diagnosed every year with a rare cancer is **estimated at 4 000**. The majority of rare cancers affects **less than 100 patients a year**.
- Currently, rare and common cancers are treated in almost all Belgian hospitals, with the consequence of a very low number of patients treated annually per hospital. **A striking fragmentation of highly complex interventions** is illustrated in this report.
- The success of therapeutic options for cancer treatment depends also upon an accurate diagnosis. Pathologists have long understood the significance of misdiagnoses and the value of **second opinions** and **panel revisions**. However, there are no criteria to identify the cases submitted for second opinion.

## Recommendations

- The core recommendation is the set-up of **shared care networks around Reference Centres.**
- Reference Centres with multidisciplinary teams of recognized clinical and technical expertise in specific rare/complex cancers should be established and certified. The required staffing and expertise should be higher than those necessitated by the current programs in oncology. Additional obligations above those required by oncology care programs in terms of equipment and infrastructure are needed for Reference Centres, answering the needs of diagnosis and treatment of the cancer in question.
- In order to halt the dispersion of care and to increase concentration of resources and expertise in rare and complex cancer care, it is recommended to impose minimum case loads for Reference Centres and medical specialists. These norms should be based on Belgian incidence data and international guidelines and should allow for a run-in period.
- The quality of care provided in Reference Centres should be evaluated on a regular basis, so that “static and lifelong” certification of centres which, once recognised, can no longer demonstrate outstanding outcomes, can be avoided.
- In peripheral centres only less complex well-described parts of the treatment can take place, and they should be performed under supervision of the Reference Centre. A peripheral centre should get guidelines about when they have to confer with a Reference Centre about a rare/complex cancer patient.
- The formation of networks or functional relationships between Reference Centres and peripheral centres (“shared care model”) will allow a delivery of care combining expertise and proximity. Service Level Agreements (SLA) between the physicians and centres involved, have to address patient referral/back referral and patient follow-up. To facilitate the transition of patients between Reference and peripheral centres, a 'liaison coordinator' has to be appointed.
- Besides, a ‘three-step’ model of diagnostic confirmation of pathology data is recommended for rare cancers and should be implemented as recommendation of good practice (guidelines) in licensed pathology laboratories.
- Finally, the setup of a national portal website which provides adapted information on rare cancers and Reference centres for various types of users (patients, healthcare professionals, researchers, general public) by providing links to validated existing information sources (including Orphanet) is recommended.

# CONCLUSION

It is no longer practicable, efficient or ethical that every hospital or every practitioner continues to offer care for every rare/complex cancer. Improving the quality of rare/complex cancer care requires to concentrate expertise and sophisticated infrastructure in Reference Centres. Furthermore, the formation of networks between Reference Centres and peripheral centres will allow a delivery of care combining expertise and proximity.

In order to prepare the path towards Reference Centres for rare and complex cancers in Belgium, 14 multidisciplinary working groups developed a series of concrete proposals for an improved organisation of care for different rare or complex cancer types. In addition, a panel of pathologists formulated concrete suggestions for an improved diagnosis of rare cancers.

The next step is the translation of the recommendations into policy decisions. The ultimate goal is that, in the foreseeable future, each single patient with a rare or complex cancer can benefit from the best available state-of-the-art care, provided by a multidisciplinary team with demonstrated expertise in that particular domain. It is very well realised that this will take some courage and that a certain degree of resistance will have to be surmounted, but eventually, the best interest of the patient should prevail.

# SYNTHESIS

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# LIST OF ABBREVIATIONS

| ABBREVIATION | DEFINITION |
|---|---|
| AR | Arrêté Royal |
| BCBSA | Blue Cross Blue Shield Association |
| BCR | Belgian Cancer Registry |
| COM | Consultation Oncologique Multidisciplinaire (Multidisciplinary Team Meeting) |
| FAP | Familial adenomatous polyposis |
| FOD | Federale Overheidsdienst |
| GBS | Groupement des Unions Professionnelles Belges des Médecins Spécialistes |
| HIPEC | Hyperthermic Intraperitoneal Chemotherapy |
| IKNL | Integraal Kankercentrum Nederland (Comprehensive Cancer Centre the Netherlands) |
| INAMI | Institut National d'Assurance Maladie Invalidité (NIHDI) |
| ISP | Institut scientifique de Santé Publique |
| KB | Koninklijk Besluit |
| MOC | Multidisciplinair Oncologisch Consult (Multidisciplinary Team Meeting) |
| NET | Neuroendocrine tumour |
| NHS | National Health Services |
| NIHDI | National Institute for Health and Disability Insurance |
| OECI | Organisation of European Cancer Institutes |
| RaDiOrg | Belgian Alliance of Patients' associations for rare diseases |
| RD | Royal Decree |
| RIZIV | Rijksinstituut voor Ziekte- en Invaliditeitsverzekering (NIHDI) |
| SONCOS | Stichting Oncologische Samenwerking (Foundation of Oncological Collaboration) |
| VBS | Verbond der Belgische Beroepsverenigingen van Geneesheer-Specialisten |
| WIV | Wetenschappelijk Instituut Volksgezondheid |

# 1. RARE AND COMPLEX CANCERS: A CHALLENGE TO CLINICAL PRACTICE

**Rare cancers** present a **challenge to clinical practice**: the experience with their diagnosis, staging and treatment is often limited, even in major cancer centres.[1] Because of the paucity of expertise, rare cancers are often **diagnosed late or misdiagnosed**.[2] Pathologists may be confronted with a specific rare cancer only once or twice in their entire professional career. Once the correct diagnosis is made, patients and physicians may struggle to find the information they need about the disease, how it will affect the patient and what the best treatment options are. For many rare cancers, new treatments are difficult to evaluate since it is difficult to recruit enough patients for adequately powered trials. Consequently, evidence-based clinical guidelines are seldom, if ever, available.[3]

Moreover, some cancer types, rare or common, may imply a **complex diagnostic work-up or treatment** that requires skilled professionals and adequate facilities and equipment. Examples are cytoreductive surgery and hyperthermic intraperitoneal chemotherapy in case of peritoneal surface cancers or stem cell transplantation for hematologic cancers.

Such challenges are even more difficult to tackle by small healthcare centres that do not have the critical mass of patients with rare cancers nor the multidisciplinary dedicated core team with well-trained medical experts in imaging, surgery and radiotherapy as well as non-medical healthcare professionals.

There is now a sufficient number of high-quality studies, covering a large panel of interventions, that convincingly demonstrate an improved short- and long-term outcome when complex procedures are performed in high-volume hospitals.[4-7] Under the pressure of patients' associations and health insurers, these findings have resulted in the adoption of minimal hospital and practitioner volume criteria in the USA.[8] Moreover, volume is considered a quality indicator for several complex procedures. In The Netherlands, centralisation, with a minimum volume of at least 20 cases per year for most high-risk surgical interventions has resulted in a dramatic reduction of post-operative mortality and an improvement of overall survival.[9-11] In Belgium, a similar volume-outcome relationship was found each time it was analysed during the last couple of years (see section 5.4).

Finally, two recent Cochrane reviews again confirm the positive association between volume and outcome in oncology.[12, 13]

Fundamentally, the challenge boils down to the acquisition and maintenance of rare and complex skills. This phenomenon and the principles of the associated learning curve have been extensively studied in many disciplines outside the medical field. There is no point in arguing that they would not apply to oncology. One may wonder where medical teams operating in low-volume hospitals are on that curve, and whether they can obtain a higher proficiency level if they only see so few patients with rare/complex cancers.

Yet, in Belgium, as in other European countries, there still is a **lack of coherence or strategic vision** when dealing with rare or complex cancers. Even where appropriate services exist, lack of communication, coordination and acquaintance often hampers easy access to these services.[14, 15] Therefore, several European countries are now in the process of taking organisational and legislative measures to tackle these issues.

# 2. OBJECTIVES, SCOPE AND METHODS

## 2.1. Objectives

The overall aim of this report is to propose a coherent strategy for the management of adult patients with rare cancers and cancers that require complex care. This objective was specifically formulated in the National Cancer Plan (2008-2010): Action 13 relates not only to the care of patients with rare cancers but also to cancers (rare or common) that require complex care including complex diagnostic and therapeutic procedures, to be carried out by highly skilled and experienced healthcare providers.

