BenchCan

Benchmark comprehensive cancer care that provides interdisciplinary treatment for patients, and yield examples of best practices in comprehensive cancer care

Implementation manual

Co-funded by the Health Programme of the European Union

BenchCan CORE GROUP

OECI · NKI-AVL · GUSTAVE ROUSSY · healthclusternet · PANAXEA · Alleanza contro il cancro

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BENCHMARKING COMPREHENSIVE CANCER CARE TO IMPROVE THE QUALITY OF INTERDISCIPLINARY PATIENT TREATMENT **MANUAL** M

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This document arises from the BenchCan project which has received funding from the European Union, in the framework of the Health Programme.

BenchCan Manual

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The BenchCan tools presented in the Manual were piloted in 9 cancer care Organisations across Europe whose work in the project has been of enormous value and the results informed this Manual.
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FOREWORD

Improving performance of health care services is an important issue, especially as the financial sustainability is increasingly under pressure. For cancer care this means that offering value for the patient, in terms of optimal, efficient, and effective care is the goal that many institutions are striving for. Every country is struggling with rising health care costs and, regardless of the total financial percentage spent on health care, has to translate this into pressure on institutions. At the same time consumer demands and technological advances pose challenges in terms of innovative technology and drugs, and new degrees of patient centeredness in services. Lastly, international exchange of information and comparison of system performance, such as in the Eurocare studies on cancer survival in EU countries, increase the awareness that performance can be improved and lead to the notion that countries and institutions can learn from each other.

One of the instruments that can be used in exchange of information and improvement activities is comparing structures, processes, and outcomes in a series of institutions to identify good and best practices and learn from those examples. As an instrument to compare/benchmark comprehensive cancer care did not exist, the European Commission supported a research program to develop such a tool within the framework of the BENCH-CAN project. The project was coordinated by the European Organization of Cancer Institutes (OECI), and 9 European cancer centres form 3 geographic clusters, West/North, South, Central & Eastern took part in the developmental process. Earlier research on benchmarking was used to have an evidence base for these activities.

The process we went through was intense; reaching consensus on domains and indicators, both qualitative and quantitative, producing the data, organising the pilot visits, and assembling all information into a benchmarking guide in open format. Separate from this Manual, scientific publications will follow. In these reports you will find a description of the process, the tools we developed, and the possible use. Feel free to use them at your advantage, but please report on these activities in an open way so that the open format approach as initiated by the EU commission is continued and strengthened.

We thank all participants, institutions, professionals, and project staff, for their often elaborate contributions and hope that this work will find sequels in many ways. Above all it should contribute in improving cancer care in Europe and provide benefit for patients.

On behalf of all project staff,

Prof. Wim H. van Harten MD, PhD.

BENCH-CAN Coordinator

1. INTRODUCTION

1.1. Background

The number of cancer patients is steadily increasing and despite rapid improvements in therapeutics, some important inequalities in cancer survival still exist between different countries in Europe. Studies indicate that the differences in cancer survival are largely attributable to: inequalities in quality of care and screening, inequalities in diffusion and adhesion to clinical guidelines, and inequalities in access to high quality radiotherapy equipment and cancer drugs (Verdecchia et al., 2007). Improving the quality of care is part of the solution to reducing suboptimal cancer survival in Europe.

The Stockholm declaration (Ringborg, 2008; Brown, 2009) has highlighted the importance of collaboration between cancer centres. Providers of cancer care can learn from each other by identifying good practices and success factors in other institutions. Indeed, pooling the expertise of different cancer centres can help create a critical mass of competence in cancer care that can improve the overall quality of service and reduce inequalities.

1.2. The BENCH-CAN project

In 2013, the Organisation of European Cancer Institutes (OECI) launched the BENCH-CAN project (May 2013- June 2016), aiming at reducing health inequalities in Europe and improving interdisciplinary cancer care by yielding best practice examples. To achieve this, the project addressed 6 specific objectives:

1. To collect, compare and align by consensus formation the standards, recommendations and accreditation criteria of comprehensive cancer care in selected European countries.

2. To review and refine a benchmarking tool that can be applied to comprehensive cancer care through interdisciplinary patient treatment.

3. To pilot the benchmarking tool with particular attention to operations management and best clinical practice.

4. To maximise knowledge exchange and sharing of best practice between providers of comprehensive cancer care in member states and regions.

5. To ensure compatibility of the benchmarking tools with existing cancer care resources and services.

6. To ensure the sustainability and longer-term benefits of the project.

This project was developed using the best available evidence and the involvement of various stakeholders, such as cancer institutes, cancer patients' umbrella organisation like European Cancer

Patient Coalition, and other relevant European agencies. As a result of the project, comprehensive benchmarking tools have been developed, as well as good practice examples of clinical practice (including patient experience) and operations management processes have been identified, collected, and presented in a database.

1.3. The Manual

This Manual has been created as part of the BENCH-CAN project. It incorporates the developed benchmarking tools for cancer centres and cancer pathways and presents the necessary processes for carrying out an own benchmarking project by going through all the necessary, detailed steps. Both the tools and the processes have been developed by the BENCH-CAN project team using scientific evidence and been tested amongst the 9 pilot centres participating in the project.

The Manual gives practical help for health care organisations interested in participating in benchmarking. It is primarily aimed at the groups engaged in comprehensive cancer care through interdisciplinary treatment of patients (clinical staff, management, patients/carers and service funders). But it can also be used by (i) those providing cancer services and pathways in general hospitals and (ii) anyone whether they have previous experience or knowledge of benchmarking or not.

2. BENCHMARKING

2.1. What is benchmarking and why it can be beneficial?

In general terms, benchmarking is the measurement of the quality of an organisation's policies, products, programmes, strategies etc. and their comparison with standard measures, or similar measurements used by its peers. The objectives of benchmarking are (1) to determine what and where improvements are needed, (2) to analyse how comparable organisations achieve their own high performance levels, and (3) to use this information to improve performance. The use of benchmarking for hospitals began in the 1990s (Ettorchy, 2012).

However, benchmarking is not just the point of comparison in measurement of performance. It includes the study and transfer of exemplary practices (Jones, 2001).

Indeed, benchmarking in healthcare has undergone several modifications: initially, benchmarking was essentially the comparison of performance outcomes to identify disparities. Then it was expanded to include the analysis of processes and success factors for producing higher levels of performance. The most recent modifications to the concept of benchmarking relates to the need to meet patients' expectations.

By participating in benchmarking, providers of cancer care can now receive feedback on how to improve their services and it will allow identifying their good practices. Building on the results of the benchmarking exercise organisations can substantially improve the quality of their care for patients by optimising services, increasing efficiency, and/or decreasing costs in the organisation.

2.2. Quality improvement in the field of cancer care – Existing initiatives

The BENCH-CAN project is one of the European initiatives to support quality improvements in the cancer care field. Two other existing schemes are the OECI Accreditation & Designation Programme (developed in 2002) and the Excellence Designation System (developed as part of the EurocanPlatform project). These tools are linked and are complementary. Here we describe the added value of each structure and how they can be combined.

BENCH-CAN project: The benchmarking tools developed in the BENCH-CAN project are quality assessment tools for both comprehensive and clinical cancer centres. Through the benchmarking exercise processes are analysed, leading to enhanced performance in cancer care. However, the BENCH-CAN tool is not only intended to be a simple measurement of performance or comparison of indicators but it also includes the study and transfer of exemplary practices. As such, the BENCH-CAN project developed a database of good practices, unlike the Accreditation & Designation system or the Excellence Designation System.

OECI Accreditation and Designation programme: The OECI Accreditation & Designation (A&D) Programme was designed as a response to the important disparities of quality of care between different cancer centres in the European Union. Indeed, the EUROCARE report had highlighted the important differences in cancer survival between European countries. As there was no definition of quality of cancer care at the European level, the OECI A&D programme was created to help cancer centres implement a quality system for oncology care. Within this programme all aspects of quality in a cancer centre (such as care, management, information technology, patient information and communication, prevention, research and teaching) are assessed. The quantitative questionnaire on resources and activities helps compare the performance of a cancer centre with its inputs, such as budget and number of staff, and to evaluate cancer centres by categories. Research on the A&D programme suggests its impact on cancer centres participating include: more importance given to the role of nurses and supportive care staff, improved processes with multidisciplinary team meetings and improved communication between multidisciplinary teams and improved credibility of the cancer centre towards its staff, patients, and funders (Rajan et al, 2015).

The Excellence Designation System: The Excellence Designation System (EDS) is part of Work Package 12 of the EurocanPlatform project, a project funded by the European Commission that brings together 28 European Cancer Research Institutions and Organisations to create a platform for translational research to improve prevention, early detection, and therapeutics. As quality assurance of cancer research centres has become a priority issue for that platform, WP12 in collaboration with the European Academy of Cancer Sciences (EACS) worked to establish a designation methodology for Comprehensive Cancer Centres of Excellence. The specificity of this designation system is that it is focused on translational research only and does not take into account (or minimally) the quality of the care, teaching, management, IT, and patient information of a cancer centre. The EDS serves as a methodology for assessing the suitability of potential partners for future collaboration initiatives (Rajan et al, 2013 & 2015).

A study into the compatibility of the three systems showed an overlap in the different indicators used. If centres would just like to focus on their research department they can use the EDS, however the A&D program will give more comprehensive assessment of the centre. Since the A&D programme is a costly exercise (money and time), centres could decide to start with benchmarking using the BENCH-CAN tools in order to see where they stand compared to other centres in the EU and to see whether it would make sense to start the A&D process. Although there are a lot of similarities there are also differences between Accreditation & Designation and benchmarking. One of the differences between benchmarking and accreditation is that accreditation usually leads to a formal approval, in other words, the participating centre fits the criteria set up by the accreditation body. Benchmarking could lead to an informal approval (e.g. this centre is a top performer), but is usually used to identify improvement opportunities rather than give a stamp of approval.

2. BENCHMARKING IN PRACTICE

2.1. Overview of the benchmarking process

There are different ways of carrying out benchmarking in practice. This Manual provides two suggestions: (i) Cancer centre instigated benchmarking and (ii) Third party benchmarking. Depending on the motive to start the benchmark, different steps should be taken. An overview of these steps can be found below.

2.2.1 Cancer centre instigated benchmark process

Cancer centres (both comprehensive cancer centres and clinical cancer centres) and also general hospitals with cancer care that want to improve services can use the BENCH-CAN tools. The steps below show how health facilities can perform the benchmarking exercise by themselves.

Step 1. The Cancer Centre determines "what to benchmark" i.e. Benchmarking tool 1 (BT1)[1] for a cancer institution as a whole or Benchmarking tool 2 (BT2)[2] for the cancer care pathway in either a general hospital of a cancer centre, or a clinical cancer centre possibly supplemented with the tool measuring patient experience (See Chapter 3.2). A facility can also decide to choose "what to benchmark" together with the partners selected in *Step 2.*

Step 2. The healthcare facility chooses benchmarking partners that are willing to join the benchmarking exercise in the format decided in *Step 1*. Depending on the goal of the benchmark health care facilities can perform the benchmark on a local, national or

[1] *OECI Comprehensive Cancer Centre:* 'Comprehensiveness' is designated to those centres that have a well-established combination of fundamental and translational cancer research, with a sufficient portfolio of cancer care services extending along the total care pathway. The following features are considered to be essential for this particular category: (i) A highly innovative character and multidisciplinary approach using the potential of basic, translational and clinical research and clinical facilities and activities, organised in a sufficiently identifiable entity, (ii) A direct provision of an extensive variety of cancer care tailored to the individual patient's needs and directed towards learning and improving the professional, organisational and relational quality of care, (iii) Broad activities in the area of prevention, education, and external dissemination of knowledge and innovation. In order to accentuate the differences with other cancer centres, a CCC separates itself in the following points: (i) High level of infrastructure, expertise and innovation in the field of oncology research, (ii) Maintenance of an extensive network including all aspects of oncology treatment and research, (iii) Related to an academic/university centre or is an academic centre (OECI A&D Manual: http://oeci.eu/Documents/OECI_ACCREDITATION.pdf).

[2] *Tumour services (Cancer Units)*: Cancer Units are defined as clinical facilities or hospital departments covering at least radiotherapy and medical or surgical oncology. Additionally they have a formalized collaboration with other hospital specialties (Wulff CN., 2012).

international level. Cancer centres could decide to benchmark themselves against other cancer centres (external benchmarking), but if looking at the pathway also against general hospitals (generic benchmarking).

Step 3. All participating facilities should agree on the terms under which they will perform the benchmark. A good starting point for this discussion is the benchmarking code of conduct which is attached to this Manual (See in Annex 4). It is especially important to discuss the issue of confidentiality. It should be decided which facility will collect all the data to perform an analysis. The most likely option is the initiator (analysing institute).

Step 4. All participating centres form an internal benchmarking team that will be responsible for the data collection. (See Chapter 2.3)

Step 5. All participating facilities download the appropriate tools from this Manual (See Annex 1-3). All facilities agree on a deadline for the data collection. It is recommended to take at least 3 months for the data collection. During these months the internal benchmarking team collects data on the indicators described in the chosen tool.

Step 6. On the agreed deadline all facilities send their filled in tools to the analysing institute.

Step 7. The analysing institute compiles all the results in an initial report.

Step 8. To get more information the facilities can decide to organize a round table meeting to discuss the results or the initiating facility (analysing institute) can decide to visit those institutes whose data was not completely clear (See Annex 4 for a suggested Site visit agenda).

Step 9. After all the data is collected and verified the analysing institute performs the analysis (See Chapter 4) and sends the results of the benchmarking exercise to the participating facilities in the form of a report (See Annex 4 for a Benchmarking report template).

Step 10. All participating facilities can then agree on those good or best practices which can be shared within their own benchmarking group or they can be made public in the BENCH-CAN good practice database on the www.oeci.eu/Benchcan/ website (See Annex 4 for a Good practice questionnaire).

Step 11. In order for the results to really reach the facility it is recommended that the internal benchmarking team presents the results to the relevant management within the facility. See The Improvement action plan template in Annex 4 for how to use the results for quality improvement.

2.2.2. Third party benchmarking

Cancer centres and other healthcare facilities can decide to hire a third party to serve as an objective, evaluating party in the benchmarking process. This third party can be any company or an

independent professional body with experience in benchmarking. In this case the following steps may apply:

Step 1. The healthcare facility applies at the third party to initiate the benchmarking exercise. Facilities could pose suggestions on other institutions to include in the benchmark or ask the third party to recruit benchmark partners.

Step 2. The third party recruits other health facilities or contacts the suggested facilities and sends the benchmarking code of conduct (See Annex 4) and an agreement that all centres agree to the terms discussed in the code. It is especially important to discuss the issue of confidentiality. All participating facilities should be comparable which means that the main characteristics of all partners need to be defined. All parties also have to decide on "what to benchmark" i.e. BT1 for cancer institution as a whole or BT2 for the cancer care pathway in either a general hospital of a cancer centre. All parties could decide to supplement the tools with the patient experience measurement (See Annex 3).

Step 3. All participating centres set up an internal benchmarking team that will be responsible for the data collection and fill in the "Project planning" sheet (See Annex 4), which needs to be sent back to the third party.

Step 4. The third party sends the BENCH-CAN questionnaire to all participating facilities. Depending on the topic of the benchmark this might only be BT1 or BT2 (See Annex 1) including the quantitative tool (See Annex 2) or supplemented with the patient questionnaire (See Annex 3). All facilities and the third party agree on a deadline for the data collection. Experience shows that three months will be needed for data collection. During these months the internal benchmarking team collects data on the indicators described in the different tools.

Step 5. On the agreed deadline all facilities send their filled in tools to the third party.

Step 6. The third party performs an initial analysis of the data to see whether all questions were filled in correctly and whether everything is clear.

Step 7. It is an option for the third party team (external review team) to perform a site visit at each participating facility. The review team sends the questions identified in step 6 to the facility so that they can prepare themselves effectively.

Step 8. The healthcare facility prepares for the site visit by making sure the appropriate people are available to answer those questions identified in step 6 (See Annex 4).

Step 9. The third party performs a 1-2 day site visit at the health facility (See Annex 4). For suggestions on who to include in the review team see Chapter 3.2.