The KCE was commissioned by the Minister of Health and Social Affairs to perform a study with the following objectives:

to establish the threshold to define rare cancers in Belgium,

to define the competences required to manage patients with rare/complex cancers,

to propose a scenario for the organisation of care for patients with rare cancers and cancers that require complex care, taking into account the current Belgian situation and relevant foreign experiences.

The results of this study are intended to be used as input for the development of a care programme for patients with rare/complex cancers, a process that could be initiated by the National Institute for Health and Disability Insurance (RIZIV - INAMI) and the Federal Public Service Health, Food Chain Safety and Environment (FOD - SPF).

## 2.2. Scope and definitions

The scope of this report is the **organisation of care for adults** having a rare cancer or a cancer requiring complex care. The organisation of care for children with cancer has already been addressed in the soon to be published Royal Decree on haemato-oncology for children.

A **rare cancer** is defined as a cancer which affects less than 6 new adult patients/100 000 adult inhabitants/year. This threshold is based on a European definition (RARECARE),[16] and corresponds in Belgium to approximately 530 new cases per year.

**A cancer requiring complex care** is defined as:

- a cancer on a very specific and extremely difficult to reach anatomic localisation (e.g. some brain tumours, an ocular tumour),
- a cancer occurring during a specific condition (e.g. during pregnancy),
- a cancer requiring a high level of skill or expertise for its adequate diagnosis and/or treatment (e.g. soft tissue sarcoma, oesophageal cancer),
- a cancer requiring a very high-tech or costly infrastructure (e.g. hyperthermic intra-peritoneal chemotherapy for cancers of the peritoneum).

Wherever in the text the term “rare/complex cancer/tumour” is used, we refer to these definitions.

## 2.3. Methods

This study combined various approaches:

- A scoping **literature review**, including peer-reviewed articles and grey literature to identify best practices in organisation of care for rare/complex cancers;
- A description of the current **organisation of (rare) cancer care** in Belgium;
- The analysis of **the incidence and 5-year relative survival** of adult patients with rare/complex cancers, based on the application of the RARECARE classification on data collected between 2004-2010 by the Belgian Cancer Registry;
- The analysis of the **dispersion of some complex procedures**, based on national claims data collected in 2011 by the National Institute for Health and Disability Insurance (RIZIV - INAMI), coupled with an evaluation of the **dispersion of cancer care** in Belgium, based on a review of previous KCE reports;
- The consultation of **stakeholders** involved in the organisation of care, the delivery of care or the advocacy of patients with rare/complex cancers, in order to collect their suggestions and concerns with regard to the organisation of rare/complex cancer care;
- The consultation of a **panel of pathologists**, that was specifically for this study constituted in order to propose concrete recommendations for an improved diagnosis of rare cancers;
- The consultation of **14 multidisciplinary cancer working groups** that were specifically for this study constituted (Table 1). Each working group comprised clinical experts and pathologists with a specific interest, clinical experience and/or subspecialty training in a certain rare or complex cancer. Once the group was composed, its members designated the working group coordinator. Taken together, 220 clinical experts from about 30 different university and non-university hospitals, from different hospital federations, from Flanders, Brussels and the Walloon region were involved in this working process. Although the coordinators of the groups were asked to involve university as well as non-university affiliated experts, the majority of participants were affiliated to university hospitals. Apparently it was not evident for some groups to get non-university affiliated colleagues involved (e.g. lack of time, lack of expertise, lack of interest).

  Each group was asked to develop a detailed proposal for an improved organisation of care for the cancer type it was assigned. They were explicitly asked to start from the patient's perspective. An important message shared with all coordinators was that they should avoid any monopoly by university hospitals. In addition, they should not define the number of hospitals to be recognised as Reference Centres.

  The starting point was the Royal Decree of 21st March 2003 that defines criteria for oncology care programmes (i.e. criteria to offer more advanced diagnostic options as well as various therapeutic possibilities). The working groups were asked to define criteria supplementary to those stipulated in the Royal Decree on oncology care. The supplementary criteria should ensure that recognised Reference Centres truly apply a multidisciplinary approach and acquire and maintain high expertise on the rare/complex cancers they are recognised for.

  To support the working groups, eligibility criteria for (rare or complex) cancer Reference Centres applied in other countries (e.g. the criteria proposed by the Stichting Oncologische Samenwerking (SONCOS) in the Netherlands, the Blue Cross Blue Shield Association (BCBSA) in the USA, the Organisation of European Cancer Institutes (OECI), the National Health Services (NHS) contracts for the UK) were provided. It was mentioned clearly that those documents could be used as a starting point for discussions and that the content not necessarily corresponded to the views of the KCE team. The working groups worked autonomously but reported the progress of their activities on a regular basis to the KCE team.

The 14 rare and/or complex cancer types for which proposals for an improved organisation of care were elaborated by the working groups, were selected based on Belgian incidence data (i.e. the most frequent rare/complex cancers), the experience from other European countries, the feasibility within a very limited time frame and the availability of medical experts (Table 1). The proposals for each of the 14 cancer types can be found in the addendum to the scientific report, accessible via the KCE website.

Other cancers were also considered (soft tissue and bone sarcomas, renal cancer, cancer of testis and penis), but for these cancer types more time will be needed to develop criteria for Reference Centres.

**Table 1 – Specific cancer types covered by the multidisciplinary working groups**

| |
|---|
| Rare haematological cancers |
| Tumours of the endocrine organs |
| Rare cancers of the female genital system |
| Cancers of the Central Nervous System |
| Cancers of the head and neck |
| Neuroendocrine tumours (NETS) |
| Cancers of the oesophagus |
| Malignant mesotheliomas |
| Cancers of the pancreas |
| Cancer occurring during pregnancy |
| Rare hepato-biliary cancers |
| Cancers of the Peritoneum |
| Rare malignant skin tumours |
| Familial adenomatous polyposis (colorectal cancer) |

# 3. INTERNATIONAL INITIATIVES

## 3.1. Initiatives at the level of the European Union

Rare cancers are an important policy concern for public health in Europe.[15] Therefore, several initiatives with regard to rare cancers and to cancers that require complex care have been taken at the European level.

One of these is the **RARECARE project**, which has proposed a definition for rare cancers based on an incidence of < 6 new cases/100 000 inhabitants/year. RARECARE evolved (with other partners) to the European network **RARECARENet**, which aims at improving the timeliness and accuracy of diagnosis, facilitating access to high-quality care for patients with rare cancers, identifying centres of expertise for rare cancers and establishing a related information network across Europe. It currently works on the identification of qualification criteria for centres of expertise for rare cancers. A list of criteria indicating the level/quality of expertise for rare cancer management will be developed in collaboration with multidisciplinary experts from the major scientific societies, patients' associations and policy makers. For a selected subgroup of rare cancers, more specific indicators will be collected through high resolution studies in a sample of countries.

RARECARENet develops, at the European level and in collaboration with multidisciplinary experts from major scientific societies, patients associations and policy makers, **qualification criteria for Reference Centres for rare cancers**.

The recent European Directive 2011/24/EU on the application of patients' rights in cross-border health care urges Member States to identify Reference Centres and to create networks with other Reference Centres throughout Europe. Moreover, the European Commission was mandated to define the criteria that reference networks and health centres involved in the networks, should fulfil. These criteria and conditions have to ensure that reference networks concentrate the required knowledge and expertise, follow a multidisciplinary and collaborative approach, and pursue activities in research and training. The reference networks should also play a specific role in the development and dissemination of good practice guidelines, expert information and in the implementation of outcome measures and quality control.

The European Directive 2011/24/EU on the application of patients' rights in cross-border health care urges Member States to **identify Reference Centres** and to create networks with other Reference Centres throughout Europe.

## 3.2. Lessons learnt from other European countries

Several European countries (e.g. the Netherlands, Denmark, France, the UK) have taken initiatives to improve the quality of care offered to patients with rare/ complex cancers. In some countries, "rare cancers" are covered within the framework of a national cancer plan; in others they are included in strategies for rare diseases.

Most of the initiatives appear to pursue **similar objectives**, i.e.

- Facilitate early diagnosis and timely referral to centres of expertise
- Enable a multidisciplinary care approach
- Concentrate human and technical resources
- Ensure a sufficient volume of patients with rare/complex cancers to increase experience and expertise
- Create networks within the country as well as networks with bordering countries
- Use costly technology efficiently
- Increase teaching and training possibilities
- Concentrate research in centres of expertise
- Deliver adequate information to patients

The overarching point of view is that it is no longer practicable, efficient or ethical that every hospital or every practitioner continues to offer care for every rare/complex cancer. All these initiatives pursue the improvement of quality of care by **reducing the dispersion of specialised care services**.

Several European countries have already adopted a **specific model for the organisation of rare/complex cancer care**, by referring adults with rare cancers to Reference Centres (also called centres of excellence). Hospitals have to meet strict criteria to be eligible as Reference Centres and their application is thoroughly reviewed (involving international experts). In several countries, the differentiation process was imposed by the authorities: hospitals were assigned the level of care (from highly specialised multidisciplinary care down to basic oncological care) they could offer to patients presenting with a certain type of rare cancer. The aim was to concentrate specialised care, research, education and training at this highest level and to maintain the less complex parts of care in local care centres (shared care model).

The discussion of the patient's file by experts from different disciplines during a multidisciplinary oncological consultation is systematically required in several countries. Some countries also ensure the process of double reading of slides for the diagnosis of certain rare cancers.

Several European countries have already adopted a **differentiated model** for the organisation of highly specialised cancer care, by referring adults with rare cancers to **Reference Centres**. The goals are universal: to **raise the quality of care** delivered to patients and to help patients find specialty care at facilities proven to have delivered better outcomes.

To ensure consistent quality among facilities that have been certified as Reference Centres, **continuous quality assurance** through for example auditing and accreditations is essential. Outcome registration and case-mix adjusted feedback to individual hospitals are advocated as it was proven that mirror-information may act as a catalyst for quality improvement in care.[17] However, as long as care professionals directly concerned are the only ones who are made aware of shortcomings and areas for improvement, failure to meet standards or observe agreements has only minor consequences.[18]

To ensure consistent quality of care, **continuous quality assurance**, e.g. through auditing, accreditation and benchmarking, is essential.

# 4. THE BURDEN OF RARE CANCERS IN BELGIUM

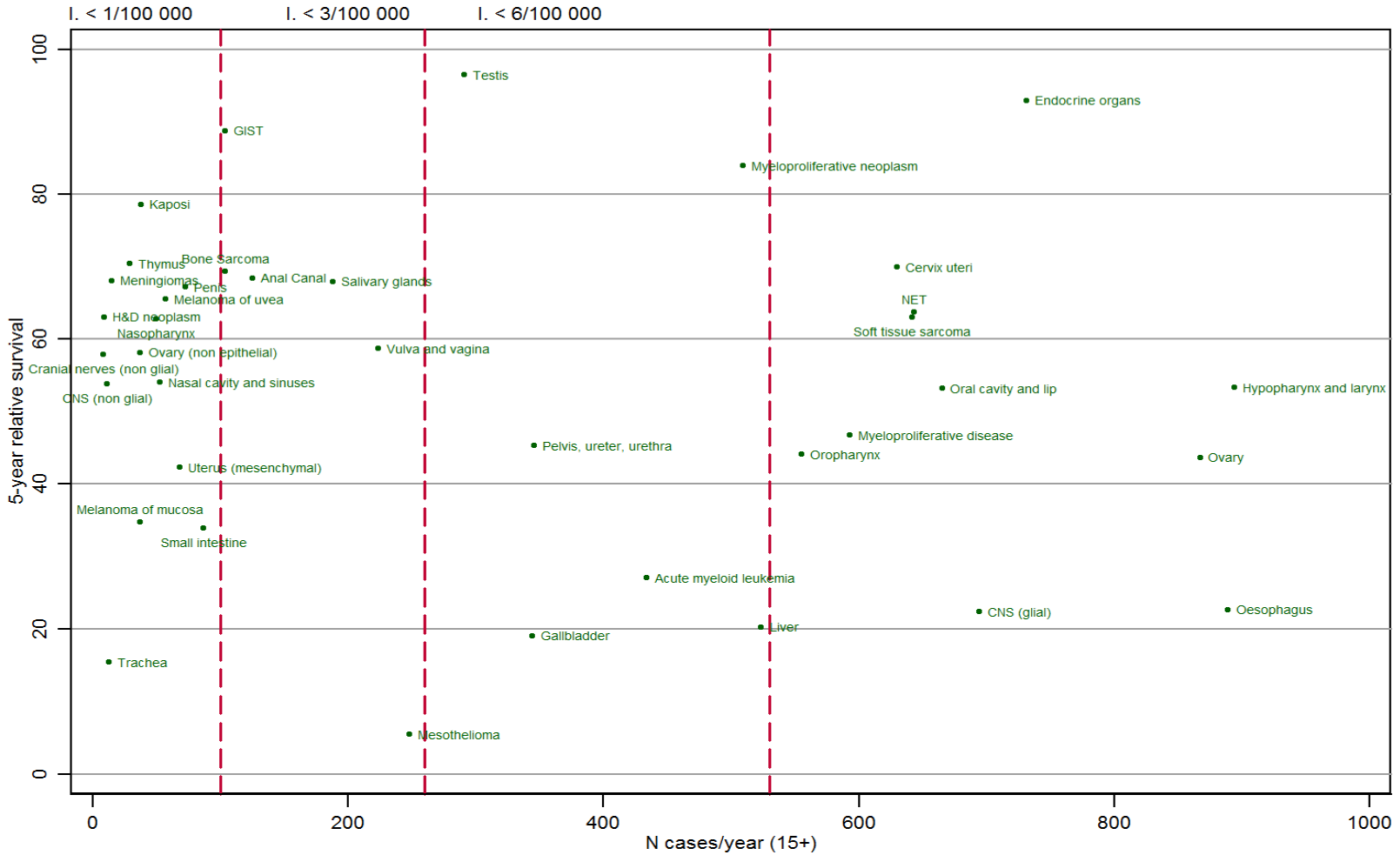
Currently, there is no internationally agreed definition for rare cancers. However, the definition elaborated by the RARECARE network has been endorsed by several European cancer organisations and institutions, among which the Belgian Cancer Registry. This research group defined a cancer as rare when the incidence is lower than 6 per 100 000 inhabitants per year, which, in Belgium, would correspond to 530 new cases in the adult population per year. Based on this criterion, a list of common and rare cancers has been drawn up. Each cancer entity is defined by a combination of morphology and topography criteria. For this study, we used the 2011 RARECARE list (http://www.rarecare.eu/rarecancers/rarecancers.asp).

On average, each year almost 62 000 new cancers are diagnosed in the Belgian adult population. Although the label 'rare' would presume that only few persons are affected by rare cancers, as many as **4 000 adults** are diagnosed every year with a rare cancer in Belgium, accounting for 7% of all adults being diagnosed with a cancer. Roughly, the Belgian distribution corresponds to the epidemiology of rare cancers at the European level.[16] The two most common families of rare cancers are digestive cancers (mainly cancers of the liver and gallbladder) and haematological malignancies (mainly myeloproliferative neoplasms and acute myeloid leukaemia). The other rare cancers are spread over several families (e.g. female genital system, male genital system, head and neck). The majority of rare cancers affects **less than 100 patients a year**. This fact is of utmost importance when planning a better organisation of care for these patients.

The **number of adults** being diagnosed with a rare cancer is **estimated at 4 000 a year in Belgium.** The majority of rare cancer types affects **less than 100 patients a year**.

The poorest 5-year relative survival (i.e. around or below 20%) is observed in cancers of the trachea, the gallbladder, the liver and in mesotheliomas (Figure 1). Beyond the RARECARE threshold, but affecting less than 1 000 adults per year, the following cancers are also characterised by a poor prognosis: glial cancers of the central nervous system, cancers of the oesophagus and cancers of the pancreas. Equally, lung cancer, that belongs to the group of the commonest cancers (7 000 new cases per year) also faces a poor prognosis (below 20%). Rarity by itself is thus not necessarily related to poor prognosis. Gastrointestinal stromal tumours (GISTs), Kaposi's sarcomas, cancer of the testis and myeloproliferative neoplasms all reach a 5-year relative survival around or above 80% (Figure 1).