Step 10. After a recommended maximum time of 6 weeks the review team sends a summary report of the site visit which needs to be checked by the internal benchmarking team. This

report is not the benchmark report, but only to verify that the review team understood everything correctly during the site visit.

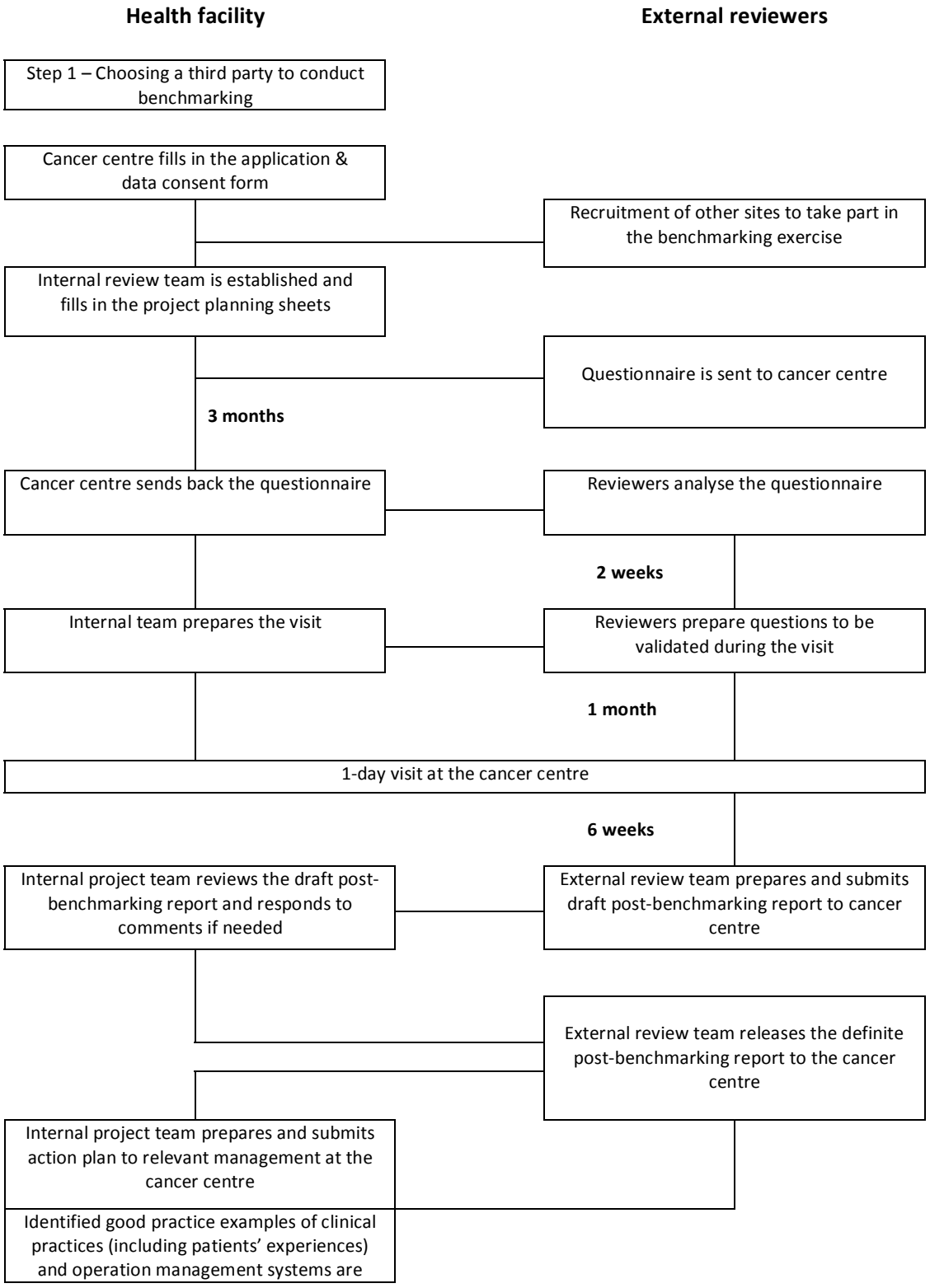
Step 11. The internal benchmarking team checks the site visit report and if needed sends the revisions to the review team.

Step 12. After all the data is checked the review team performs the analysis and sends the results of the benchmarking exercise to the participating facilities in the form of a report (See Annex 4). The review team can identify good or best practices which can be added into a good practice database, like for example into the BENCH-CAN database.

Step 13. It is recommended that the internal benchmarking team presents the results to the relevant management within the facility so that the results effectively reach the facility. See Improvement action plan template in Annex 4 on how to use the results for quality improvement.

The flowchart below (Figure 1) summarises the steps of third party benchmarking. However, each benchmarking project is different and can have different processes, steps. Therefore the model presented does not necessarily fit all situations and should be adapted to particular circumstances.

Figure 1: Steps in third party benchmarking



identified in the cancer centre(s) and included in a practical knowledge database.

2.3. The benchmarking actors

Different parties (actors) are involved while doing a benchmarking exercise. Here we describe the roles and responsibilities of all possible stakeholders involved in benchmarking.

Cancer institutes

All health facilities providing cancer care across Europe can participate in benchmarking using the BENCH-CAN tools. This includes cancer centres or cancer departments/units at general hospitals.

Internal benchmarking team (within the institution)

Within each institution participating in the benchmarking exercise a team carries out the benchmarking. This team is called the *internal benchmarking team*. In addition to a project leader the team must include at least one person from each of the following groups:

- clinicians,
- hospital managers,
- patient organisation representative, and
- researchers

In addition, other staff members can also participate in the exercise:

- staff from quality management,
- staff from IT department,
- finance or health economics expert,
- coordinator of the review and logistics,
- human resources representatives.

External benchmarking team (outside the institution)

When third party benchmarking is conducted, the team that carries out the benchmarking exercise by organising the process, providing instructions, tools, reviewing and analysing the collected data, visiting the cancer centres, and producing a report with recommendations is called *external benchmarking team*. It is usually composed of 4-6 people comprising:

- clinicians,

- hospital managers,
- patient organisation representative, and
- researchers at the health field.

Members of the external benchmarking team can receive training on benchmarking. Within the BENCH-CAN project this has been designed using both the available scientific literature on benchmarking as well as the expertise of staff involved in the OECI Accreditation and Designation Programme (van Lent et al, 2010; Thonon et al, 2015).

No previous experience of benchmarking is necessary to participate in either the internal or external benchmarking exercises although those who will work with the data should have skills and experience in research. The template 'Project plan for cancer centre to organize self-assessment' can be found in Annex 4.

3. THE BENCH-CAN BENCHMARKING TOOLS

In the framework of the BENCH-CAN project different types of tools have been developed using both qualitative and quantitative approaches, which can be used for different types of benchmarking discussed in Chapter 2.1.

Here we present the benchmarking tools for comprehensive cancer centres and tumour pathways of general hospitals. The tools have been developed by the BENCH-CAN Partnership with the lead of NKI-AVL and PANAXEA. Due to the fact that this was the first pilot of the benchmark system, more iteration will be necessary to fully exploit its potential.

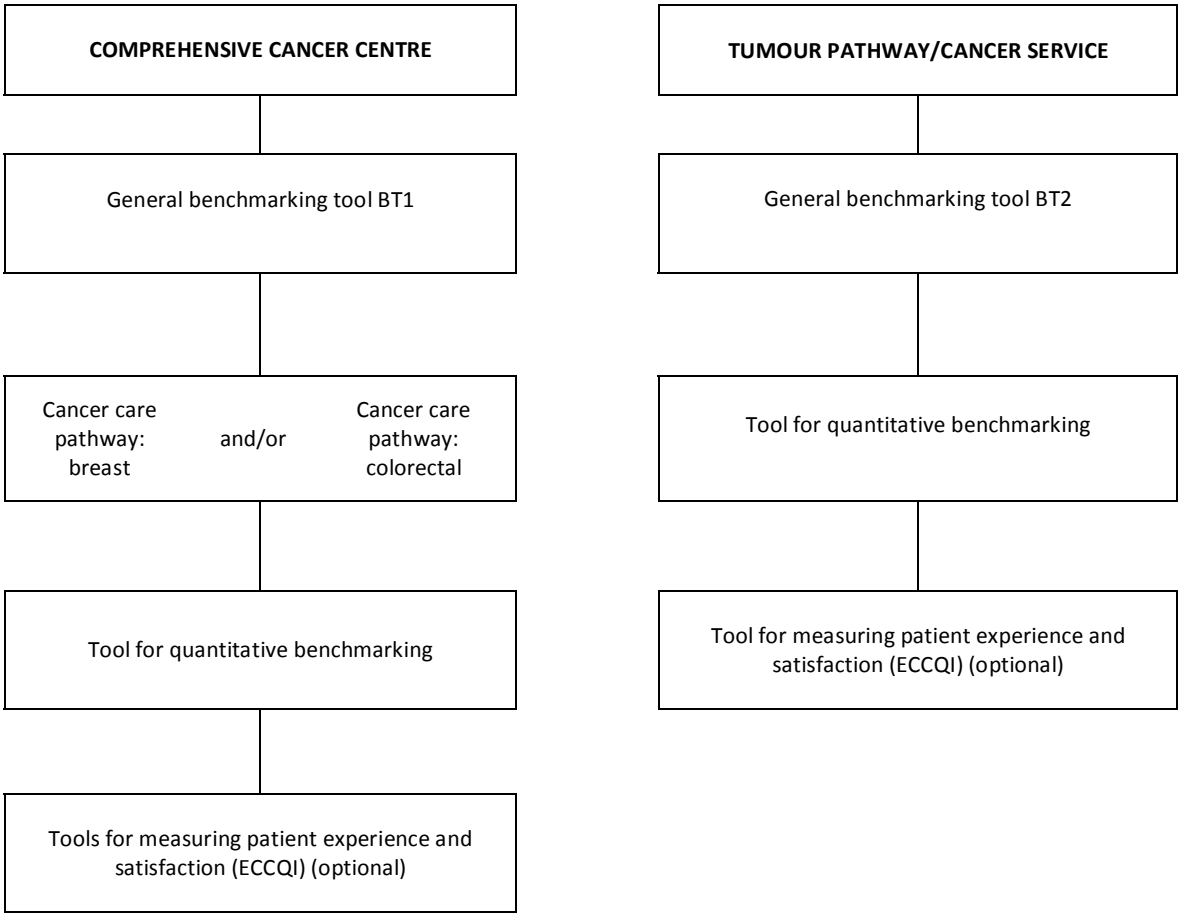
Who can use the tools and for what?

The benchmarking tools consist of several elements. Depending on the type of institution and purpose of the benchmark (benchmarking a specific process or the whole of an organization) the tools are used for:

1. General benchmarking for (i) cancer centres or health institutions delivering only cancer care and (ii) pathways for cancer centres (for colorectal cancer and breast cancer) (BT1)
2. General benchmarking for cancer services and pathways (BT2)
3. Quantitative benchmarking for all types of institutions
4. Measuring patient experience and satisfaction for all types of institutions

Figure 2 gives an overview about these benchmarking tools and institution types.

Figure 2: Overview of tools and institutions



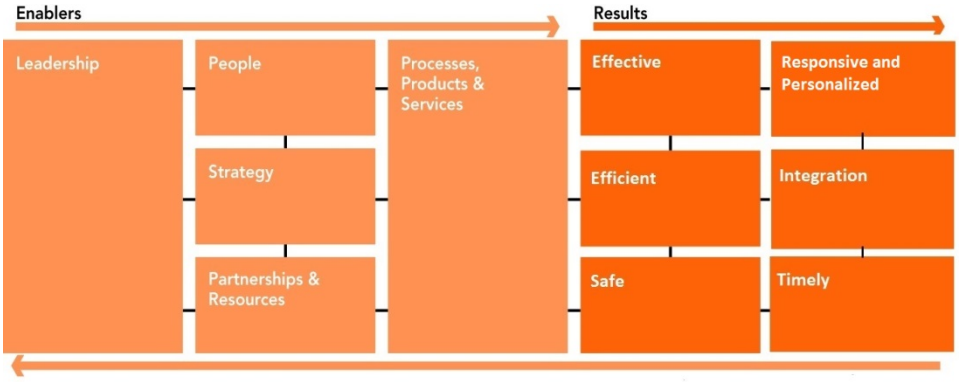
3.1. General benchmarking tools for cancer centres and cancer pathways

Two general tools have been developed using qualitative indicators: (i) for cancer centres (BT1) and (ii) for tumour services/cancer care pathways (BT2). These tools have been developed within a framework based on the European Foundation for Quality Management (EFQM) Model and the Institute of Medicine (IOM) domains of Quality. They look at quality and value from two perspectives.

The European Foundation for Quality Management published a model for performance-assessment and identification of key strengths and improvement areas. This model is a comprehensive framework, by which all important aspects of an organisation and their relationships with each other can be analysed. It includes 9 criteria in which the organisational structure and processes (enablers) are considered as well as the results, which can be demonstrated by outcome measures (Hayes, 2007). The model provides a good basis for organisations to compare themselves to other organisations, e.g. by means of benchmarking. The categories show the various aspects of an organisation. Good performance in the enabler's domains is expected to lead to good performance in the results domain. For the framework used in the questionnaire only the enablers are used. For the results the IOM domains of quality are used.

According to the Health Resources and Systems Administration (HRSA) Office of Health Information Technology and Quality[3], *"Quality healthcare is the provision of appropriate services to individuals and populations that are consistent with current professional knowledge, in a technically competent manner with good communication, shared decision-making and cultural sensitivity. Good quality healthcare is evidence based; increases the likelihood of desired health outcomes; and, addresses six aims - safe, effective, patient-centred, timely, efficient and equitable - using a systems approach to continuously improve clinical, operational and financial domains.*" For the benchmarking questionnaire the domains of quality are adapted into effective, efficient, safe, responsive and personalized, integration, and timely as shown in Figure 3.

Figure 3: The BENCH-CAN Framework



For each domain qualitative indicators have been developed. The domains of "Efficient" and "Responsive and personalized" are an exception. They are measured with the help of sub-tools. To measure the domain of efficiency quantitative indicators are used that look at quantitative and financial aspects of cancer care.

Please note that the *full version of the general benchmarking tools with instructions* is available in Annex 1 both attached to this document and as a separate downloadable WORD file.

General benchmarking tool (BT1)

1) Qualitative indicators for benchmarking cancer centres or health institutions delivering only cancer care

The indicators of this tool generate information for comparing/benchmarking and aim to measure what makes organizations perform better. The questionnaire looks at the institute as a whole and assesses the different departments within a cancer centre. Both process indicators and outcomes indicators are assessed.

3 HRSA Office of Health Information Technology and Quality. Quality Improvement and Safety Net Providers; Health care for people who are poor should never be poor health care : http://www.hrsa.gov/healthit/hitquality.html

1. Leadership

1.1 Organization	**Indicator 1.1a: Organogram**
1.2 Communication	**Indicator 1.2b: Communication with other parties**

2. People

2.1 Staff turnover	**Indicator 2.1a: Yearly turnover rate**
	Indicator 2.1b Voluntary termination of contract and average length of contract
	Indicator 2.1c Voluntary termination of contract and average length of contract
	Indicator 2.1d Exit interviews
	Indicator 2.1e: Information exit interviews
2.2 Staff training	**Indicator 2.2a: Types of education offered in-house**
	Indicator 2.2b: Education needs analysis
	Indicator 2.2c: Staff training
2.3 Recruitment	**Indicator 2.3a: Responses to vacancies**

3. Strategy

3.1 Focus	**Indicator 3.1a: Focus on tumour type- care**
	Indicator 3.1b: Focus on tumour type- research
	Indicator 3.1c: Organizational structure of research
	Indicator 3.1d: Top 3 most common tumours
3.2 Quality improvement	**Indicator 3.2a: Strategies/systems for quality improvement**
	Indicator 3.2b: Measurable goals
3.3 Risk and safety management	**Indicator 3.3a: Risk and safety management**
	Indicator 3.3b: Medication management
3.4 Adverse events	**Indicator 3.4a: Adverse event analysis**
	Indicator 3.4b: Results adverse events analysis

4. Partnerships and resources

4.1 Cooperation with universities	**Indicator 4.1a: Description of cooperation agreements with universities**
	Indicator 4.1b: Number of physicians with appointments (contracts) at universities / professorships
4.2 Cooperation with external partners	**Indicator 4.2a: Organization of collaboration with other institutes/care providers**
	Indicator 4.2b: External partners
	Indicator 4.2c: Transition protocol
4.3 ICT	**Indicator 4.3a Electronic patient record (EPR)**
	Indicator 4.3b Computerized physician order entry (CPOE)
	Indicator 4.3c ICT support research
	Indicator 4.3d External exchange

5. Processes, products and services

5.1 Patient centred	**Indicator 5.1a: Case managers**
	Indicator 5.1b: Patients' participation in the diagnostic and treatment

	process
	Indicator 5.1c: Patients' participation in strategy development
	Indicator 5.1d: Patients' education
	Indicator 5.1e: Patients reminders
5.2 Guidelines	**Indicator 5.2a: Guideline access**
	Indicator 5.2b Guideline to protocol
5.3 Patient safety	**Indicator 5.3a: Ensuring patient safety**
5.4 Follow up	**Indicator 5.4a: Follow-up system**
5.5 Survivorship	**Indicator 5.5a: Description of support**

6. Effective

6.1 Mortality rates	**Indicator 6.1a: Types of mortality rates**
	Indicator 6.1b: Colorectal surgery mortality
	Indicator 6.1c: Breast surgery mortality
6.2 Complication rates	**Indicator 6.2a: Complication rates registration**
	Indicator 6.2b: Complication rates

7. Safe

7.1 Work- safety	**Indicator 7.1a: Incidents with hazardous materials and products**
7.2 Patient safety	**Indicator 7.2a: Patient safety monitoring**
	Indicator 7.2b: Patient safety indicators
7.3 Patient safety (surgeries)	**Indicator 7.3a: Number of surgeries per year**
7.3 Patient safety (surgeries)	**Indicator 7.3b: Number of surgeries for resection of the colon in colorectal cancer patients per year**
	Indicator 7.3c: Number of skin-sparing mastectomies in breast cancer patients per year
7.4 Patient safety (sepsis and pressure ulcers)	**Indicator 7.4a: Sepsis after the insertion of a drip-feed into the vena cava superior or vena cava inferior**
	Indicator 7.4b: Percentage of patients who get pressure ulcers during their stay in hospital

8. Responsive and personalized

8.1 Patient satisfaction survey	**Indicator 8.1a: Patient satisfaction survey**

The European Cancer Consumer Quality Index developed for the BENCH-CAN project; the ECCQI can be used to measure the rest of the domain of Responsive and personalized (See Annex 3).

9. Integrated care

9.1 Multidisciplinary teams	**Indicator 9.1a: Composition of multidisciplinary teams**
	Indicator 9.1b: Patients treated by multidisciplinary teams
9.2 Research-care integration	**Indicator 9.2a: Research-care**

10. Timely

10.1 Waiting and throughput times registration	**Indicator 10.1a: Waiting and throughput times registry**
10.2 Waiting and throughput times	**Indicator 10.2a: Waiting time first visit to institute**
	Indicator 10.2b: Average waiting time between first visit and diagnosis
	Indicator 10.2c: Average waiting time between diagnosis and establishing the treatment plan
	Indicator 10.2d: Average waiting time between establishing treatment plan and first treatment

2) Qualitative indicators for benchmarking pathways (breast cancer or colorectal cancer) for cancer centres

The following indicators are related to cancer care pathways. Cancer care pathways are detailed, evidence-based processes for delivering cancer care for specific patient presentations, including the state and stage of disease. They also include described steps for diagnosis and after-care. There are indicators for colorectal tumours (part A) as well as for breast cancer (part B).

Pathway for colorectal cancer (Part A)

A.1 Pathway development	**Indicator A 1.1 Pathway example**
	Indicator A 1.2: Pathway development
	Indicator A 1.3: Colorectal pathway evaluation
	Indicator A 1.4: Results pathway evaluation
A.2 Pathway staff	**Indicator A 2.1: Multidisciplinary team members**
	Indicator A 2.2: Background multidisciplinary team members
A.3 Diagnosis	**Indicator A 3.1: Histopathology reports**
A.4 Follow-up	**Indicator A 4.1: Follow-up**

Pathway for breast cancer (Part B)

B.1 Pathway development	**Indicator B 1.1: Pathway example**
	Indicator B 1.2: Pathway development
	Indicator B 1.3: Breast pathway evaluation
	Indicator B 1.4: Results pathway evaluation
B.2 Pathway staff	**Indicator B 2.1: Background multidisciplinary team members**
B.3 Diagnosis	**Indicator B.3.1: Completeness of clinical and imaging diagnostic work-up**
B.4 Follow-up	**Indicator B.4.1: Follow-up**

General benchmarking tool for cancer services and pathways (BT2)

Qualitative indicators for cancer services and pathways

The indicators of this questionnaire are for cancer services or pathways. They look at the cancer care pathway and can be used by cancer centres that want to benchmark part of their services or general hospitals that have a well-developed oncology department. The tool focusses on Breast cancer and Colorectal cancer as these were the diagnostic fields that we used for the pilot series in the BENCH-CAN project, but can also be used for other types of cancer.

1. Leadership

1.1 Pathway director	**Indicator 1.1a: Pathway director**

2. People

2.1 Pathway staff	**Indicator 2.1a: Multidisciplinary team members**
	Indicator 2.1b: Background multidisciplinary team members
2.2 Staff training	**Indicator 2.2a: Staff training**

3. Strategy

3.1 Pathway development	**Indicator 3.1a: Pathway example**
	Indicator 3.1b: Pathway development
	Indicator 3.1c: Pathway evaluation
	Indicator 3.1d: Results pathway evaluation
3.2 Risk management	**Indicator 3.2a: Risk management**
	Indicator 3.2b: Incident reports
	Indicator 3.2c: Medication management

4. Partnerships and resources

4.1 Cooperation with other institutes	**Indicator 4.1a: Organisation of the collaboration with other institutes/care facilities**
	Indicator 4.1b: Pathway development
	Indicator 4.1c: Transition protocol
4.2 ICT	**Indicator 4.2a: Electronic patient record (EPR)**
	Indicator 4.2 b: Computerized physician order entry (CPOE)
	Indicator 4.2c: ICT support research
	Indicator 4.2d: External exchange

5. Processes, products and services

5.1 Guidelines	**Indicator 5.1a: Guideline access**
	Indicator 5.1b: Guideline to protocol
5.2 Patient participation	**Indicator 5.2a: Patient participation diagnostic and treatment process**
	Indicator 5.2b: Patient participation strategy development
5.3 Communication	**Indicator 5.3a: Case managers**
	Indicator 5.3b: Information
	Indicator 5.3c: Communication with other parties

5.4 Services	**Indicator 5.4a: The institute provides patients with reminders of visits**
5.5 Patient safety	**Indicator 5.5a: Ensuring patient safety**
5.6 Survivorship	**Indicator 5.6a: Description of support**

6. Effective

6.1 Diagnosis	**Indicator 6.1a: Completeness of colorectal diagnostic work-up**
	Indicator 6.1b: Completeness of breast cancer diagnostic work-up
6.2 Follow-up	**Indicator 6.2a: Follow-up colorectal tumours**
	Indicator 6.2b: Follow-up breast cancer
6.3 Mortality rates	**Indicator 6.3a Types of mortality rates**

7. Safe

7.1 Patient- safety	**Indicator 7.1a: Complication rates**
	Indicator 7.1b: Complication rates data
	Indicator 7.1c: Patient safety incidents
7.2 Work- safety	**Indicator 7.2a Incidents with hazardous materials and products**
7.3 Patient safety (surgeries)	**Indicator 7.3a: Number of surgeries per year**
7.3 Patient safety (surgeries)	**Indicator 7.3b: Number of surgeries for resection of the colon in colorectal cancer patients per year**
	Indicator 7.3c: Number of skin-sparing mastectomies in breast cancer patients per year
7.4 Patient safety (sepsis and pressure ulcers)	**Indicator 7.4a: Sepsis after the insertion of a drip-feed into the vena cava superior or vena cava inferior**
	Indicator 7.4b: Percentage of patients who get pressure ulcers during their stay in hospital

8. Responsive and personalised

8.1 Patient satisfaction survey	**Indicator 8.1a: Patient satisfaction survey**

The European Cancer Consumer Quality Index developed for the BENCH-CAN project the ECCQI can be used to measure the rest of the domain of Responsive and personalised (See Annex 3).

9. Integrated care

9.1 Research-care integration	**Indicator 9.1a: Research-care**
	Indicator 9.1b: Clinical trials

10. Timely

10.1 Waiting and throughput times registration	**Indicator 10.1a: Waiting and throughput times registry**
10.2 Waiting and throughput times	**Indicator 10.2a: Waiting time first visit to institute**
	Indicator 10.2b: Average waiting time between first visit and diagnosis
	Indicator 10.2c: Average waiting time between diagnosis and establishing

	the treatment plan
	Indicator 10.2d: Average waiting time between establishing treatment plan and first treatment

3.2. Quantitative benchmarking tool – Cost and volume collection

The quantitative benchmarking tool was developed to gain insight into the relative operational efficiency and resource allocation of the participating centres. This tool was also created in close collaboration with the partners and stakeholders.

The framework contains 141 indicators categorized in seven sections, as shown in Table 1. The seven categories were: 1) Medical activities per annum (e.g. number of inpatients visits and number of MRI scans per annum); 2) Human resources input (e.g. number of FTE by M.D's and FTE by certified nurses); 3) Institutions capacities and facilities (e.g. number of inpatients beds and number of MRI scanners); 4) Financial: human resources (e.g. FTE costs MD's, FTE costs/month all staff in radiology); 5) Diagnosing and treatments costs (e.g. average costs MRI scan, costs brachytherapy); 6) Institution characteristics for comparisons (e.g. type of institution, total institution annual budget); and 7) Institution financials (e.g. annual budget for health care and net income). (See the downloadable format of the tool in Annex 3)

The outcome parameters were categorized in the subdomains (input -, medical – and technical efficiency and the financial performance), and calculated based in the inputs on the indicators of the participating centres.

Please note that the *full version of the quantitative benchmarking tool* is available in Annex 2 both attached to this document and as a separate downloadable EXCEL file.

Table 1. Overview of the quantitative tool

Section 0.0	General instructions
Data Inputs	
Section 1.0	Medical activities per annum
Section 2.0	Human resources input
Section 3.0	Institutions capacities and facilities
Section 4.0	Financial: human resources
Section 5.0	Diagnosing and treatments costs
Section 6.0	Institution characteristics for comparisons
Section 7.0	Institution financials
Results	
Section 8.0	Appendix 1: Device costing

3.3. Tool for measuring patient experience and satisfaction

To see whether care is responsive and personalized patients are asked for their experiences with the use of a European Cancer Consumer Quality Index (ECCQI). The ECCQI is an internationally accepted patient experience survey based on the CAPHS (Consumer Assessment of Healthcare Providers and Systems) that was developed in the US. This has been translated and validated in different countries, amongst other in the Netherlands for general cancer patients, breast cancer patients and radiotherapy. This CQI was also based on the Dutch QUOTE (Quality of care through the patient's eyes) and were so far developed for Dutch patients; a paper has been published with a survey in English (Booij et al., 2013).

Please note that the *full version of ECCQI* is available in Annex 3 both attached to this document and as a separate downloadable WORD file.

The questions of the ECCQI questionnaire

1. *In the last 2 years, have you been examined, treated or had aftercare for cancer at the hospital?* If no, this questionnaire does not apply to the patient.
2. *Which form of cancer do you have or have you had?*
3. *This was diagnosed in: month/year*
4. *For which examinations or treatment have you been to this hospital in the last 2 years?*
5. *Which of the following applies most to your current situation?*
6. *When was the last time you went to this hospital for examinations, treatment or checks for cancer?*

ACCESSIBILITY

7. *Was it difficult to get to the hospital (either by your own transport, by public transport or by taxi)?*
8. *Was it difficult to park at the hospital?*
9. *Was it difficult to reach the hospital by phone?*

ORGANIZATION AT THE HOSPITAL

The following questions concern the experience of the patient of waiting times and the speed of the care process.

10. *Was your diagnosis of cancer made at this hospital within the last 2 years?*
11. *How long did it last between your referral to the hospital and your first visit there?*
12. *How long did it last between your first visit/examination and your diagnosis?*
13. *Did you hear the diagnosis sooner or later than you had expected?*
14. *Once the diagnosis was known, was it possible to start treatment as quickly as you wanted?*
15. *If you desired this, was it possible at this hospital to plan several appointments for examination and/or treatment (e.g. surgery, radiotherapy, etc.) on the same day?*

THE PATIENT'S STAY IN HOSPITAL

16. *During your treatment, did you spend one or more nights in hospital?*
17. *Were the toilet, shower and bathroom in or near the room?*

18. *Was your privacy sufficiently respected at this hospital (when changing clothes, washing/showering, during visiting hours, no information given in the presence of other patients)?*
19. *Were you able to receive visitors at the times you wanted?*
20. *Were you able to be undisturbed whenever you wished?*
21. *Was it possible to eat at the times you wished?*

SAFETY IN THIS HOSPITAL

22. *When you were being given medicine, did anyone check that it was really intended for you – by asking your name, for example, or checking your hospital wristband?*
23. *Before treatment, examination or an operation began; did anyone check that you were the right person – by asking your name and date of birth, for example?*

ATTITUDE OF HEALTHCARE PROFESSIONALS

The following questions concern the experiences of the patient with all the healthcare professionals at the hospital who were involved in the treatment of the patient – for example, nurses, radiotherapists, oncologist, and/or surgeons.

24. *Did the healthcare professionals listen to you attentively?*
25. *Did the healthcare professionals have enough time for you?*
26. *Did the healthcare professionals take you seriously?*
27. *Were there opportunities to talk with your healthcare professionals about how you felt?*
28. *Did your healthcare professionals pay attention to your loved one(s)?*
29. *Did your healthcare professionals show due respect to faith or philosophy of life?*

COMMUNICATION AND THE PROVISION OF INFORMATION

The following questions concern communication and the information the patient was given. By "communication", we mean the contact between the patient and the healthcare professionals (doctors and nursing staff).

30. *Did healthcare professionals explain things to you in ways that were clear and understandable?*
31. *Did the healthcare professionals give you information about any side-effects of the treatment?*
32. *During your treatment, were you informed about its effect (for example whether you were responding to it)?*
33. *Was the written information about the examinations or treatment clear?*

THE PATIENT'S OWN INPUTS

The following questions concern the extent to which the patient was involved in discussions about his or her care and treatment and could take part in decisions about it.

34. *If you wanted, could you take part in decisions about the care and treatment you received?*
35. *Was it possible for loved ones to be involved in discussions on your care and treatment?*

COORDINATION DURING YOUR CARE

The following questions concern the various healthcare professionals involved in the care of the patient – such as the radiologist, surgeon, internist, nurses and general practitioner/family doctor, and how they collaborated and were coordinated.

36. *Were the treatment and examinations you had from different healthcare professionals (within this hospital) well-coordinated?*

37. *Were your healthcare professionals (within this hospital) aware of the appointments you had with other healthcare professionals?*
38. *Did you always deal with the same person in this hospital – such as a doctor or nurse – when anything needed to be arranged?*
39. *Were you seen by the same care providers during your investigations and treatments?*

SUPERVISION AND SUPPORT

The following questions concern the supervision and support the patient received during the treatment process.

40. *During the diagnostic phase, was attention paid to your pain?*
41. *During the treatment phase, was attention paid to your pain?*
42. *During aftercare, was attention paid to your pain?*
43. *During the diagnostic phase, was attention paid to your complaints about fatigue?*
44. *During the treatment phase, was attention paid to your complaints about fatigue?*
45. *During the aftercare, was attention paid to your complaints about fatigue?*
46. *Did this hospital provide you with information about help with coping with emotions and other forms of counselling on this?*
47. *Did this hospital provide you with information about help with dealing with practical problems caused by cancer and other forms of counselling on this?*
48. *Did healthcare professionals (within this hospital) inform you about patient organisations?*
49. *Was it possible to talk to a spiritual or moral counsellor, such as a hospital chaplain or humanistic counsellor?*

ROUNDING OFF THE TREATMENT

The following questions concern how the course of treatment of the patient at the hospital was concluded.