**Figure 1 – Yearly incidence and 5–year relative survival for tumours with less than 1 000 new cases in adults per year - Belgium (2004-2010)**




*Notes: the dashed red lines correspond respectively to incidences of 1/100 000, 3/100 000 and 6/100 000 adults. I: Incidence; CNS: Central nervous system; NET: Neuroendocrine tumours; GIST: Gastrointestinal stromal sarcoma; H&D neoplasm: Hystiocytic and dendritic neosplasm; Tumours of eye, middle ear, glial tumours of cranial nerves and carcinomas of skin are not indicated on the graph because the number of available observations was too small to calculate relative survival.*
*Data source: Belgian Cancer Registry, data 2004-2010.*

# 5. CURRENT ORGANISATION OF CANCER CARE IN BELGIUM

## 5.1. Programmes in oncology

The Royal Decree of 21st March 2003 stipulates the care programmes for basic oncological care (that focus mainly on diagnosis and less complex treatments) and oncology care programmes (that have to offer more advanced diagnostic options as well as various therapeutic possibilities). All programmes that meet the required criteria, can be officially recognised (AR/KB 21.03.2003). In 2013, as many as **106 of the 119 Belgian acute-care hospitals were registered with a care programme for basic oncological care and/or an oncology care programme**; 87 hospital sites or campuses had a programme for basic oncological care and 84 sites an oncological care programme.

The Royal Decree of 21st March 2003 further specified that apart from these two care programmes, a number of **specialised care programmes** need to be developed, focusing on patients with cancers that need a complex multidisciplinary approach and/or extremely specialised expertise and/or that are very rare. Likewise, specific care programmes need also to be developed for children with an oncological illness that requires specific modalities from a diagnostic and therapeutic perspective. Yet, to date, breast clinics are the only specialised oncological care programme elaborated and certified in Belgium so far. Moreover, any hospital registered with a care programme for basic oncology care or an oncology care programme can continue to take care of all cancer patients, including patients with breast cancer or with a rare/complex cancer.

At present, **patients with a rare/complex cancer can be treated in any Belgian hospital** registered with a care programme for basic oncology care or an oncology care programme. To date, no specialised care programmes with recognised clinical expertise in specific rare cancers have been certified.

## 5.2. Cancer registration

Since 2003, hospitals are obliged to register all new cancer diagnoses in the Belgian Cancer Registry (BCR). Since 2006, the laboratories of pathological anatomy and clinical biology (haematological malignancies) have also to encode every malignant diagnosis and transfer this information to the Belgian Cancer Registry. The BCR population-based cancer database allows the calculation of incidence, survival and prevalence for all types of cancers. The linkage of cancer registration data with the claims data on reimbursed diagnostic and therapeutic procedures (including pharmaceutical products) provides information about treatment received and allows the calculation of process and outcome indicators to evaluate the quality of care in oncology.

The BCR also manages the Belgian Virtual Tumour bank (Biobank Catalogue). This online catalogue of available tissue samples provides many opportunities for scientific research especially for rare cancers, considering the sometimes scarce availability of such tissue for research.

The linkage of cancer registration data with data on reimbursed diagnostic and therapeutic procedures allows the calculation of process and outcome indicators, **evaluating the quality of oncology care**.

## 5.3. Second opinion in pathology

Because the accurate diagnosis of some rare cancers presents a real challenge, a second opinion in diagnostic pathology is more and more demanded by the pathologists themselves to reduce misdiagnoses.[19] Second opinions on pathology diagnoses are routinely used intra-departmentally for a limited selection of cancer cases. Moreover for a certain number of cancer types, extra-departmental referral of cases to a panel of pathologists with acknowledged expertise in the diagnosis of certain cancer types is organised. However, at present there are no criteria to select which cases should be submitted to second opinion. Timely expert review is in the best interests of the patient, but many pathologists are faced with questions about how, when and to whom cases should be referred. Moreover, sending cases to outside institutions represents a cost for both the referring and the receiving laboratory. Currently there is neither funding of nor a legal basis for this practice of second opinion in pathology. The Belgian Institute of Public Health (WIV/ISP) is starting an external quality assurance programme for pathology laboratories, a process that deserves support.

Currently there is **neither funding of nor a legal basis for the practice of second opinion in pathology**. There are no criteria to select the cases to be submitted for second opinion.

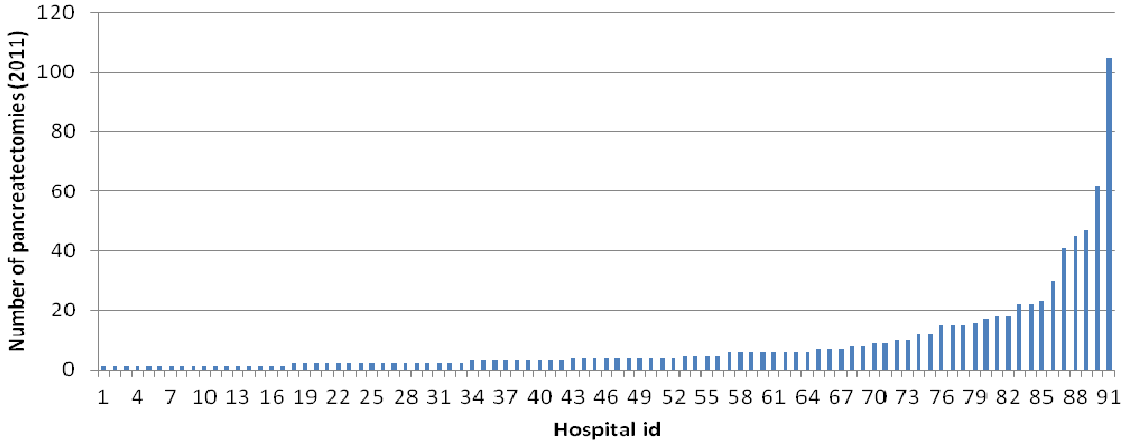
## 5.4. The dispersion of care in Belgium

### *5.4.1. Low hospital volume and variability of care in oncology*

No specialised care programmes or Reference Centres for rare cancers have been certified yet in Belgium. In addition, as a systematic quality monitoring system for cancer care is still lacking, there is no easy way to objectify the performance of self-declared expert centres, that often justify their claim of excellence by the acquisition of specific highly specialised equipment or innovative technologies.[20] Astonishingly, the actual volume of patients with a certain type of (rare) cancer treated per hospital is hardly, if ever, publicly available.

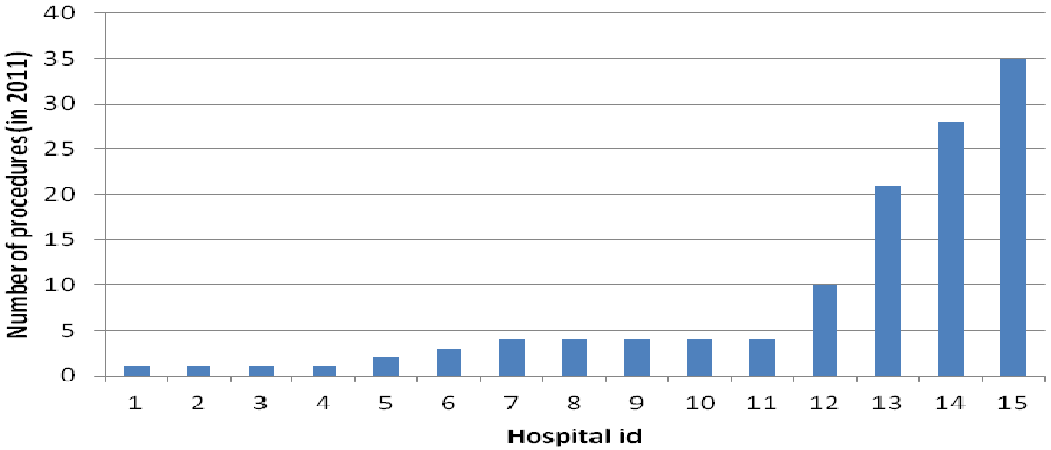
Several previous KCE reports illustrated the dispersion of care in Belgium, both for common and for rare cancers (colon cancer,[21] lung cancer,[21] pancreatic cancer,[21] testis cancer,[22] breast cancer,[23] oesophageal cancer,[24] and gastric cancer[24]). The analysis of the health insurance claims data revealed an appalling scattering of highly complex interventions. In 2011 for example, 446 oesophagectomies were performed in 64 hospitals with a median of 4 operations per year (see figure in the scientific report). Pancreatic resections (729 interventions in 2011) were dispersed over 91 hospitals, again resulting in a median volume of 4 (Figure 2). Similar situations were reported for hyperthermic intraperitoneal chemotherapy (HIPEC; Figure 3) and colectomy in patients with familial adenomatous polyposis (FAP) (see figure in the scientific report).