50. *Was your treatment concluded at the hospital?*
51. *When your treatment in this hospital was concluded, were you informed about possible symptoms or health problems you should be aware of/watch out for?*
52. *Did you know who you could approach in this hospital with questions or problems after treatment had been concluded?*
53. *Were important people and organizations, such as your general practitioner/family doctor, homecare provider, rehabilitation centre) informed that your hospital treatment had been concluded?*
54. *Were the care and support you needed at home arranged for you?*
55. *Were you offered help with your questions about resuming your day-to-day activities (family, school, work) at the check-up?*

OVERALL OPINION OF (NAME OF HOSPITAL)

The following questions concern the overall opinion of the patient about the hospital.

56. *Which score would you award this hospital?*
57. *How likely is it that you would recommend the hospital to other patients with cancer?*
58. *Name one thing that should have been different about the care you received in the hospital*

ABOUT YOURSELF

59. What is your age?
60. Are you a male or female?
61. Please indicate highest degree of your education (including primary education but excluding short courses) & number of years:

62. How would you describe your overall physical health?
63. Did anyone help you complete this questionnaire?
64. How did this person help you?

4. ANALYSIS OF DATA COLLECTED DURING THE BENCHMARK EXCERCISE

4.1. Analysis of the qualitative data collected by the general benchmarking tool

There are different possibilities for analysis when dealing with the data collected with the tools using qualitative indicators.

We recommend using an *adapted form of qualitative content analysis* for the qualitative data. The steps of this analysis are briefly described below:

9 Steps of Adapted Qualitative Content Analysis[4]

1) Read through the data transcript (benchmark data) - make brief notes in the margin when interesting or relevant information is found of when things seem unclear or unexpected.

2) Go through the notes made in the margins and list the different types of information found.

3) Read through the list and categorise each item in a way that offers a description of what it is about or use the categories described in the attached example report.

4) Repeat the first three stages again for each data transcript.

5) When you have done the above with all of the transcripts, collect all of the categories or themes and examine each in detail and consider if it fits and its relevance.

6) Once all the transcript data is categorised into minor and major categories/themes, review in order to ensure that the information is categorised as it should be.

7) Review all of the categories and ascertain whether some categories can be merged or if some need to them be sub-categorised, if the report is followed this step can be skipped.

[4] Source: http://libweb.surrey.ac.uk/library/skills/Introduction%20to%20Research%20and%20Managing%20Information%20Leicester/page_74.htm

8) Return to the original transcripts and ensure that all the information that needs to be categorized has been so.

9) Collect all data in one report.

Rating and reporting

The different strategies described by the institutes for the various indicators can be rated by 4 parameters as it was done in the BENCH-CAN project. To make the final report easier to read these parameters can be represented by 4 colors:

Rate	Color
Excellent	
Good	
Fair	
Not available	

The *good* practices are represented by the excellent strategies. If a center has a strategy of service implanted and/or it fits the advised features by the literature it will receive a good rate. If the center has something extra, the so called good practice, they will receive an *excellent* rate. If the strategy or service is partly implemented the institute receives a *fair* rate. If the strategy or service is not implemented the institute receives the *not available* rate. Missing data will be indicated by an empty field. Not all indicators can be rated, but those indicators may still provide interesting information, therefore they are recommended to mention in the report.

Analysing the ECCQI data

The description on the analysis of the data collected by the ECCQI is described in Annex 3at the tool itself.

4.2. Analysis of the quantitative data collected by the quantitative tool

For the quantitative data collected, multiple approaches in analyzing and comparing the data are possible. In the BENCH-CAN project the team followed the following steps:

1) Check the consistency, credibility and correctness of the input data to ensure that all questions were correctly understood and that no errors were made during the data collection phase. Data outside the expected or experienced range of the indicator are highlighted as outliers.

2) Convert cost data into euros by adding conversion factor (note which date of conversion factor is chosen) and adjusted for Purchasing Power Parity (PPP) (source PPP: http://epp.eurostat.ec.europa.eu, date accessed: May 19th 2016)

3) Normalize input data where necessary to compare different type and sizes of centers. Parameters used for normalization are:
   - Openings hours of departments and/or
   - Number of inpatient beds and/or
   - Number of inpatient visits and/or
   - number of FTE

E.g. total budgets of the centers divided by total number of inpatients beds

4) Combine the provided data of all centers by putting all parameters and normalized parameters in one Excel sheet. Next, compare the participating centers (columns) on each parameter (rows) and identify possible outliers.

5) Contact the centres and provide the overview of their parameters and corrected parameters and highlight the possible outliers. Ask the centers to elaborate on the possible reasons for the outliers.

6) Analyze the output data and create charts of the most important and most divergent parameters. Explain each chart by describing possible trends, type of normalization if applicable, factors influencing the outcomes (e.g. institution size or reimbursement system) and elaborate on the possible reasons for the observed diversity. The presentation should facilitate to extract "lessons learned" for the participating centers. An example is the ratio of daycare treatments divided by the number of inpatient days, where a low ratio indicates a relatively low number of performed daycare treatments. Centers with low ratios are therefore advised to shift more to daycare treatments to increase efficiency and reduce the costs.

See also an example of qualitative analysis of outcome parameters from the BENCH-CAN project in Table 2. The selection of outcome parameters was based on the data provided by the participating centers. Parameters, which were considered important or divergent and still sufficiently comparable between the centers – as all centers differed in size, specializations and geographical locations – were selected.

Table 2. Qualitative analysis - Outcome Parameters

Qualitative analysis - Outcome Parameters

Medical efficiency

1. Origin of patients diagnosed and treated categorized by international, national and regional.
Type of normalization: none
Influences: Existence of (competitive) oncology centers in region or country and the distance to centers in neighboring countries. In addition, the familiarity and publicity of the center will play an important role in attracting new patients.

2. Number of new patients (inpatient, outpatient and daycare patients) divided by the total number of personnel FTE in the institution. Indicating the efficiency of patient turnover and work pressure.
Type of normalization: none
Influences: Size of institution, complexity tumor types, cooperation other institutions for after care and research activities, identification of new patients: new to institution or new to individual departments.

Beds and utilization

3. Efficiency daycare treatments visits. Number of daycare treatments divided by the number of inpatient visits. The higher the ratio, the more daycare treatments are performed in relation to the number of inpatient visits. Daycare treatments can – in some cases – be used as alternative for inpatient days.
Type of normalization: none
Influences: Average tumor complexity, type of daycare treatments, number of available daycare and inpatient beds, type of reimbursement or profit model, inclusion of radiotherapy patients as daycare or outpatients.

4. Efficiency outpatient visits. Number of outpatient visits divided by the number of inpatient visits. The higher the ratio, the more outpatient visits are performed in relation to the number of inpatient visits
Type of normalization: none
Influences: Average tumor complexity, type of aftercare or length of follow-up after treatment, type of reimbursement or profit model, registration system; counting each visit or each action (as center D), referral system (general practitioner will prevent unnecessary outpatient visits).

5. Inpatient beds utilization rate (%) (Number of beds multiplied with 365 days divided by the cumulative number of inpatient nights (columns) and number of inpatients beds (line)). A higher ratio indicates more efficient use of beds. Centers with a lower utilization rate have a higher flexibility, just as centers with a high number of beds, and are less likely to turn patients down due to their limited capacity.
Type of normalization: none
Influences: Tumor complexity, size of institution, number of beds defined as inpatient bed, registration of inpatients and/or collaboration with other centers in neighborhood to prevent turn down of patients

6. Daycare bed utilization rate (%) (Number of beds multiplied with 365 days divided by the cumulative number of daycare treatments (columns) and number of daycare beds or chairs (line)). A higher ratio indicates more efficient use of the beds and chairs and, hence, most likely also staff use.
Type of normalization: Openings hours of daycare department
Influences: Tumor complexity, number of beds defined as daycare beds, registration of treatments, type of daycare treatments

7. ICU bed utilization rate (%) (Number of beds multiplied with 365 days divided by the cumulative number of ICU nights (columns) and the number of ICU beds (line). A higher ratio indicates more efficient use of ICU beds and, hence, most likely also staff use.

Type of normalization: none

Influences: Type of surgeries (elective or not), type of center (only cancer of also general function including emergency care), alternative in region for emergency care, size of center, length of stay ICU

8. Average length of stay (LOS) inpatients

Type of normalization: none

Influences: Tumor complexity, palliative unit, out of hospital care or homecare, distance from home to center, inpatient chemo and radiotherapy

9. Average length of stay (LOS) ICU patients at ICU

Type of normalization: none

Influences: Tumor complexity, availability medium care department, inclusion of recovery patients after operations

Input efficiency

10. Efficiency radiology devices. Number of scans made per device in each radiology department. With figure a) MRI, b) CT, c) Mammography and d) X-ray

Type of normalization: The number of scans is normalized to a 40h workweek and the number of devices available in each center.

Influences: Possibility of outsourcing, availability scanners in center and country, institution size, number of devices, type of funding, tumor mix and type of scan (sequences) used

11. Number of devices available in nuclear medicine department. Number of PET/CT or SPECT/CT scanner available per FTE physician.

Type of normalization: Total FTE physicians

Influences: Possibility outsourcing, availability, size institution, economic status country, # machines, funding, number of FTE physicians per number of inpatients

12. Radiotherapy. Number of devices able to perform only conventional or also intensity modulated radiation therapy (IMRT).

Type of normalization: Total number FTE physicians

Influences: Tumor complexity, size institution, economic status country, type of funding, number of FTE physicians per number of inpatients.

13. Laboratory costs per inpatient. Total cost of laboratory tests normalized to the total number of daycare treatments and inpatients visits.

Type of normalization: PPP

Influences: Tumor complexity, treatment protocols; number of tests performed per patients, outsourcing laboratory, available tests, length of stay inpatients, type of medication available.

14. Costs and quantity laboratory tests performed. Average cost per laboratory test performed and the line representing the number of tests per patient (inpatients and daycare patients).

Type of normalization: PPP

Influences: Tumor complexity, treatment protocols; outsourcing laboratory, available (expensive) tests, length of stay inpatients, treatment protocols: choice of tests and availability

15. Research activities per year. Number of clinical trials started per annum divided in early and late trials, further categorized as external or self-initiated trials. The line represented the total number of new patients included in clinical trials per annum.

Type of normalization: none

Influences: Funding, type of center, size of center and research department

16. FTE dedicated to research. Total number of FTE dedicated to research, including physicians and non-medical personnel.

Type of normalization: none

Influences: Funding, type of center, size of institution and research department

Technical efficiency: Staff

17. FTE expenditures of the total institution in relation to the total number of patient visits.
Type of normalization: PPP
Influences: Salaries, economic status country, staff efficiency

18. FTE allocation across the nine main identified disciplines, as percentage (%) of total institution FTE
Type of normalization none
Influence by: Staff expenditures per specialty, laws, training nurses, overhead, research dedication, outsourcing departments.

19. Total FTE and FTE expenditures for physicians, specialized nurses and nurses A) total number of FTE of physicians and (specialized) nurses per institution. B) The number of FTE expenditures of these three specialties. C) The ratio of FTE expenditures and number of FTE of physicians versus total FTE of nurses (normal nurses and specialized nurses).
Type of normalization: FTE Expenditures are normalized using PPP
Influences: Oncology mix, laws, size of institution, education nurses, staff experience, relation FTE costs and quantity: when FTE expenditures for physicians are higher (higher ratio), it can be expected that more tasks are performed by nurses, hence, increasing the ratio FTE (specialized) nurses versus the FTE physicians.

20. Total number of inpatient visits per FTE physician. The higher the ratio, the more inpatients are treated by one FTE physician, possibly indicating a high efficiency or workload.
Type of normalization: none
Influences: Oncology mix, efficiency FTE physicians, number of specialized nurses, daycare treatments as alternative of inpatient stay, length of stay

Financial ratios

21. Debt ratio. The debt ratio is a financial ratio that indicates the percentage of a company's assets that are provided via debt. The higher the debt ratio, the greater the risks will be associated with the institutions operation. A high debt ratio will indicate a lower borrowing capacity, making it harder to invest in new equipment or buildings. Centers D and G do not have any current debts.
Type of normalization: none
Influences: Recent big (capital) investments, laws, financial performance influencing the willingness to lent money, financing in health care system

22. Solvency ratio. The solvency ratio measures the degree in which the institution can comply with its financial short- and long-term obligations. Institutions with a lower ratio will have more problems to obtain external funding for investments. Note that the solvency ratio indicates whether the cash flow is sufficient to meet their obligations, whereas the debt ratio indicates the amount of external money invested in the institution.
Type of normalization: none
Influences: Recent big (capital) investments, laws, financial performance influencing the willingness to lent money.

23. Total profit margin. The total profit margin or gross profit margin indicates the proportion of money left over from the revenues after accounting for the costs. This percentage will heavily rely on the type of healthcare system. In general, efficient institutions will have higher profit margins, which can be used to invest in e.g. new equipment or buildings.
Type of normalization: none
Influences: Healthcare system, type of refunding, operation management

For data reporting different templates can be used. Suggested benchmarking report templates can be found in Annex 4.

5. GOOD PRACTICES TO IMPROVE QUALITY OF CARE

5.1. Defining good practice

As noted earlier benchmarking is not only a measurement of performance, but it includes the study and transfer of exemplary practices.

Good practice refers to systems and processes associated with operational management and the qualitative attainment of best clinical practice for patient experience (Kay 2007). One of the key deliverables of the BENCH-CAN project was to identify good practice examples of clinical practice (including patient experience) and operations management processes at each pilot site and assess them in order to create a practical knowledge database.

5.2. Good Practice Framework

Implementing change that leads to good practice can be challenging for any types of organisations, especially in cancer care where cancer centres may be part of a larger hospital with complex organisational structures and multiple stakeholders. As the organisational structure and number of staff in the BENCH-CAN pilot cancer centres also varied, a common framework was selected that could be applied across a wide spectrum of organisations regardless of size, structure or regional differences in order to gain further insights into the selected good practices.[5]

During the benchmarking process one or several good practices have been identified at participating institutions based on the analysis of the submitted benchmarking data and the site visits. Institutions provided detailed information about the case examples using the above framework.

Providing more insights into leading good practices enable other cancer centres to implement them and raise the quality of care on a European scale, thus leading to increased benefits to patients. The developed BENCH-CAN good practice database helps foster knowledge exchange and collaboration between several European centres also committed to excellence and the improvement of their processes, clinical practice and patient experience. The BENCH-CAN good practice database is available at www.oeci.eu/Benchcan/

See Annex 4 for the Good practice questionnaire.

5 The "8-Step Process for Leading Change" developed by Harvard Business School Professor John Kotter (http://www.kotterinternational.com/the-8-step-process-for-leading-change/) was identified to present the good practices in comprehensive cancer care in a way that they are potentially measurable, replicable and adaptable at other organizations. In 2014 Kotter updated his 1996 model and revised the steps to make them relevant to today's environment. The questions in the questionnaire in Annex 4 are grouped around Kotter's updated model depicted above.

6. COSTS ASSOCIATED WITH PERFORMING THE BENCH-CAN EXERCISE

6.1. Budget Impact Analysis

In order to gain insight into the resources needed from the oncologic centres to perform the benchmarking exercise a Budget Impact Analysis (BIA) was carried out. As such, it provided an estimate of the costs of implementing benchmarking in future institutions.

To do so, the estimated amount of employee hours and associated costs for performing a benchmarking exercise like the BENCH-CAN project, solely from the perspective of the participating centres, were included in this BIA.[6]

6.2. Data collection

After the site visits, all centres participating in the pilot project were asked to estimate the amount of hours spent by each type of employee on the BENCH-CAN exercise. This included the hours spent on the activities necessary for data collection, filling in the qualitative and quantitative questionnaires, participating in the pilot visit, and responding to further questions by mail when necessary.

As the BENCH-CAN project tried to cover all facets of a specialised oncology care centre, employees covering all these aspects were involved in the data collection. To limit the variability and amount of types of involved employees, we categorised them into five groups (See Table 3 below). These categories were based on the provided data and are in agreement with '*The benchmarking actors'* as described in this Manual. Besides the amount of hours spent internally on the project we also estimated the weighted staff expenditures – corrected for purchasing power parity and currency – for each centre when performing the BENCH-CAN exercise.

6.3. Resources needed for the benchmarking exercise

The weighted expenditures on employees through wages associated with taking part in the BENCH-CAN exercise was on average €3667 ± €3068.

The amount of hours spent on the project was on average 168 ± 95 hours and varied widely between 43.5 to 256 hours, as shown in Table 3.

6 As the yields of the BENCH-CAN project have been unknown when this analysis was performed and were only indicated in the improvement plans of the participating pilot centres which were developed in a later stage, a real Budget Impact Analysis could not be performed at this stage. In addition, the yield will differ for each centre, depending on their current state in comparison to the other centres (an already good performing centre might learn less than a moderate performing centre). Hence, this part of the Manual does not describe the yields but only the internal costs associated with performing a BENCH-CAN exercise. A follow-up study should be conducted to determine the range of potential benefits for the participating centres.

Table 3. Estimated amount of hours' employees spent on the BENCH-CAN project for the pilot centres.

Centre	A	B	D	E	F	G	H
Quality manager	15	3.5	12	-	20	22	88
Project leader/coordinator/director	15	164	72	-	1.5	143	80
Financial manager	8	4	16	-	-	12	-
Head of departments (e.g. research, breast unit, ICT, HR)	5.25	37	74	-	13	27	-
Administrative staff	0.25	29	57	40	45	-	32
Clinical representatives (physicians, clinicians and patient representatives	0	1.5	1	40	1	43	56
Total amount of hours	43.5	239	232	80	80.5	247	256

Note: The three missing pilot centres were not able to provide their working hours' estimates. Moreover, missing hours do not necessarily mean that these types of employees were not involved but most likely that they were categorised differently.

The high variation in the estimated spent hours could be explained by the wide variation in data availability between centres due to differences in size, geographical location and country, different reimbursement systems, and integration of dedicated ICT systems for data collection.

Moreover, the most important factor influencing the easiness of data collection seemed the ongoing or recently finished accreditation programs by the OECI and/or dedicated ICT system for registration and automatic reimbursement.

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LIST OF ANNEXES

All tools and annexes are also available as separate, downloadable files in Word or Excel format.

BenchCan manual

ANNEX 1

GENERAL BENCHMARKING TOOLS FOR CANCER CENTRES AND CANCER PATHWAYS

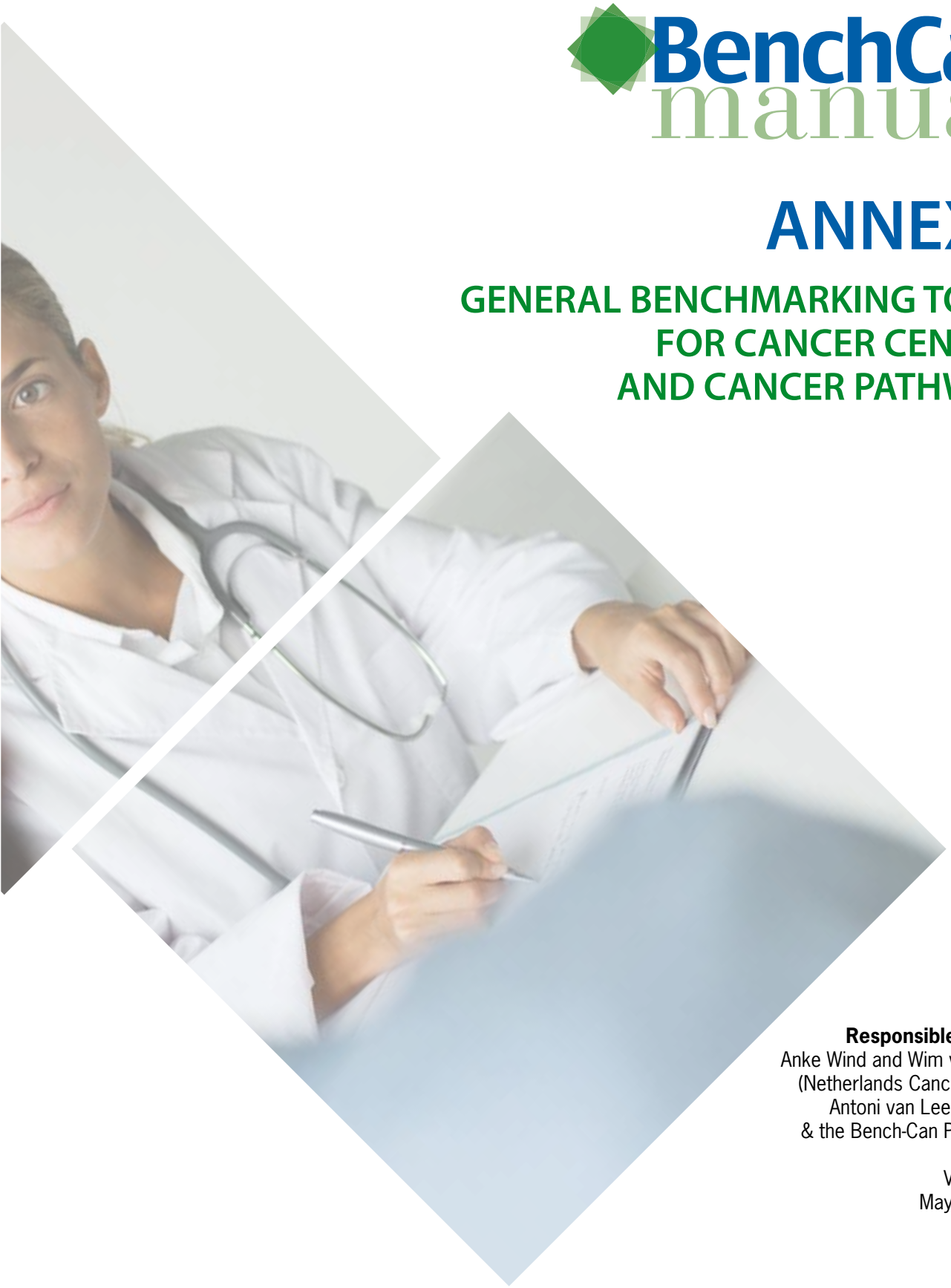

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TABLE OF CONTENTS

1.GENERAL BENCHMARKING TOOL (BT1)

1.1 Questionnaire for benchmarking cancer centres or health institutions delivering only cancer care

Organizations with the best outcomes in terms of for example mortality rate are set as top performers and orientation for best practices in the field. However, it is not always clarified what exactly makes those organizations perform better. This questionnaire generates information for comparing/benchmarking and aims to measure just what makes those organizations perform better. The questionnaire looks at the institute as a whole and assesses the different departments within a cancer centre. Both process indicators and outcome indicators are assessed.

Instruction

You can write the answers into this document following the indicator or in a separate document. If you choose the latter option, please refer to the question answered using the title of the indicator (for example 1.1a Organogram). If documents are requested, please provide these as an attachment or provide a link to the web source clearly indicating to which indicator the documents belong.

For indicators that measure items over a certain time period please give information for a given year that is noted as '*year X*'. Should this year be a problem for you, please discuss this with your benchmarking partners. mailto:a.wind@nki.nlSome questions describe a ratio, please provide both the numerator and denominator. Each indicator is described as follows:

Description: This is the definition of the indicator.

(For some indicators) Numerator: It is a subset of the denominator.

(For some indicators) Denominator: Detailed description of the client population/total number of procedures. If there is an open question indicator, the nominator and the denominator are not applicable indicator structure; therefore the denominator is not applicable.

Definitions: All the terms used in the indicator are described.

Measurement: This indicates how to measure or to fill in this indicator.

Performance level: The level at which the indicator should be delivered, for example, by department or the whole institute (institutional).

1. Leadership

1.1 Organization	**Indicator 1.1a: Organogram** Description: Provide the organogram of your institute. This indicator will not be used for benchmarking but serves as background information.
1.2 Communication	**Indicator 1.2b: Communication with other parties** Description: Please describe how the board of directors communicates with other parties. Definition: other parties include: patient representatives, clinical department heads, research department heads, government (ministry of health). Communication strategies could include meetings, phone calls, and emails. Measurement: Give an overview of communication strategies and channels and please provide documentation and information about frequency. Performance level: High administrative level.

2. People

2.1 Staff turnover	**Indicator 2.1a: Yearly turnover rate** Description: Describe the yearly staff turnover rate at the institute. If staff turnover is due to governmental regulations, please indicate. Numerator: Number of staff leaving in year X Denominator: Average number of employees in year X Definition: Employee turnover refers to the rate at which employees leave jobs in a company, this excludes leaving because the end of a (training) contract is reached. Measurement: Numerator/Denominator Performance level: Institutional
	Indicator 2.1b Voluntary termination of contract and average length of contract Description: Please describe for nurses in the clinical departments how many ended their contract based on their own initiative in the year X and the average lengths of time those people were working at the institute. Numerator 1: Number of nurses ending their contract on their own initiative in the year X Denominator 1: Total number of nurses working in clinical departments the year X Numerator 2: Total years of work of leaving nurses Denominator 2: Total number of leaving nurses Measurement: Numerator/denominator Performance level: Clinical department
	Indicator 2.1c Voluntary termination of contract and average length of contract Description: Please describe for physicians in the clinical departments how many ended their contract based on their own initiative in the year X and the average of how long those people were working at the institute.

	Numerator 1: Number of physicians ending their contract on their own initiative in the year X Denominator 1: Total number of physicians working in clinical departments the year X Numerator 2: Total years of work of leaving physicians Denominator 2: Total number of leaving physicians Measurement: Numerator/denominator Performance level: Clinical department
	Indicator 2.1d Exit interviews Description: Does the institute have exit interviews with exiting staff? Definition: Exiting staff is staff terminating their contract and thus leaving the institute. It excludes people that are leaving because their (training) contract ended. Measurement: Yes; mostly; partially; no; not applicable (If yes, please indicate which personnel is responsible for conducting the exit interviews) Performance level: Institutional, if applicable on department level
	Indicator 2.1e: Information exit interviews Description: Is the information gathered through the exit interviews used for performance improvement? Definition: Exit interview is the conversation that's being held when the staff member hears the contract is ended preliminary, or after the contract is ended. Measurement: Yes; mostly; partially; no; not applicable (If yes, please indicate how) Performance level: Institutional, if applicable on department level
2.2 Staff training	**Indicator 2.2a: Types of education offered in-house** Description: This indicator assess the education at the institute: e.g. how many courses are offered? What kinds of courses are offered? (multidisciplinary educations) To whom are the courses offered? Is it only for staff or outsiders as well? Credit points? Evaluation sheets? etc…

	Definition: A credit point relates to the point for the course being officially accredited by a university or other institution other than the cancer institute. Measurement: Give an overview of the items listed above; please divide the types of education by stakeholder: e.g. do you have courses for bachelor and/or master students, PhD students, physicians, nurses, administrative personal or others. Indicate for each course if credit point can be received and whether other people can attend. Performance level: Institutional level
	Indicator 2.2 b: Education needs analysis Description: Does the institute have a system for education needs analysis? Definition: System includes any kind of ICT based or in person based assessment. Measurement: Yes/no, yes explain if so, how often are the needs analysed? Please indicate whether there is a link with professional accreditation bodies (physician or nurse accreditation). Performance level: System for all employees that need to keep their knowledge up to date; physicians, researchers, nurses.
	Indicator 2.2c: Staff training Description: Is training on quality and risk management provided to all staff? Definition: Training could mean a day long course or any other type of training. Staff means everybody with a contract at the institute. Measurement: Is it provided? (yes/no) What is being taught? And how often is it provided? Performance level: Institutional
2.3 Recruitment	**Indicator 2.3a: Responses to vacancies** Description: Describe the average number of responses per vacancy in the year X. Please also describe how vacancies are advertised. Numerator: Responses to vacancies the year X

	Denominator: Number of vacancies the year X Definition: A vacancy is a position that is unfilled and for which the institute is looking for a new employee. Measurement: Numerator/Denominator Performance level: Institutional, data probably provided by HR-department

3. Strategy

3.1 Focus	**Indicator 3.1a: Focus on tumour type- care** Description: Does the centre have a focus on certain tumour types in terms of treatment? Definition: A tumour type is a tumour in area of the body, not a specific tumour, so cancer in the breast not a ductal carcinoma in situ. Measurement: Yes/no, if yes explain Performance level: Institutional
	Indicator 3.1b: Focus on tumour type- research Description: Does the centre have a focus on certain tumour types in terms of research? Definition: A tumour type is a tumour in area of the body, not a specific tumour, so cancer in the breast not a DCIS. Measurement: Yes/no, if yes explain Performance level: Institutional
	Indicator 3.1c: Organizational structure of research Description: Could you please describe the organizational structure of research at your centre? Measurement: organizational structure relates to the way the research departments are organized. Is there for example one PI and several post-docs and PhD's for each research groups or is research organized per department. Please also describe if there are any supportive facilities for doing research for example a patent office or a dedicated person to help with grant applications. Performance level: Institutional
	Indicator 3.1d: Top 3 most common tumours Description: Describe the 3 most common tumour types treated in the year X. Definition: A tumour type is for example breast cancer, all types

	Measurement: Most common; Second; Third. Performance level: Institutional This indicator will not be used for benchmarking but serves as background information.
3.2 Quality improvement	**Indicator 3.2a: Strategies/systems for quality improvement** Description: Describe strategies used for quality improvement (logistics, research, education, multidisciplinary teams, etc.) as listed in the year/multi year plan, if applicable. Measurement: List all quality improvement strategies/systems and describe them for the year X. Please include both external systems (accreditation for example OECI) and internal systems and quality improvement strategies based on internal evaluations. Please make a distinction between improvement strategies for care, research, the whole institute and if applicable education. Performance level: Institutional
	Indicator 3.2b: Measurable goals Description: Does the institute set out measurable goals for the quality improvement strategies? Please provide examples. Definition: Quality improvement strategies are the strategies described in the previous indicator. Measurement: Indicate for each strategy the goals that were set beforehand to evaluate the effectiveness of the strategy and, if possible, indicate the results of the strategies based on the goals for the year X. Performance level: Institutional
3.3 Risk and safety management	**Indicator 3.3a: Risk and safety management** Description: Are there strategies for risk and safety management? If so please describe these strategies. Definition: Risk management includes for example protocols for staff that work with biological/chemical hazards, waste management, evaluation of contamination risks etc… Measurement: Description of the different strategies used. Performance level: Institutional

	Indicator 3.3b: Medication management Description: How are drugs given, stored and registered/followed in inventory? How is it ensured that drugs are given to the right person? Measurement: Description of how drugs are given stored and registered/followed in inventory. How is it ensured that drugs are given to the right person? Performance level: Institutional
3.4 Adverse events	**Indicator 3.4a: Adverse event analysis** Description: Is there a program for systemic analysis of major adverse or undesirable events? If so please describe. Definition: Adverse events are events that occur in the treatment of patients and that are undesired and have a negative impact. This could be caused by a medical error for example. examples of notifications are: Near misses - Risk Factor or potential error that is intercepted before the event occurs or causes injury, Incident - Unexpected or unintended event that, or has caused or will cause damage to the patient, Adverse event -Unintentional injury or complication which results in disability, hospitalization prolongation or patient's death, as a consequence of healthcare provided, Sentinel event - Adverse event subtype that is rare but extremely serious. Measurement: Description of the analysis program, what does it measure (which events are included)? Who are allowed to notify? Can a notifier see what happened with the notification? Performance level: Institutional
	Indicator 3.4b: Results adverse events analysis Description: Are the results of the adverse events program analysed? What is done with the results? Are they used for quality improvement strategies? If so how? Measurement: Are the results analysed yes/no? What is done

	with results, are the made public for example? Please describe. Performance level: Institutional