**Figure 2 – Distribution of pancreatectomies per hospital in 2011 (all causes)**




*Source: RIZIV-INAMI, data 2011*

**Figure 3 – Distribution of HIPEC procedures (hyperthermic intraperitoneal chemotherapy) by hospital, 2011**




*Source: RIZIV-INAMI, data 2011*

Additionally, a recent report covering the Flemish Region demonstrated a high variability in care processes for a series of rare cancers.[25] Even worse, in the majority of the cases, the volume per hospital was so low (less than 5 patients per year, and sometimes even less than 1 patient per year) that the BCR could not reliably analyse the variability in treatment schemes (e.g. between low- and high-volume centres). This was for example the case for cancer of the salivary glands, anal canal cancer, lip cancer, nasopharyngeal cancer, vaginal and vulvar cancer.

Based on previous KCE studies on Belgian data, it can be assumed that the situation in Wallonia and Brussels is not different.

The dispersion of care for numerous common and rare cancers has been documented in several KCE reports. The analysis of health insurance claims data (2011) reveals an **appalling scattering of highly complex interventions**.

### *5.4.2. Association between volume and processes and outcomes*

As was indicated above, an explicit volume-outcome relationship has been demonstrated for several oncological pathologies and surgical interventions. This was also illustrated in the above-mentioned KCE studies on breast cancer[23, 26] and testicular cancer[22, 27], which bore out that high-volume hospitals more frequently adopted recommended processes of care than low-volume hospitals.

In 2013, the KCE study on quality indicators for oesophageal and gastric cancer[24] illustrated, once again, that volumes of care per hospital were noticeably low in Belgium. A clear volume-outcome relationship was found, both for postoperative mortality (oesophageal cancer) and 5-year survival (oesophageal and gastric cancer). The lowest mortality rates reported by high-volume centres were in line with those reported in the Netherlands after the introduction of volume criteria for the treatment of patients with oesophageal cancer.[28]

For a large panel of interventions it has been demonstrated that **high-volume hospitals obtain improved short- and long-term outcomes**. High-volume hospitals tend to adopt more frequently recommended processes of care than low-volume hospitals.

# 6. RECOMMENDATIONS FOR A MORE EFFECTIVE ORGANISATION OF RARE/COMPLEX CANCER CARE FOR ADULT PATIENTS

These recommendations are based on the findings from the literature review, the views of the stakeholders (see colophon) and the detailed proposals formulated by the multidisciplinary cancer working groups and the panel of pathologists. They were carefully pondered by KCE experts against the backdrop of the current organisation of care for rare/complex cancers in our country.

**Core recommendation: Set-up of shared care networks around Reference Centres**

**To improve the quality of care and to decrease the dispersion of expertise and experience, Reference Centres (RC) with multidisciplinary teams of recognized clinical and technical expertise in specific rare/complex cancers should be established and certified.**

**The formation of networks or functional relationships between Reference Centres and Peripheral Centres ("shared care model") will allow a delivery of care combining expertise and proximity.**

**In peripheral centres only less complex well-described parts of the treatment can take place, and they should be performed under supervision of the Reference Centre. A Peripheral Centre should get guidelines about when they have to confer with a Reference Centre about a rare/complex cancer patient.**

***Note:*** *A Reference Centre is not to be understood as necessarily situated in a university hospital. Likewise, the term "peripheral centre" is used to designate a hospital/campus that is not certified as a Reference Centre for the cancer type concerned. It does not entail any qualitative or geographical connotation, nor does it refer to a non-university status.*

**What can patients with rare/complex cancers expect from shared care networks organised around Reference Centres?**

The most fundamental benefit patients can expect from **shared care networks organised around Reference Centres** is a **better chance of survival, lower relapse rates and lower complication rates.**

More specifically, patients with a rare/complex cancer can easily identify Reference Centres by themselves. They will be referred by their general practitioner or their specialist. In the Reference Centre the first diagnosis and staging will be further elaborated by expert specialists (e.g. double reading of slices, access to molecular biology, additional/high imaging technology if needed). Patients can expect to benefit from a more standardised diagnostic and therapeutic approach and will be ensured that their case will be discussed by a multidisciplinary group including the appropriate experts in diagnostics as well as therapy. As patients' management will be in the hands of an experienced multidisciplinary team working in a Reference Centre with sufficient case load, short-term and long term outcomes will be better. In addition, they will have a direct access to more advanced or innovative treatments; they will be treated by experienced and skilled healthcare providers (including well-trained and skilled nursing and paramedical staff) and can be recruited in clinical trials if applicable. A direct link with patients' associations will offer them psychological support and help. Finally, the structured collaboration between the Reference Centre and the Peripheral centre and the continuous quality assurance of the care processes, will have a positive impact on the quality of care delivered in the Reference Centre as well as the peripheral centre. Furthermore, the shared care model will offer patients the combination of high quality care and proximity.

Under 6.1 we will detail the recommendations with regard to the Reference Centres and under 6.2 the shared care network is further elaborated. Under 6.3 the recommendations with regard to second opinion in pathology are depicted and finally under 6.4 the recommendations with regard to information and communication.

## 6.1. Reference Centres: expertise, multidisciplinarity and accessibility

**Recommendation 1**

**To become recognised as Reference Centre hospitals should meet strict criteria in addition to those specified in the oncology care programme legislation.**

**These criteria should ensure that recognised Reference Centres truly apply a multidisciplinary approach and have sufficient expertise in the rare cancers they are recognised for.**

To become recognised as Reference Centre for a certain cancer (group), hospitals should not only fulfil the minimal requirements for the oncology care programme, they should also meet the special requirements for diagnosis and treatment of rare/complex cancers. For 14 rare and complex cancers, listed in Table 1, these criteria have been very thoroughly elaborated (see the proposals from the working groups - KCE website).

It is evident that Reference Centres should receive **sufficient financial support** so that they can invest in extra (para)medical expertise and expensive infrastructure. Financing through agreements with RIZIV - INAMI ("conventies/conventions") is a proven formula that could well meet this specific context.

### *6.1.1. Dedicated teams and adequate facilities*

**Recommendation 2**

**Reference Centres need more specifically skilled medical and paramedical staffing than required by the programmes in oncology. In addition, they should be equipped in function of the rare/complex cancer they are certified for.**

Reference Centres should have the resources to provide high-quality, continuous, comprehensive care delivered by a multidisciplinary team with a special interest and expertise in the cancer concerned. Not only medical experts have to be involved, but also a highly skilled (para) medical staff (e.g. clinical nurse specialists, dieticians and nutritionists, speech therapists, dentists, physiotherapists, psycho-oncologists, social workers).

The organisation and financing of the care should ensure that patients with rare/complex cancers are systematically directed to these teams which have the required training, expertise, skills and infrastructure. The **systematic referral** can be accomplished by limiting the reimbursement of certain procedures to specifically qualified specialists and recognized Reference Centres.