4. Partnerships and resources

4.1 Cooperation with universities	**Indicator 4.1a: Description of cooperation agreements with universities** Description: Describe if and how the institutes cooperates with universities (in terms of PhD students, joint clinical/translational research projects etc). Measurement: If applicable, description of how cooperation is organised/documented and with whom (which universities). Performance level: Institutional, if applicable only for the research department.
	Indicator 4.1b: Number of physicians with appointments (contracts) at universities / professorships Description: How many physicians that are currently working as at the institute have a contract with a university as well? Definition: An appointment (contract) means working for the university as well, not a one-time collaboration. Measurement: Give the number of physicians that are currently working as a physician at the institute and a university. Performance level: Institutional
4.2 Cooperation with external partners	**Indicator 4.2a: Organization of collaboration with other institutes/care providers** Description: Network (local, regional, national, other) Communication (electronic file sharing, e-mail, phone, joint meetings) Definition: Other institutes could be other cancer institutes or any other care facility Measurement: Describe with whom there is collaboration and how this collaboration is organised. Describe the structure of the collaborating activities, potential treaties, agreements. Performance level: Institutional
	Indicator 4.2b: External partners Description: Describe the main external partners of the

	institute (research institutes, screening facilities etc.). Definition: External partners are all partners that provide services needed by the institute, which are not part of the institute. Measurement: List all partners. Performance level: Institutional
	Indicator 4.2c: Transition protocol Description: Describe, if applicable, the protocol for the transfer of patients to other facilities. Definition: Patients can be any patient that was treated by the institute but will no longer be and is being transferred to another facility (for example a hospice). Measurement: Describe how the transition is organised. This could be for example by providing the patients a discharge letter. Please also provide documentation. Performance level: Institutional
4.3 ICT	**Indicator 4.3a Electronic patient record (EPR)** Description: Please describe the ICT (Information and Communication Technology) system used at your institute in terms of EPR (Electronic patient record). Definitions: An ICT system is any computer or mobile device-based system, so no paper-based system. An EPR, also referred to sometimes at Electronic Health Record is a tool to view a patient's medical record via a computerised interface. Examples of data that can be stored in an EPR are: • Vital patient functions (blood pressure, temperature) • Diagnosis and treatment plans • Summary of outpatient visits Measurement: Give a description of the system and for which purposes it is used. If different ICT systems are in place for this purpose, please describe all of them. Please also indicate what kind of data is being stored, for how long, who is handling the system and how access is granted. Performance level: Institutional, if applicable departmental

	Indicator 4.3b Computerized physician order entry (CPOE) Description: Please describe the ICT system used at your institute in terms of a CPOE. Definitions: A CPOE is a process of electronic entry of medical practitioner instructions for the treatment of patients (particularly hospitalised patients) under his or her care. These orders are communicated over a computer network to the medical staff or to the departments (pharmacy, laboratory, or radiology) responsible for fulfilling the order. Measurement: Give a description of the system and for which purposes it is used. If different ICT systems are in place for this purpose please describe all of them. Please also indicate what kind of data is being stored, for how long, who is handling the system and how access is granted. Performance level: Institutional, if applicable departmental
	Indicator 4.3c ICT support research Description: Please describe the ICT system used at your institute for research purposes and how ICT supports research. Definitions: An ICT system is any computer or mobile device-based system, so no paper-based system. A research system could be for example a database. Measurement: Give a description of the system and for which purposes it is used, who or what assists researchers. If different ICT systems are in place for this purpose please describe all of them. Please also indicate what kind of data is being stored, for how long, who is handling the system and how access is granted. Performance level: Institutional, if applicable departmental
	Indicator 4.3d External exchange Description: Please describe if it is possible to share data from your institute with external parties such as other hospitals or care facilities. Measurement: Give a description of the possibilities to share information with external parties. If so, what kind of information (for example data from the EPR). Please describe with whom this data is shared.

	Performance level: Institutional, if applicable departmental

5. Processes, products and services

5.1 Patient centred	**Indicator 5.1a: Case managers** Description: Is there one staff member appointed as a contact person or "case manager" for each patient? Definition: The contact person is the central source of information for the patient; this could be a nurse, a physician, a social worker or other member of staff. Person needs to be under contract with the institute. Measurement: Is there a contact person for each patient? If not for which percentage of the patients is there a contact person? What is the most common background of the case manager (e.g. is it often a nurse, a physician etc.)? Performance level: Institutional
	Indicator 5.1b: Patients' participation in the diagnostic and treatment process Description: Please describe which options are given to patients to participate in their diagnostic and treatment process for example by having insight in their own treatment plan and health data. Definitions: Patients are all people treated at the institute both in-hospitals as in the polyclinic. Measurement: Description of the options Performance level: Institutional
	Indicator 5.1c: Patients' participation in strategy development Description: Please describe whether patients can participate in the strategy development of the institute Definitions: Patients are all people treated at the institute both in-hospital as in the polyclinic. Measurement: Describe if patients can participate (yes/no). If so, how do they participate? Performance level: Institutional
	Indicator 5.1d: Patients' education

	Description: Does the institute provide education to patients Definitions: Types of education could include for example: "Everything you need to know about chemotherapy and treating its side effects"; courses on diets for cancer patients; Preparing for operation – both body and soul. Measurement: Yes/no, yes explain if so what kind of education on which topics is provided. Performance level: Institutional level, if applicable per department
	Indicator 5.1e: Patients reminders Description: Please describe, if applicable, if and how the patients are reminded that they have a visit to the hospital coming up. If this is only in place for certain departments please indicate. Definitions: Reminders can be a mobile texts or an e-mail, for example. Measurement: Describe if patients receive reminders and how they receive these reminders. Performance level: Institutional
5.2 Guidelines	**Indicator 5.2a: Guideline access** Description: How are guidelines accessed and stored within the institute? Are the guidelines updated and controlled by experts on a regular basis, if so by whom and how often? Definitions: A guideline is an indication of policy or procedure by which to determine a course of action. Measurement: Describe the system used to store and manage guidelines within the institute (ICT, paper based, other), are the guidelines updated and by whom? Are the guidelines based on US or EU guidelines? Performance level: Institutional/per department.
	Indicator 5.2b Guideline to protocol Description: How are guidelines translated into protocols for daily use? Definitions: A guideline is an indication of policy or procedure

	by which to determine a course of action. A protocol (also referred to as a standard operating procedure) is a locally agreed standard to which clinicians and the organization can work and against which they can be audited. Measurement: Describe how protocols are developed at the institute, who develops them and how often they are updated. How is it checked if all procedures are done according to the protocol and what happens if there is a deviation from the protocol? Performance level: Institutional/per department.
5.3 Patient safety	**Indicator 5.3a: Ensuring patient safety** Description: Please describe how, if applicable, patient safety is ensured at the institute. Definitions: Patient safety is the prevention of errors and adverse effects to patients associated with health care. Measurement: Please list which strategies or systems are used to ensure patient safety and which indicators are being measured. For example infections, ISO standards etc. Please describe whether these are mandatory by the government or other regulatory agency. Performance level: Institutional
5.4 Follow up	**Indicator 5.4a: Follow-up system** Description: Please describe how the follow-up is organised at the institute Definition: Follow-up includes monitoring a person's health over time after treatment. This is usually done by regular medical check-ups. The frequency of these check-up could vary per patient, institute and type of cancer. Measurement: Describe how follow-up care is organised: e.g. is it performed by the institute itself or others? How are appointments scheduled? Is follow-up organised by specialty (surgery, radiotherapy) or by tumour type? Is follow-up included in guidelines? Performance level: Institutional
5.5 Survivorship	**Indicator 5.5a: Description of support** Description: Please describe, if applicable what kind of support

	is offered by the institute to survivors. Definitions: A survivor is a patient that has completed initial cancer management. Measurement: Describe all kinds of support that are provided by the centre itself, so not by others outside the institute. Performance level: Institutional

6. Effective

6.1 Mortality rates	**Indicator 6.1a: Types of mortality rates** Description: Please describe the types of mortality rates that your institute can provide. Definition: Mortality rate is the ratio of deaths. Measurement: What kind of mortality rates can you provide and please provide them for year X? Performance level: Institutional
	Indicator 6.1b: Colorectal surgery mortality Description: Proportion of in-hospital mortality within 30 days after colon or rectal cancer surgery (for non-urgent surgery). Numerator: Patients that died within 30 days in year X Denominator: Total number of patients treated for given tumour in the year X Definition: Only pre-planned surgeries should be counted, no urgent surgeries. Measurement: Numerator/Denominator Performance level: Institutional (data from responsible department/mortality registry)
	Indicator 6.1c: Breast surgery mortality Description: Proportion of in-hospital mortality within 30 days after breast cancer surgery (for non-urgent surgery). Numerator: Patients that died within 30 days in year X Denominator: Total number of patients treated for given tumour in the year X Definition: Only pre-planned surgeries should be counted, no urgent surgeries. Measurement: Numerator/Denominator Performance level: Institutional (data from responsible department/mortality registry)

6.2 Complication rates	**Indicator 6.2a: Complication rates registration** Description: Are complication rates registered? If so which complication rates are registered and where or how are they registered? Definition: Complication rates contain e.g. the Clavien rate for surgery or toxicities for chemotherapy. Complications can be registered in for example the patients file, in a central location etc… Measurement: Are complication rates measured (yes/no)? If so which ones are measured? How/where are they registered? Performance level: Institutional, if applicable per department
	Indicator 6.2b: Complication rates Description: Please provide data on the above described complication rates, if applicable. What is done with the information from the complication rates? Measurement: Are complication rates measured? Provide data on these rates. Please describe how this information is used within the institute, for example for quality improvement. Performance level: Institutional, if applicable per department

7. Safe

7.1 Work- safety	**Indicator 7.1a: Incidents with hazardous materials and products** Description: Please describe the number of incidents with hazardous material in the year X. Numerator: Number of incidents with hazardous material in year x Denominator: Total number of employees that worked with hazardous materials year x Definition: Hazardous material is any item or agent (biological, chemical, physical) which has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors. An incident is an occurrence or event that interrupts normal procedure or harms a human, animal or the environment. Measurement: Number of incidents in the year X. Performance level: Departmental
7.2 Patient safety	**Indicator 7.2a: Patient safety monitoring** Description: Please indicate the number of incidents with patient safety in the year X. Definition: Patient safety is the prevention of errors and adverse effects to patients associated with health care. Measurement: Please describe if monitored, the number of patient safety incident and list the top three of most common incidents. Performance level: Institutional
	Indicator 7.2b: Patient safety indicators Description: Please describe, if applicable, which indicators are measured regarding patient safety in the institute Definitions: Patient safety is the prevention of errors and adverse effects to patients associated with health care; indicators are measures that give an indication of output quality or give an indication of process quality. Measurement: Please list all patient safety indicators that are

	measured in the institute Performance level: Institutional
The following indicators are examples of patient safety indicators. Please provide data for these indicators if possible, if not, continue to domain 8.	
7.3 Patient safety (surgeries)	**Indicator 7.3a: Number of surgeries per year** Description: Is there a minimum of surgeries that need to be performed per year? Measurement: Please indicate if there is a set minimum of surgeries that have to be performed per year (this is usually done in order to ensure quality of the surgeries) and by whom this minimum is set (e.g. government, associations of medical professionals, other). Performance level: Surgical department
If the answer to previous question was no, please continue to 7.4	
7.3 Patient safety (surgeries)	**Indicator 7.3b: Number of surgeries for resection of the colon in colorectal cancer patients per year** Description: What is the minimum amount of colon resections that need to be performed per year (if applicable)? Did you manage to perform enough surgeries based on the norm in the year X? Definition: A colon resection is a surgical procedure in which all or part of the colon is resected. Measurement: Please indicate the number of surgeries that have to be performed per year (this is usually done in order to ensure quality of the surgeries) and if you managed to perform this amount in the year X. Performance level: Surgical department
	Indicator 7.3c: Number of skin-sparing mastectomies in breast cancer patients per year Description: What is the minimum amount of skin-sparing mastectomies that need to be performed per year (if applicable)? Did you manage to perform enough surgeries based on the norm in the year X?

	Definition: Mastectomy is the surgery in which the entire breast in removed. With a skin-sparing mastectomy most of the skin over the breast (other than the nipple and areola) is left intact. Measurement: Please indicate the number of surgeries that have to be performed per year (this is usually done in order to ensure quality of the surgeries) and if you managed to perform this amount in the year X. Performance level: Surgical department
7.4 Patient safety (sepsis and pressure ulcers)	**Indicator 7.4a: Sepsis after the insertion of a drip-feed into the vena cava superior or vena cava inferior** Description: Please indicate the number of cases of sepsis after the insertion of a drip into the great vein close to the heart per 1000 catheter days in the year X. Numerator: Cases of sepsis after the insertion of a drip into the great vein close to the heart Denominator: 1000 catheter days Definition: Catheter Days are days when drip-feeds are inserted in patients. A drip-feed is a device for introducing fluid drop by drop into a patient. Measurement: Numerator/Denominator Performance level: Applicable departments
	Indicator 7.4b: Percentage of patients who get pressure ulcers during their stay in hospital Description: Percentage of patients who get pressure ulcers during their stay in hospital Numerator: Number of patients that gets pressure ulcers during their stay in hospital in the year X Denominator: All patients staying at least two days in the hospital in the year X Definition: Pressure ulcers -also called bedsores- are injuries to skin and underlying tissue resulting from prolonged pressure on the skin (ulcers can occur when you are sitting or lying in the same position for a long time). Measurement: Numerator/Denominator

	Performance level: Applicable departments

8. Responsive and personalized

8.1 Patient satisfaction survey	**Indicator 8.1a: Patient satisfaction survey** Description: Does the institute have a pathway patient satisfaction survey? If so how often is this survey conducted? Measurement: Survey, yes/no? How often is it performed? What is done with the results? Performance level: Institutional, or per department if applicable

The European Cancer Consumer Quality Index developed for the BENCH-CAN project; the ECCQI can be used to measure the rest of the domain of Responsive and personalized (See Annex 3).

9. Integrated care

9.1 Multidisciplinary teams	**Indicator 9.1a: Composition of multidisciplinary teams** Description: How is the participation of personnel in multidisciplinary teams decided? Which protocols are used? Definition: Multidisciplinary teams are teams consisting of different professionals with different backgrounds that together discuss patients and decide on treatment plans. Measurement: Describe how it is decided which disciplines are in which multidisciplinary team. Is this decided based on general guidelines? Performance level: Institutional, if applicable departmental
	Indicator 9.1b: Patients treated by multidisciplinary teams Description: Are all patients treated by multidisciplinary teams? If not how is it decided who is and who isn't? Definition: Multidisciplinary teams are teams consisting of different professionals with different backgrounds that together discuss patients and decide on treatment plans. Measurement: Describe if all patients are treated by multidisciplinary teams. If not please describe the patient selection criteria. Performance level: Institutional, if applicable departmental
9.2 Research-care integration	**Indicator 9.2a: Research-care** Description: If applicable, how is the research department connected to the patient care departments? Measurement: Describe how the research department is connected to the patient care departments for example by a department of translation research, physicians doing research, research results translated from bench to bedside. Performance level: Institutional, if applicable departmental

10. Timely

10.1 Waiting and throughput times registration	**Indicator 10.1a: Waiting and throughput times registry** Description: Please describe if there are procedures for the recording of waiting and throughput times, are there maximum waiting and throughput time, are they set by the institute or for example by the government Definitions: Waiting time is the time a patient has to wait for example between referral by a GP and the first visit to the institute. Measurement: Describe if waiting and throughput times are recorded, if there are set maximum times, is the information gathered used for improvement and how. Performance level: Institutional, if applicable departmental
10.2 Waiting and throughput times	**Indicator 10.2a: Waiting time first visit to institute** Description: Describe the average waiting time between the referral and the first visit to the institute. Definition: Waiting time between referral by for example a GP and the first visit to the institute. Measurement: Describe the average waiting time in the year X. Performance level: Institutional, if applicable departmental
	Indicator 10.2b: Average waiting time between first visit and diagnosis Description: Describe the average waiting time between the first visit at the institute and the appointment in which the diagnosis is discussed. Measurement: Describe the average waiting time in the year X. Performance level: Institutional, if applicable departmental
	Indicator 10.2c: Average waiting time between diagnosis and establishing the treatment plan Description: Describe the average waiting time between the appointment in which the diagnosis is discussed and the appointment in which the treatment plan is

	discussed/established. Measurement: Describe the average waiting time in the year X. Performance level: Institutional, if applicable departmental
	Indicator 10.2d: Average waiting time between establishing treatment plan and first treatment Description: Describe the average waiting time between the appointment in which the treatment plan is discussed/established and the first treatment. Measurement: Describe the average waiting time in the year X. Performance level: Institutional, if applicable departmental

1.2. Questionnaire for benchmarking pathways (breast cancer or colorectal cancer) for cancer centres

The following indicators are related to cancer care pathways. Please choose whether to answer the indicators for colorectal tumours (part A) or for breast cancer (part B). If you like you can also do both. Cancer care pathways are detailed, evidence-based processes for delivering cancer care for specific patient presentations, including the state and stage of the disease. They also include described steps for diagnosis and after-care.

1.2.1. Pathway for colorectal cancer (Part A)

A.1 Pathway development	**Indicator A 1.1 Pathway example** Description: Please give a graphical example of a colorectal care pathway. Definition: A graphical example can be a flowchart, depicting the pathway of a patient for example. Performance level: Institutional level/department level
	Indicator A 1.2: Pathway development Description: Please describe, if applicable, how cancer care pathways/tumour services are developed within the institute. Definition: Cancer care pathways or tumour services are pathways directed at the path a patient follows from diagnosis to discharge/death. Measurement: Give an overview of existing pathways for colorectal tumours. State if there is a clear director within the development. If so who is this? Is there a written mission statement? Which system is used for the development (for example Plan Do Act Control)? Performance level: Institutional level
	Indicator A 1.3: Colorectal pathway evaluation Description: Please describe how and how often the colorectal pathway is evaluated. Is it evaluated based on goals set beforehand? Who performs the evaluation (internal/external)? Definition: Internal means by someone inside the institute and external evaluations are performed by someone outside the institute. Measurement: Description of evaluation strategies: Who performs the evaluation? How often? Which indicators are used (if applicable)? Performance level: Institutional
	Indicator A 1.4: Results pathway evaluation Description: What is done with the results of above described evaluation?

	Measurement: Please describe, if applicable, how the findings from the evaluation are implemented. Is there a system for quality improvement of pathways? Performance level: Institutional
A.2 Pathway staff	**Indicator A 2.1: Multidisciplinary team members** Description: Are there standard multidisciplinary teams for each pathway? Is this described within the pathway development? Definition: Multidisciplinary teams are teams consisting of different professionals with different backgrounds that together discuss patients and decide on treatment plans. Measurement: Description of multidisciplinary teams within the pathways, standard team members within the pathway, how is it decided who is those teams. Performance level: Institution-wide
	Indicator A 2.2: Background multidisciplinary team members Description: Please describe the general multidisciplinary team members for colorectal tumours (for example oncology nurse, surgeon, radiologist, gastro-enterologist etc.) Definition: Multidisciplinary teams are teams consisting of different professionals with different backgrounds that together discuss patients and decide on treatment plans. Measurement: Description of multidisciplinary teams members for colorectal tumours. Please indicate, if applicable, whether the nurse has special training to treat colorectal tumours (training in stoma-therapy). Performance level: Institution-wide
A.3 Diagnosis	**Indicator A 3.1: Histopathology reports** Description: Proportion of stage I to III colorectal patients who have histopathology reports which give the degree of involvement of surgical margins, including circumferential margins, the number of lymph nodes examined and the number involved. Numerator: Number of stage I to III colorectal patients who have histopathology report which give the degree of involvement of surgical margins, including circumferential margins, the number of lymph nodes examined and the number

	involved (year X). Denominator: Number of stage I to III colorectal patients excluding patients who undergo polypectomy (year X) Measurement: Numerator/Denominator Performance level: Institutional (data from responsible department)
A.4 Follow-up	**Indicator A 4.1: Follow-up** Description: Proportion of patients with colon cancer who undergo surveillance colonoscopy within 1 year after surgery Numerator: Patients with a colon cancer who undergo surveillance colonoscopy within 1 yr after surgery (5 years), Please indicate per year. Denominator: Patients with colon cancer who came to the institute for follow-up (5 years) Measurement: Numerator/Denominator Performance level: Institutional (data from responsible department)

1.2.2. Pathway for breast cancer (Part B)

B.1 Pathway development	**Indicator B 1.1: Pathway example** Description: Please give a graphical example of a breast tumour care pathway. Definition: A graphical example can be a flowchart, depicting the pathway of a patient for example. Performance level: Institutional level/department level
	Indicator B 1.2: Pathway development Description: Please describe, if applicable, how cancer care pathways/tumour services are developed within the institute. Definition: Cancer care pathways or tumour services are pathways directed at the path a patient follows from diagnosis to discharge/death. Measurement: Give an overview of existing pathways for breast tumours. State if there is a clear director within the development, if so who is this? Is there a written mission statement? Which system is used for the development (for example Plan Do Act Control)? Performance level: Institutional level
	Indicator B 1.3: Breast pathway evaluation Description: Please describe how and how often the breast pathway is evaluated. Is it evaluated based on goals set beforehand? Who performs the evaluation (internal/external)? Definition: Internal means by someone inside the institute and external evaluations are performed by someone outside the institute. Measurement: Description of evaluation strategies. Who performs the evaluation? How often? Which indicators are used (if applicable)? Performance level: Institutional
	Indicator B 1.4: Results pathway evaluation Description: What is done with the results of above described evaluation?

	Definition: See above Measurement: Please describe, if applicable, how findings from the evaluation are implemented, is there a system for quality improvement of pathways Performance level: Institutional
B.2 Pathway staff	**Indicator B 2.1: Background multidisciplinary team members** Description: Please describe the general multidisciplinary team members for breast tumours. Definition: Multidisciplinary teams are teams consisting of different professionals with different backgrounds that together discuss patients and decide on treatment plans. Measurement: Description of multidisciplinary teams members for breast tumours. Performance level: Institution-wide
B.3 Diagnosis	**Indicator B.3.1: Completeness of clinical and imaging diagnostic work-up** Description: Proportion of women with breast cancer who pre-operatively underwent mammography, ultrasound and physical examination. Numerator: Women with breast cancer who pre-operatively underwent mammography, ultrasound and physical examination (in the year X). Denominator: Women who came to the institute to undergo surgery for breast cancer. Measurement: Numerator/Denominator Performance level: Institutional
B.4 Follow-up	**Indicator B.4.1: Follow-up** Description: The proportion of asymptomatic patients who undergo routine annual mammographic screening and clinical evaluation every 6 months in the first 5 years after the operation. Numerator: Number of asymptomatic patients who undergo routine annual mammographic screening and clinical evaluation every 6 months in the first 5 years after the

	operation. Denominator: Total number of asymptomatic patients that came to the institute for follow-up (5 years). Measurement: Numerator/Denominator Performance level: Institutional (data from responsible department)

2. GENERAL BENCHMARKING TOOL FOR CANCER SERVICES AND PATHWAYS (BT2)

This questionnaire is for cancer services or pathways. It looks at the cancer care pathway and can be used by cancer centres that want to benchmark part of their services or general hospitals that have a well-developed oncology department. The tool focusses on Breast cancer and Colorectal cancer as these were the diagnostic fields that have been used for the BENCH-CAN pilot series, but can also be used for other types of cancer.

Instructions

Please read the description of each indicator carefully. You can write the answers in this document following the indicator or in a separate document. If you choose the latter option, please refer to the question answered using the title of the indicator (for example Indicator 1.1a: Pathway director). If documents are requested, please provide these as an attachment or provide a link to the web source clearly indicating to which indicator the documents belong.

For indicators that measure items over a certain time period, please, give information for a given year that is noted as '*year X*'. Should this year be a problem for you, please, discuss this with your benchmarking partners. Some questions describe a ratio, please provide both the numerator and denominator. Each indicator is described as follows:

Description: This is the definition of the indicator.

(For some indicators) Numerator: It is a subset of the denominator.

(For some indicators) Denominator: Detailed description of the client population/total number of procedures. If there is an open question indicator, the nominator and the denominator are not applicable indicator structure; therefore the denominator is not applicable.

Definitions: All the terms used in the indicator are described.

Measurement: This indicates how to measure or to fill out this indicator.

1. Leadership

1.1 Pathway director	**Indicator 1.1a: Pathway director** Description: Please describe if there is a clear director within the development of cancer care pathways. Definitions: Cancer care pathways or tumour services are pathways directed at the path a patient follows from diagnosis to discharge/death. The director is someone who is in charge of the pathway development. A director is also referred to as leader, manager, or main responsible person. Measurement: State if there is a clear director within the development of pathways at your institute; what the background of this director is and if this director is also involved in the evaluation. Performance level: Institutional level

2. People

2.1 Pathway staff	**Indicator 2.1a: Multidisciplinary team members** Description: Are there standard multidisciplinary teams for each pathway? Is this described within the pathway development? Definitions: Multidisciplinary teams are teams consisting of different professionals with different backgrounds that together discuss patients and decide on treatment plans. Measurement: Description of multidisciplinary teams within the pathways and how it is decided who is in those teams. Performance level: Institution-wide
	Indicator 2.1b: Background multidisciplinary team members Description: Please describe the general multidisciplinary team members for colorectal tumours and breast cancer tumours (for example oncology nurse, surgeon, radiologist, gastroenterologist etc.). Definitions: Multidisciplinary teams (MDT) are teams consisting of different professionals with different backgrounds that together discuss patients and decide on treatment plans. Measurement: Description of multidisciplinary teams members for colorectal tumours and breast cancer tumours. Please indicate if applicable, if the nurse has special training to treat colorectal tumours (training in stoma-therapy) or breast cancer. Please also indicate whether supportive staff (for example psychologists) are part of the MDT at all times, at some occasions (how is it decided when supportive staff joins the MDT) or not at all. Performance level: Institution wide
2.2 Staff training	**Indicator 2.2a: Staff training** Description: Is training on quality and risk management provided to all staff involved in the pathway? Definitions: Training could mean a day long course or any other type of training, staff means everybody with a contract at the institute. Measurement: Is it provided (yes/no)? Is it provided to

	everybody or only to certain employees? What is being taught and how often is it provided? Performance level: Institutional

3. Strategy

3.1 Pathway development	**Indicator 3.1a: Pathway example** Description: Please give a graphical example of a colorectal pathway and a breast cancer pathway. Definitions: A graphical example could for example be a flowchart that depicts the patients' pathway. Performance level: Institutional level
	Indicator 3.1b: Pathway development Description: Please describe, if applicable, how cancer care pathways/tumour services are developed within the institute. Definitions: Cancer care pathways or tumour services are pathways directed at the path a patient follows from diagnosis to discharge/death. Measurement: Give an overview of existing pathways for colorectal tumours and breast cancer tumours: for which tumour types? Since when are they used? Is there a written mission statement? Which system is used for the development (for example Plan Do Act Control)? Performance level: Institutional level
	Indicator 3.1c: Pathway evaluation Description: Please describe how and how often pathways are evaluated; if they are evaluated based on goals set beforehand and who performs the evaluation (internal/external). Definitions: Internal means by someone inside the institute and external evaluations are performed by someone outside the institute. Measurement: Description of evaluation strategies: who performs the evaluation? How often? Performance level: Institutional
	Indicator 3.1d: Results pathway evaluation Description: What is done with the results of above described evaluation?

	Measurement: Please describe, if applicable, how findings from the evaluation are implemented. Is there a system for quality improvement of pathways? Performance level: Institutional
3.2 Risk management	**Indicator 3.2a: Risk management** Description: Are there strategies for risk management? If so please describe these strategies. Definitions: Risk management includes for example protocols for staff that work with biological/chemical hazards, waste management, evaluation of contamination risks etc. Measurement: Description of the different strategies used. Performance level: Institutional
	Indicator 3.2b: Incident reports Description: Are patients and staff members able to report incidents (adverse events)? How can they do this? Definitions: Incidents could be adverse events or other situations in which a patient or staff member feels treated badly. Measurement: Describe which system is used for the reporting or incidents and what is done with these reports. Performance level: Institutional
	Indicator 3.2c: Medication management Description: How are drugs given, stored and registered/followed in inventory? How is it ensured that drugs are given to the right person? Measurement: Description of how drugs are given, stored and registered/followed in inventory and how it is ensured that drugs are given to the right person. Performance level: Institutional

4. Partnerships and resources

4.1 Cooperation with other institutes	**Indicator 4.1a: Organisation of the collaboration with other institutes/care facilities** Description: Please describe whether you are part of a network (local, regional, national, other). Please describe the collaboration to provide care and the communication. Please describe the collaboration to perform research. Definitions: Other institutes could be other cancer institutes or any other care facility. Communication could include electronic file sharing, e-mail, phone, joint meetings. Measurement: Describe with whom there is collaboration and how this collaboration is organised. Performance level: Institutional
	Indicator 4.1b: Pathway development Description: Does the collaboration with other institutes contribute to pathway development? Measurement: Explain the reasons for collaboration. For example does it lead to a better focus in tumour types treated? Etc… Performance level: Institutional
	Indicator 4.1c: Transition protocol Description: Please describe, if applicable, the protocol for the transfer of patients to other facilities. Definitions: Patients can be any patient that was treated by the institute but will no longer be and is being transferred to another facility, for example to a hospice. Measurement: Describe how the transition is organised. This could be for example by providing the patients a discharge letter, and provide documentation. If the patient goes to another care facility how is the communication with this other facility organized or is this done by the patient himself? Performance level: Institutional

4.2 ICT	**Indicator 4.2a: Electronic patient record (EPR)** Description: Please describe the ICT system used at your institute in terms of EPR (Electronic patient record) Definitions: An ICT system is any computer or mobile device-based system, so no paper-based system. An EPR, also referred to sometimes at Electronic Health Record is a way or a tool to view a patient's medical record via a computerised interface. Examples of data that can be stored in an EPR are: • Vital patient functions (blood pressure, temperature) • Diagnosis and treatment plans • Summary of outpatient visits Measurement: Give a description of the system and for which purposes it is used. If different ICT systems are in place for this purpose, please describe all of them. Please also indicate what kind of data is being stored, for how long, who is handling the system and how access is granted. Performance level: Institutional, if applicable departmental
	Indicator 4.2 b: Computerized physician order entry (CPOE) Description: Please describe the ICT system used at your institute in terms of a CPOE. Definitions: A CPOE is a process of electronic entry of medical practitioner instructions for the treatment of patients (particularly hospitalized patients) under his or her care. These orders are communicated over a computer network to the medical staff or to the departments (pharmacy, laboratory, or radiology) responsible for fulfilling the order. Measurement: Give a description of the system and for which purposes it is used. If different ICT systems are in place for this purpose, please describe all of them. Please also indicate what kind of data is being stored, for how long, who is handling the system and how access is granted. Performance level: Institutional, if applicable departmental
	Indicator 4.2c: ICT support research Description: Please describe the ICT system used at your

	institute for research purposes and how ICT supports research. Definitions: An ICT system is any computer or mobile device-based system, so no paper-based system. A research system could be for example a database. Measurement: Give a description of the system and for which purposes it is used, who or what assists researchers. If different ICT systems are in place for this purpose please describe all of them. Please also indicate what kind of data is being stored, for how long, who is handling the system and how access is granted. Performance level: Institutional, if applicable departmental
	Indicator 4.2d: External exchange Description: Please describe if it is possible to share data from your institute with external parties such as other hospitals or care facilities. Measurement: Give a description of the possibilities to share information with external parties. If so, what kind of information (for example data from the EPR). Please describe with whom this data is shared. Performance level: Institutional, if applicable departmental

5. Processes, products, and services

5.1 Guidelines	**Indicator 5.1a: Guideline access** Description: How are guidelines accessed and stored within the institute? Are the guidelines updated and controlled by experts on a regular basis, if so by whom and how often? Definitions: A guideline is an indication of policy or procedure by which to determine a course of action. Measurement: Describe the system used to store and manage guidelines within the institute (ICT, paper based, other). Are the guidelines updated and by whom? Are the guidelines based on US or EU guidelines? Performance level: Institutional/per department.
	Indicator 5.1b: Guideline to protocol Description: How are guidelines translated into protocols for daily use? Definitions: A guideline is an indication of policy or procedure by which to determine a course of action. A protocol (also referred to as a standard operating procedure) is a locally agreed standard to which clinicians and the organization can work and against which they can be audited. Measurement: Describe how protocols are developed at the institute, who develops them, how often they are updated. How is it checked if all procedures are done according to the protocol and what happens if there is a deviation from the protocol? Performance level: Institutional/per department.
5.2 Patient participation	**Indicator 5.2a: Patient participation diagnostic and treatment process** Description: Please describe which options are given to patients to participate in their diagnostic and treatment process for example by having insight in their own treatment plan and health data. Definitions: Patients are all people treated at the institute both in-hospital as in the polyclinic.