A patient with a rare/complex cancer should find all expertise (multidisciplinary team and necessary technical equipment) **on 1 campus**. Concomitant treatments (e.g. chemoradiotherapy) should definitely be offered on the same hospital site. Subsequent follow-up treatment can be offered in a peripheral hospital, under the supervision of the reference centre, provided the required skills are available and of sufficient quality (see recommendations 9 and 10).

Also from an economical perspective, concentrating very expensive treatments and costly equipment in a limited number of centres, is more cost-effective.

A transition period could facilitate the needed structural reforms, but should be limited in time.

For detailed descriptions, the reader is referred to the 14 proposals, where the specific requirements are described in more detail on the KCE website.

### 6.1.2. Multidisciplinary oncological team meeting (COM/MOC)

**Recommendation 3**

**Specialised multidisciplinary oncological consults (COM/MOC) should ensure optimal management of patients with rare/complex cancers. The panel should involve medical and paramedical experts with a specific expertise in the management of patients with the cancer in question (diagnostic and therapeutic strategies, supportive care). The composition of the panel of experts will vary according to the cancer types discussed and the phase in the disease.**

Rare cancer cases are significantly less frequently discussed during MOC/COM meetings. E.g. less than 60% of bone and soft tissue sarcoma, malignant melanoma, thyroid cancer and urinary tract cancers are discussed during MOC/COM meetings.[29] Hence, extra efforts should be made by the Reference Centres to discuss each rare and complex cancer case with an appropriate multidisciplinary panel.

As proposed by many of the working groups, rare cancers that were already discussed during a MOC/COM meeting in the peripheral hospital should benefit from a second specialised MOC/COM at the Reference Centre. The current regulations already provide for the reimbursement of these second-opinion MOCs under certain conditions, which may need a thorough re-evaluation.

With regard to the registration of the MOC/COM, specific items related to rare cancers, such as the second reading of slides, should be added to the standard questionnaire sent to the BCR.

In addition to the MOC/COMs organised at the Reference Centre, it is recommended to install 'super MOCs/COMs' at a higher level, allowing experts from several (also international) Reference Centres to discuss more difficult cases. Tele-MOC facilities, including audiovisual facilities, will support and encourage discussions between specialists from different institutions.

As the current remuneration modalities for the MOC/COMs might not be appropriate for the specialised MOC/COM, the 'super MOCs/COMs' and the participation of medical experts from Reference Centres attending MOCs/COMs at peripheral centres - either in person or via web conference – a reform or extension of the system should be considered.

This issue is further elaborated in each of the 14 concrete proposals described in more detail in the addendum available on the KCE website.

### 6.1.3. Patient-centred care

**Recommendation 4**

**Reference Centres have to ensure that care is based on the patients' needs and values. In order to guarantee that patients are actively involved in the clinical pathway they are offered, a liaison coordinator should be appointed.**

Over the past two decades, patient-centred care has been recognised internationally as a dimension of high-quality health care. In 2001, the US Institute of Medicine (IOM) defined patient-centred care as 'care that is respectful of and responsive to individual patient preferences, needs and values, and ensuring that patients' values guide all clinical decisions'. Patient-centred care implies that an effective and time limited care pathway is planned and specific support services are offered to the patient (identification of a care coordinator, link with patients' associations, specific website for patients / professionals...). In case of unusual, complicated ethical problems and end-of-life ethical issues, the ethics committee should be consulted.

The MDT team of the Reference Centre designates for **each patient a practitioner-in-charge** and its substitute, who acts on behalf of the MDT team. The practitioner-in-charge and its substitute are documented in the (digital) medical file and are known to the patient and his/her relatives. The practitioner-in-charge and its substitute act in close collaboration with the liaison-coordinator.

Following the COM/MOC, the general practitioner (GP) has to be informed of the diagnosis and the therapeutic plan.

In order to ensure that each patient is actively involved in the clinical pathway s/he is offered, a **liaison coordinator** should be appointed. This person will play an important role in the transmission of information (e.g. about the diagnostic and therapeutic timelines) to the patient, his/her relatives and GP, and in the coordination of the different steps in the clinical pathway (e.g. which part of the pathway is performed in the reference centre and which part in the peripheral centre).

### *6.1.4. Minimum volume of patients*

**Recommendation 5**

**In order to halt the dispersion of care and to increase concentration of resources and expertise in rare and complex cancer care, it is recommended to impose minimum case loads for Reference Centres and medical specialists. These norms should be based on Belgian incidence data and international guidelines and should allow for a run-in period.**

**Within a reasonable time frame it should be realised that every patient with a suspicion of rare/complex cancer is referred to a Reference Centre in the early diagnostic phase.**

The "volume-outcome relationship" has been demonstrated for numerous types of surgical and medical treatments (e.g. oesophagectomy, pancreatectomy, management of patients with testicular cancer). A smaller body of evidence has identified a number of specific structural characteristics or care processes associated with better patient outcomes. Volume may be a determinant by itself and/or may be associated with better perioperative care, including well-performed diagnostics (patient selection), pre-operative discussion of each patient in a multidisciplinary team, adequate perioperative care in the surgical department and in the intensive care unit with adequate numbers of skilled specialists and experienced nurses, and an infrastructure able to adequately deal with complications.

Reference Centres have to treat a sufficient volume of patients with rare/complex cancers to increase experience and expertise and to maintain this high level of expertise. This requirement is advocated by many stakeholders, convinced by the evidence from research.

Moreover, insofar as Reference Centres have a duty to monitor and report their performance and outcomes (see recommendation 6), among others by means of quality indicators, a minimum number of cases is needed in order to get meaningful and trustworthy results. From this perspective, the minimum volume requirement is an unescapable statistical dictate.

The corrolarium is that, on the one hand, the number of Reference Centres per type of cancer is kept (very) low and, on the other hand, all other hospitals are forced to stop treating rare/complex cancers.

Again, foreseeing a transition period will facilitate the needed structural reforms, but should be limited in time.

### *6.1.5. Quality Assurance*

**Recommendation 6**

**Reference Centres should only be certified if they meet specific requirements regarding expertise, experience and infrastructure. The quality of care provided in Reference Centres should be evaluated on a regular basis, so that "static and lifelong" certification of centres which, once recognised, can no longer demonstrate outstanding outcomes, can be avoided.**

The quality of care delivered by Reference Centres has to be monitored on a continuous basis. These centres should participate in the relevant external quality assurance initiatives, which could both encompass regional or national quality systems and international auditing, benchmarking or accreditation for the specific cancer concerned. The principles of such an integrated quality assurance approach have been developped in KCE report 152 (2011). More specifically:

- For each patient, complete and valid information about the diagnosis, the cancer stage, the diagnostic procedures and the planned/given treatment should be sent to the Belgian Cancer Registry. This is part of the existing reporting obligation, applicable to all centres with an oncology programme. For each rare/complex cancer it should be evaluated which variables of specific interest should be added;
- Quality indicators (structure, process, outcome) should be developed and prospectively recorded. These indicators should entail both transversal dimensions, relevant for all cancer types (discussion in a COM/MOC, quality of the staging, short- and long-term survival, complication rate, re-entry surgery, patient satisfaction,…) and (a limited number of) more specific aspects, linked to the recommended care processes and specific outcome dimensions of a particular cancer type;
- The results should be pooled and analysed by an independent body, and standardised feedback reports should be sent to the individual centres, allowing them to benchmark their performance with their peers; this should preferably be organised in an international context, given the small number of cases and Reference Centres per country.

The objectives, content and modalities of this monitoring and feedback should be defined in close collaboration with the professionals involved in the day to day care, but the system should be set up and run by an external, dedicated team with expertise in data mangement and quality assurance.

In addition to the monitoring and feedback described above, it is recommended to organize periodic auditing or accreditation visits, again preferably in an international context.

Public disclosure of the results of the monitoring, the audits and the accreditation reports will increase the striving for excellence and should be envisaged once the data are available.

### *6.1.6. Scientific and educational activities*

**Recommendation 7**

**Reference Centres should be actively involved in clinical research to stay on the cutting edge of their field. In order to disseminate their medical expertise, they should also be implicated in continued education of health care professionals.**

As the incidence of rare cancer is low by definition, experts working in a Reference Centre should participate in clinical trials in which rare cancer patients can be recruited (including local, national and international observational, translational and interventional studies of any phase). Medical experts working in Reference Centres should also be involved in the development of clinical practice guidelines. Reference Centres should also have a structural link with a tumour bank.

Reference Centres should disseminate their medical advances via publications in peer-reviewed journals, through professional training and communication towards the general public.

### *6.1.7. Networking at the European and international level*

**Recommendation 8**

**Healthcare professionals from Belgian Reference Centres should collaborate actively with colleagues from international Reference Centres. In case of (ultra)-rare cancers and highly complex procedures for which there is insufficient expertise in Belgium, referral partnerships should be set up**.

The number of Reference Centres certified for a certain rare and/or complex cancer should be based on the yearly incidence. If for certain pathologies or treatment modalities insufficient experience/expertise is present in Belgium, patients should be informed, the medical team should refer and the liaison person should facilitate the logistics of the referral. It is recommended to establish criteria for the referral of patients from Belgian Reference Centres to European Reference Centres.

In addition, through international networking Belgian Reference Centres will not only increase their expertise but also their research potential, both on fundamental, translational and clinical research, including the participation in clinical trials.

## 6.2. A shared care model

### *6.2.1. Networking between Reference Centres and peripheral services for the delivery of care*

**Recommendation 9**

**The formation of networks or functional relationships between Reference Centres and peripheral centres that allow a delivery of care combining expertise and proximity (shared care model) is highly recommended.**

**Service Level Agreements (SLA) between the physicians and centres involved, have to address patient referral/back referral and patient follow-up.**

**To facilitate the transition of patients between Reference and peripheral centres, a 'liaison coordinator' has to be appointed.**

In this model, the Reference Centre is responsible for the diagnostic confirmation, the elaboration of the treatment plan and the complex parts of the treatment (for instance complex surgery or radiotherapy), whereas the peripheral centre is responsible for the implementation of the other aspects of the care plan, in particular the less complex elements of the treatment or the follow-up.

This type of network or relationship should be tailored per cancer type. The majority of the working groups have advocated a shared care model rather than the concentration of the whole care pathway in the Reference Centre (see addendum on the KCE website).

Each patient with a rare/complex cancer should be discussed during a multidisciplinary meeting in the Reference Centre, as first intent or as second opinion before any therapeutic intervention. Also in cases of relapse or recurrence, the patient should be discussed again during a multidisciplinary meeting in the Reference Centre.

Service Level Agreements (SLA) between the centres involved, addressing patient referral/back referral and patient follow-up are an essential element of the shared care network. These arrangements should entail (among others) the sharing or at least exchange of (electronic) medical records, information duty in both directions (on the medical, paramedical social and logistics level, e.g. smooth transportation process) and formal agreements on common care protocols. This should avoid undue delays and duplicate investigations.

To facilitate a smooth transition of patients between Reference and peripheral centres and to keep the patient optimally informed, a **'liaison coordinator'** has to be appointed in the Reference Centre. He/she should assure that patients receive optimal care at the Reference Centre as well as at the peripheral centre and will assure an efficient information transfer. The care coordinator should not only be involved in the medical aspects of the care pathway, but also in the paramedical aspects. He/she should also be involved in networking with the family doctor and the domiciliary care facilities.

The onco-coaches or specialised nurses in oncology, who are currently financed by the National Cancer Plan to coordinate the oncology care, can accomplish this mission. In some settings, social workers actively assist in discharge-planning activities, such as taking arrangements for home-care services or for the transfer to other healthcare settings.

### *6.2.2. Networking between Reference Centres and peripheral services for follow-up and rehabilitation*

**Recommendation 10**

**The networks and functional relationships between Reference Centres and peripheral centres should ensure continuity and coherence in the follow-up and rehabilitation of the patient after the specialised treatment.**

The follow-up and rehabilitation of the patients after their specialised cancer treatment should pursue different objectives, including optimal physical, social and psychological functioning. Rehabilitation requires an interdisciplinary team approach because of the variety of potential problems and impairments induced by the illness process and the treatment.

According to the needs of the patients, the following specialists can be involved: care coordinator, physiotherapists, social workers, psychologists, occupational therapists, speech therapists, dieticians. Other professionals can also have an added value such as dentists, orthotists and prosthetists. In addition, rehabilitation programmes can benefit from consultative relationships with other care-providing organisations (e.g. home healthcare agencies, community services).

For detailed descriptions, the reader is referred to the 14 proposals, where the specific requirements are described in more detail (see addendum on the KCE website).

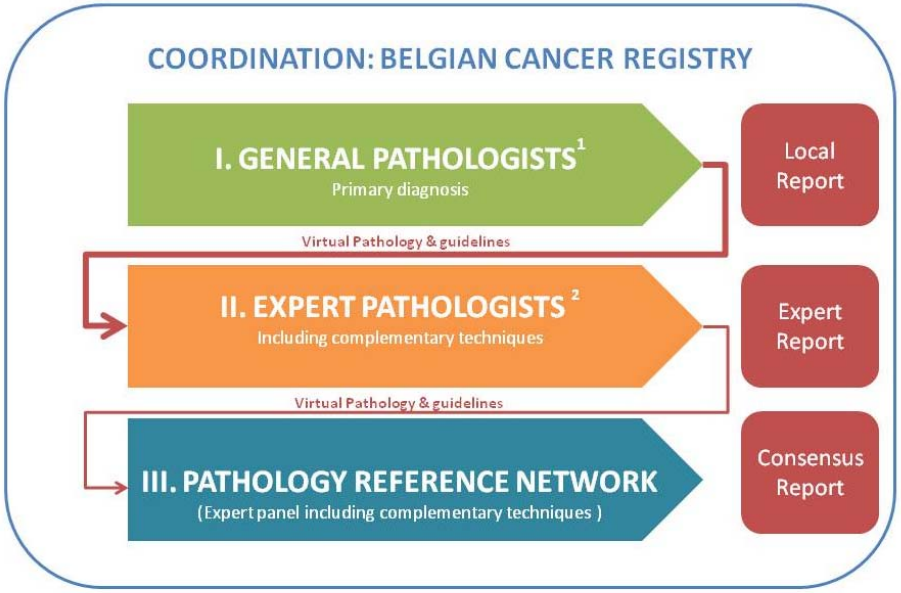
## 6.3. Second opinion in pathology

Similarly to the role played by the Centres for Human Genetics in the management of rare diseases, the Pathology labs have to play a key role in the management of patients with rare cancers. The panel of pathologists with expertise in rare cancer diagnosis consulted in the course of this study suggested a number of proposals for an improved diagnostic process of rare cancers[a]. Their proposals were unanimously accepted by the Consilium Pathologicum Belgicum, by the Commission for Anatomic Pathology, by the Belgian Society of Pathology (BWP) and by the GBS/VBS (Groupe des Unions Professionnelles Belges de Médecins Spécialistes/Verbond der Belgische Beroepsverenigingen van Geneesheren-Specialisten - Pathology).

**Recommendation 11**

**A 'three-step' model of diagnostic confirmation of pathology findings is recommended for rare cancers (Figure 4). This protocol should be implemented as recommendation of good practice in licensed pathology laboratories.**

**Figure 4 – A 'three-step' model of diagnostic confirmation for rare cancers**




(1) General pathologists belonging to a licensed pathology laboratory
(2) Expert pathologists recognised by the ISP/WIV

[a] P. Vermeulen, C. Colpaert, C. Cuvelier, P. Demetter, A. Mourin, P. Goddeeris, M. Petein, P. Delvenne, W. Waelput, R. Croes, R. Sciot, I. Salmon, T. Tousseyn, R. Achten, E. Mutijima, K. Cokelaere.

### 6.3.1. Definitions

An **expert pathologist** is a pathologist who provides a 'second opinion' on pathology specimens from rare cancer cases. This diagnostic confirmation has to be incorporated in the initial pathology report as "expert report" within acceptable time limits. The expert pathologist works in consultation with other national and/or international expert pathologists in a 'pathology reference network' where difficult cases are discussed and a consensus diagnosis is reached.

A **pathology reference network** represents a panel of national and/or international expert pathologists, who will assure the second opinion of difficult cases, for a given group of rare cancers leading to a consensus report.

### 6.3.2. Practical organisation

#### 6.3.2.1. Expert selection

Similarly to recognition process of laboratories, pathologists should apply for recognition as an expert pathologist with advice from the Commission for Pathology (ISP/WIV). To this purpose a Working Group 'quality assurance of second opinion' should be installed within the Commission.

Selection criteria will be based on 'recognition by peers', activity in relation to rare cancers (number of cases seen, taking part in multidisciplinary oncology meetings (MOC/COM), considerable daily practice in the area of expertise), scientific visibility, involvement in research and publications. Moreover, the expert pathologist has to have easy access to the necessary ancillary techniques to obtain accurate diagnosis and prognostic report on the cancers relevant to his/her area of expertise.

#### 6.3.2.2. Pathology reference networks' composition

The pathology reference networks should be composed of a minimum number of both academic and non-academic, national and/or international pathologists. The pathology reference networks are coordinated by a responsible pathologist elected for a term of 3 years. Timing of meetings is subject to specific needs. In order to minimise delays in answering time the use of digital pathology should be introduced.

The pathology reference networks have also:

- to promote research on these rare cancers through multicentre research studies, both at a national and international level,
- to contribute to the epidemiologic surveillance of these cancers by establishing a database for collection of relevant data, in collaboration with the Belgian Cancer Registry,
- to participate in the formulation of national recommendations for good practice, drawing on European or international guidelines.

In view of its relevance in the registration of all cancer cases, including rare cancers, the Belgian Cancer Registry would be the evident choice to coordinate this model of diagnostic confirmation of pathology data.

#### 6.3.2.3. Daily practice second opinion organization

According to multidisciplinary oncological consultations (COM/MOC) a demand for pathological diagnostic confirmation in rare cancer cases should be addressed by the general pathologist to an expert pathologist previously defined. This expert report should be delivered in a timely manner (e.g. one week), in order to minimise any delay in treatment and has to be integrated in the initial report by the general pathologist providing a clear unique diagnosis to the clinicians. In case of discordance or for more complex cases, the expert decides to refer to the pathology reference network in order to obtain a consensus diagnosis in a timely manner.

### 6.3.3. Quality Assurance

The pathology reference networks should draft an annual activity report. This report should include (non exhaustive listing) the number of cases discussed in the panel, number of cases seen in 'second opinion' by individual expert pathologists, concordance and discordance levels, ancillary techniques used by expert pathologists. This report should be communicated to the Commission for Pathology. The ISP/WIV presents an annual composite report on the entirety of 'second opinion' activities, in accordance with the national external evaluation programme.

### 6.3.4. Virtual Pathology

The vast advancements in telecommunications and converting medical information to a digital format have increased the number of medical applications including virtual pathology. In the last few years, telepathology has benefited from the progress in the technology of image digitalization and transmission through the world web.

Virtual pathology is a rapidly evolving niche in the world of pathology and is likely to increase in popularity as technology improves. Virtual pathology facilitates rapid, efficient communication between subspecialty pathologists and generalist pathologists. This approach allows 2nd opinion on challenging cases with fine-tuning of diagnostic interpretation and has many advantages. Indeed, virtual microscopy for 2nd opinion avoids mailing costs and loss of slides. In addition, the patients will benefit from a faster diagnosis via a secure web site. Consequently, faster patient diagnosis and treatment may decrease healthcare costs.

Furthermore, an extension to the existing 'Belgian virtual tumour bank' (biobanking) could be envisioned by the possibility of digital archiving of rare cancer cases.

### 6.3.5. Financial aspects

There is an evident cost to these 'second opinions': besides logistics (transfer of slides, registration, reporting) there is an important investment in 'time and energy' of expert pathologists. No reimbursement for diagnostic confirmation of pathology data is currently provided. When considering the financial aspects of diagnostic confirmation of pathology data in rare cancers however, one should take into account other, less readily quantifiable costs. The impact on public health, patients, institutions and society of incorrect pathology diagnoses is crystal clear. A well-organised model for 'second opinions' will certainly lead to budget savings by avoiding unnecessary treatments (not to mention possible litigation costs of mistreatment).

Expert pathologists should receive a 'consultation fee' for the second opinion in the context of this programme. Coordination, secretariat and other missions of pathology reference networks could be funded through a NIHDI convention specific to this purpose.

Through the work of the Belgian Cancer Registry, in concert with many stakeholders, a very adequate estimate regarding the numbers of rare cancers can be made. These constitute only a fraction of daily pathology practice. The expected budget for these 'second opinions' would thus be very predictable and stable.

The diagnosis of these cancer cases, by their rare and complex nature, usually necessitates the extensive use of relevant ancillary techniques (e.g. immunohistochemistry, molecular biology), essential to provide a 'state of the art' reporting (fine-tuning of diagnosis, standard reporting, prognostication). It would therefore be reasonable to consider upscaling the current limit on reimbursement of these techniques.

In view of the many potential benefits of virtual pathology (especially time-wise), it could be sound financial management to fund the development of virtual pathology in Belgium, included use of digital slide-scanners, according to the existing project such as Belgian Virtual Tumour bank-Biobanking and Biomolecular Resources Research Infrastructure - Biobanking.

Finally, to manage the additional costs in general pathology labs (e.g. sending cases for double reading, registration of discordances) to be expected from this model of 'second opinion', a 'lump budget' per patient can be considered.

## 6.4. Information and communication

**Recommendation 12**

**The setup of a national portal website which provides up-to-date information on rare cancers and Reference Centres for various users (patients, healthcare professionals, researchers, general public) and links to validated sources of information (including Orphanet) is recommended.**

Disease-specific websites about patients' associations, networks of reference, registries or specific activities on cancers are very important sources of information.

The Rare Diseases Organisation Belgium (RaDiOrg.be), a coordinating alliance of 80 patients' organisations, is the official representative of Eurordis in Belgium. RaDiOrg.be created a web site to encourage the dissemination of information on rare diseases in Belgium. It provides a direct link to Orphanet, the European Portal for rare diseases and orphan drugs. Orphanet operates through a network of partner teams in different countries; these teams are responsible for collecting information on expert services and research on rare diseases. A specific page of this portal is devoted to the identification of Centres for expertise and networks in the management of rare cancers.

The setup of a national portal website which provides information on rare diseases (including rare cancers) was already suggested in the recommendations and proposed measures for a Belgian Plan for Rare Diseases[14]. The KCE subscribes this recommendation.

# 7. CONCLUSIONS

It is no longer practicable, efficient or ethical that every hospital and every practitioner continues to offer care for every rare/complex cancer. If one wants to improve the quality of rare/complex cancer care, the only option is to concentrate expertise and sophisticated infrastructure in Reference Centres, which have to comply with strict criteria to be certified as such. Moreover, European directives urge Member States to identify Reference Centres and to create networks with other Reference Centres throughout Europe. To ensure consistent quality of care, continuous quality assurance (e.g. through audits and accreditations) and regular re-certifications are essential. Furthermore, the formation of networks or functional relationships between Reference Centres and peripheral centres (shared care model) will allow a delivery of care combining expertise and proximity.

In order to prepare the path towards Reference Centres for rare and complex cancers in Belgium, 14 multidisciplinary working groups, involving as many as 220 clinical experts from 30 different university and non-university hospitals, from all regions of the country developed a series of concrete proposals for an improved organisation of care for 14 different rare or complex cancer types. In addition, a panel of pathologists with expertise in rare cancer diagnosis formulated concrete suggestions for an improved diagnosis of rare cancers.

The next step is the translation of the recommendations into policy decisions. In addition, for those cancer types that were not yet addressed, or for which, no conclusive results could be obtained in this first round, a second round should be organised (including sarcomas, cancer of the thymus, renal cancer, cancer of the testis and the penis, complex lung surgery...). The ultimate goal is that, in the foreseeable future, each single patient with a rare or complex cancer can benefit from the best available state-of-the-art care, provided by a multidisciplinary team with demonstrated expertise in that particular domain. It is very well realised that this will take some courage and that a certain degree of resistance will have to be surmounted, but eventually, the best interest of the patient should prevail.

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