	Measurement: Description of the options Performance level: Institutional
	Indicator 5.2b: Patient participation strategy development Description: Please describe whether patients can participate in the strategy development of the institute. Definitions: Patients are all people treated at the institute both in-hospital as in the polyclinic. Measurement: Describe if patients can participate (yes/no). If so, how do they participate? Performance level: Institutional
5.3 Communication	**Indicator 5.3a: Case managers** Description: Is there one staff member appointed as a contact person or "case manager" for each patient? Definition: The contact person is the central source of information for the patient; this could be a nurse, a physician, a social worker or other member of staff. The person needs to be under contract with the institute. Measurement: Is there a contact person for each patient? If not for which percentage of the patients is there contact person? What is the most common background of the case manager (e.g. is it often a nurse, a physician etc.)? Performance level: Institutional
	Indicator 5.3b: Information Description: After informing the patient about the diagnosis, the patient is also informed about patient organisations and other relevant organisations Measurement: Please indicate if and how patients are informed about these organisations. About which organisations are colorectal and breast cancer patients informed? Performance level: Institutional, if applicable on department level
	Indicator 5.3c: Communication with other parties Description: Are other disciplines automatically informed about a patient after the patient had colorectal surgery or breast

	surgery? Is this only done by request of the patient? Which disciplines are informed? Definitions: Other disciplines are for example social workers, dieticians, stoma nurses etc… Measurement: Are disciplines informed (yes/no)? Are they informed automatically or by request? Who is informed? Performance level: Institutional level
5.4 Services	**Indicator 5.4a: The institute provides patients with reminders of visits** Description: Please describe, if applicable, if and how the patients are reminded that they have a visit to the hospital coming up. Definitions: Reminders can be a mobile texts or an e-mail, for example. Measurement: Describe if patients receive reminders and how they receive these reminders. Performance level: Institutional
5.5 Patient safety	**Indicator 5.5a: Ensuring patient safety** Description: Please describe how, if applicable, patient safety is ensured at the institute. Definitions: Patient safety is the prevention of errors and adverse effects to patients associated with health care. Measurement: Please list which strategies/systems are used to ensure patient safety and which indicators are being measured. Performance level: Institutional
5.6 Survivorship	**Indicator 5.6a: Description of support** Description: Please describe, if applicable what kind of support is offered by the institute to survivors. Definitions: A survivor is a patient that has completed initial cancer management. Measurement: Describe all kinds of support that are provided by the centre itself, so not by others outside the institute.

	Performance level: Institutional

6. Effective

6.1 Diagnosis	**Indicator 6.1a: Completeness of colorectal diagnostic work-up** Description: Proportion of stage I to III colorectal patients who have histopathology reports which give the degree of involvement of surgical margins, including circumferential margins, the number of lymph nodes examined and the number of lymph nodes involved. Numerator: Number of stage I to III colorectal patients who have histopathology report which give the degree of involvement of surgical margins, including circumferential margins, the number of lymph nodes examined and the number of lymph nodes involved (year X). Denominator**:** Number of stage I to III colorectal patients excluding patients who undergo polypectomy (year X). Measurement: Numerator/denominator Performance level: Institutional (data from responsible department)
	Indicator 6.1b: Completeness of breast cancer diagnostic work-up Description: Proportion of women with breast cancer who pre-operatively underwent mammography, ultrasound and physical examination. Numerator: Women with breast cancer who pre-operatively underwent mammography, ultrasound and physical examination (year X). Denominator: Women who came to the institute to undergo surgery for breast cancer. Measurement: Numerator/denominator Performance level: Institutional
6.2 Follow-up	**Indicator 6.2a: Follow-up colorectal tumours** Description: Proportion of patients with colon cancer who undergo surveillance colonoscopy within 1 year after surgery. Numerator: Patients with colon cancer who undergo surveillance colonoscopy within 1 year after surgery (5 year

	period). Denominator: Patients with colon cancer who came to the institute for follow-up (5 year period). Measurement: Numerator/denominator Performance level: Institutional (data from responsible department)
	Indicator 6.2b: Follow-up breast cancer Description: The proportion of asymptomatic patients who undergo routine annual mammographic screening and clinical evaluation every 6 months in the first 5 years after the operation. Numerator: Number of asymptomatic patients who undergo routine annual mammographic screening and clinical evaluation every 6 months in the first 5 years after the operation (5-year period). Denominator: Total number of asymptomatic patients that came to the institute for follow-up (5-year period). Measurement: Numerator/denominator Performance level: Institutional (data from responsible department)
6.3 Mortality rates	**Indicator 6.3a Types of mortality rates** Description: Please describe the types of mortality rates that your institute can provide for colorectal patients and breast tumour patients. Definitions: Mortality rate is the ratio of deaths compared to for example the total number of patients. Measurement: What kind of mortality rates can you provide and please provide them for the year X. Performance level: Institutional

7. Safe

7.1 Patient- safety	**Indicator 7.1a: Complication rates** Description: Are complication rates registered for colorectal tumours and breast cancer tumours? Definitions: Complication rates include for example the Clavien rate for surgery or toxicities from chemotherapy. Measurement: Are complication rates measured? If yes which ones are measured? Performance level: institutional, if applicable per department
	Indicator 7.1b: Complication rates data Description: Please provide data on the above mentioned complication rates, if applicable. Measurement: Are complication rates measured? Please provide data on these rates and explain how this data is registered. Performance level: Institutional, if applicable per department
	Indicator 7.1c: Patient safety incidents Description: Please indicate the number and type of incidents with patient safety in year X. Definitions: Patient safety is the prevention of errors and adverse effects to patients associated with health care. A patient safety incident is an incident where an adverse event or an error or accident (fall out of bed) happened. Measurement: Please describe if monitored, the number of patient safety incident and list the top three of most common incidents. Performance level: institutional, if applicable per department
7.2 Work- safety	**Indicator 7.2a Incidents with hazardous materials and products** Description: Please describe the number of incidents with hazardous material in year X. Definitions: Hazardous material is any item or agent (biological,

	chemical, physical) which has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors. An incident is an occurrence or event that interrupts normal procedure or harms a human, animal or the environment. Measurement: Number of incidents in year X Performance level: Departmental
The following indicators are examples of patient safety indicators. Please provide data for these indicators if possible, if not, continue to domain 8.	
7.3 Patient safety (surgeries)	**Indicator 7.3a: Number of surgeries per year** Description: Is there a minimum of surgeries that need to be performed per year? Measurement: Please indicate if there is a set minimum of surgeries that have to be performed per year (this is usually done in order to ensure quality of the surgeries) and by whom this minimum is set (e.g. government, associations of medical professionals, other). Performance level: Surgical department
If the answer to previous question was no, please continue to 7.4	
7.3 Patient safety (surgeries)	**Indicator 7.3b: Number of surgeries for resection of the colon in colorectal cancer patients per year** Description: What is the minimum amount of colon resections that need to be performed per year (if applicable)? Did you manage to perform enough surgeries based on the norm in the year X? Definition: A colon resection is a surgical procedure in which all or part of the colon is resected. Measurement: Please indicate the number of surgeries that have to be performed per year (this is usually done in order to ensure quality of the surgeries) and if you managed to perform this amount in the year X. Performance level: Surgical department
	Indicator 7.3c: Number of skin-sparing mastectomies in breast cancer patients per year Description: What is the minimum amount of skin-sparing

	mastectomies that need to be performed per year (if applicable)? Did you manage to perform enough surgeries based on the norm in the year X? Definition: Mastectomy is the surgery in which the entire breast in removed. With a skin-sparing mastectomy most of the skin over the breast (other than the nipple and areola) is left intact. Measurement: Please indicate the number of surgeries that have to be performed per year (this is usually done in order to ensure quality of the surgeries) and if you managed to perform this amount in the year X. Performance level: Surgical department
7.4 Patient safety (sepsis and pressure ulcers)	**Indicator 7.4a: Sepsis after the insertion of a drip-feed into the vena cava superior or vena cava inferior** Description: Please indicate the number of cases of sepsis after the insertion of a drip into the great vein close to the heart per 1000 catheter days in the year X. Numerator: Cases of sepsis after the insertion of a drip into the great vein close to the heart Denominator: 1000 catheter days Definition: Catheter Days are days when drip-feeds are inserted in patients. A drip-feed is a device for introducing fluid drop by drop into a patient. Measurement: Numerator/Denominator Performance level: Applicable departments
	Indicator 7.4b: Percentage of patients who get pressure ulcers during their stay in hospital Description: Percentage of patients who get pressure ulcers during their stay in hospital. Numerator: Number of patients that gets pressure ulcers during their stay in hospital in the year X Denominator: All patients staying at least two days in the hospital in the year X. Definition: Pressure ulcers - also called bedsores - are injuries to skin and underlying tissue resulting from prolonged pressure

	on the skin (ulcers can occur when you are sitting or lying in the same position for a long time). Measurement: Numerator/Denominator Performance level: Applicable departments

8. Responsive and personalised

8.1 Patient satisfaction survey	**Indicator 8.1a: Patient satisfaction survey** Description: Does the institute have a pathway patient satisfaction survey? If so how often is this survey conducted? Measurement: Is there a survey (yes/no)? How often is it performed? What is done with the results? Performance level: Institutional, or per department if applicable

The European Cancer Consumer Quality Index developed for the BENCH-CAN project the ECCQI can be used to measure the rest of the domain of Responsive and personalised (see appendix 3).

9. Integrated care

9.1 Research-care integration	**Indicator 9.1a: Research-care** Description: If applicable, how is the research department connected to the patient care departments? Measurement: Describe how the research department is connected to the patient care departments for example by a department of translation research, physicians doing research, research results translated from bench to bedside. Performance level: Institutional, if applicable departmental
	Indicator 9.1b: Clinical trials Description: If applicable, how are patients selected for clinical trials? Definition: In a clinical trial, participants (patients) receive specific interventions according to the research plan or protocol created by the investigators. These interventions may be medical products, such as drugs or devices, procedures, or changes to participants' behaviour, such as diet. Measurement: Describe how patients are selected for clinical trials. Are there set criteria? Who evaluates whether a patient fits the criteria? Who discusses the possibility of a clinical trial with the patient? Performance level: Institutional, if applicable departmental

10. Timely

10.1 Waiting and throughput times registration	**Indicator 10.1a: Waiting and throughput times registry** Description: Please describe if there are procedures for the recording of waiting and throughput times. Are there maximum waiting and throughput time? Are they set by the institute or for example by the government? Definitions: Waiting time is the time a patient has to wait for example between referral by a GP and the first visit to the institute. Measurement: Describe if waiting and throughput times are recorded and if there are set maximum times. Is the information gathered used for improvement and how? Performance level: Institutional, if applicable departmental
10.2 Waiting and throughput times	**Indicator 10.2a: Waiting time first visit to institute** Description: Describe the average waiting time between the referral and the first visit to the institute. Definition: Waiting time between referral by for example a GP and the first visit to the institute. Measurement: Describe the average waiting time in the year X. Performance level: Institutional, if applicable departmental
	Indicator 10.2b: Average waiting time between first visit and diagnosis Description: Describe the average waiting time between the first visit at the institute and the appointment in which the diagnosis is discussed. Measurement: Describe the average waiting time in the year X. Performance level: Institutional, if applicable departmental
	Indicator 10.2c: Average waiting time between diagnosis and establishing the treatment plan Description: Describe the average waiting time between the appointment in which the diagnosis is discussed and the appointment in which the treatment plan is

	discussed/established. Measurement: Describe the average waiting time in the year X. Performance level: Institutional, if applicable departmental
	Indicator 10.2d: Average waiting time between establishing treatment plan and first treatment Description: Describe the average waiting time between the appointment in which the treatment plan is discussed/established and the first treatment. Measurement: Describe the average waiting time in the year X. Performance level: Institutional, if applicable departmental

Please note that the *full version of these general benchmarking tools* is available also as a separate downloadable WORD file.

For further information about the general benchmarking tool please contact Anke Wind researcher at ankewind@gmail.com .

BenchCan manual

ANNEX 2

QUANTITATITE BENCHCANMARKING TOOL
Cost and volume collection

2

Responsible authors:
Isabelle Nefkens and Joris van Dijk,
PANAXEA & the BenchCan Partnership

Version 2.4
March 25, 2015

This document arises from the BenchCan project which has received funding from the European Union, in the framework of the Health Programme.

BENCHMARKING TOOL

Cost and volume collection

Version 2.4 (Issue Date: March 25, 2015)

1.0 Medical activities per annum

#	Parameters to collect	Annual unit-resource usage or Unit costs	Additional information
	Year data provided		
1	All data provided in in this workbook is/will be originated from:	20..	Calendar year all data provided in this workbook is originated from
	Institution wide activities per annum	***All parameters collected should be originated from the same year!***	
2	o # New patients		Total number of unique new oncology patients in the institution per annum, excluding patients already known in the institution in other departments i.e. a patient seen by multiple departments will count as one)
3	o # Day care treatments visits		Total number of unique daycare treatments in the institution per annum (medical and paramedical services delivered to patients that are formally admitted for diagnosis or treatments with the intention of discharging the patient on the same day)
4	o # Outpatient visits		Total number of outpatient visits in the institution (<24h stay) per annum (patients who are not formally admitted to the facility (physician's private office, hospital out-patient center or ambulatory-care center) and do not stay overnight)
5	o # Inpatient visits for ovemight stay		Number of patients spending one or more nights in the institution (>24h stay). (If one patient stayed two times for three nights this counts as two)
6	o Mean length of stay inpatients		Mean length of stay inpatients (number of days spent in the institution per inpatient stay episode)
7	o # Re-admission or emergency room visits discharged patients		Total number of hospital readmissions or emergency room visits, within 30-day post discharge, staying more than 24h (other than planned care e.g. chemotherapy sessions)
8	o # Unique ICU patients		Number of patients receiving ICU care
9	o # ICU nights		Total number of occupied ICU beds (<24h stay counts as one whereas a patient staying for 36h will counts as 2)

	Diagnosing activities per annum	
	Radiology department	
10	o Type of radiology department, please select	Insourced (performed by hospital itself) Outsourced (nothing performed by hospital itself but by a contracted company or institution) ... % insourced, ... % outsourced. The tasks which are outsources are: ...
11	o # MRI scans	Total number of unique MRI scans made per annum in the whole institution (two sequences acquired in one session for one patient counts as one scan)
12	o # CT scans	Total number of unique CT- scans made per annum in the whole institution (two type of scans acquired in one session for one patient counts as two)
13	o # Mammography	Total number of unique Mammography's made per annum in the whole institution (whole session performed in one patient counts as one)
14	o # X-ray	Total number of X-rays patients per annum in the whole institution (all images acquired in one session for one patient counts as one) excluding mammography's
	Nuclear medicine department	
15	o Type of nuclear medicine department	Insourced (performed by hospital itself) Outsourced (nothing performed by hospital itself but by a contracted company or institution) ... % insourced, ... % outsourced. The tasks which are outsources are: ...
16	o # SPECT scans	Total number of SPECT scans per annum in the whole institution (all scans acquired in one session for one patient counts as one)
17	o # SPECT-CT scans	Total number of SPECT-CT (only combined modality) scans per annum in the whole institution (all scans acquired in one session for one patient counts as one)
18	o # PET scans	Total number of PET scans per annum in the whole institution (all scans acquired in one session for one patient counts as one)
19	o # PET-CT scans	Total number of PET-CT (only combined modality) scans per annum in the whole institution (all scans acquired in one session for one patient counts as one)
	Radiotherapy department	
20	o Type of radiotherapy department	Insourced (performed by hospital itself) Outsourced (nothing performed by hospital itself but by a contracted company or institution) ... % insourced, ... % outsourced. The tasks which are outsources are: ...
21	o # Conventional radiotherapy (patients treated)	Total number of unique patients undergoing conventional radiotherapy
22	o # Conventional radiotherapy sessions per patient	Average number of conventional radiotherapy sessions per patient
23	o # Brachytherapy's (unique patients)	Total number of unique patients undergoing brachytherapy's
24	o # Brachytherapy sessions per patient	Average number of brachytherapy sessions per patient
25	o # IMRT (Intensity modulated radiotherapy)	Total number of unique patients undergoing IMRT (Intensity modulated radiotherapy)
26	o # IMRT radiotherapy sessions per patient	Average number of IMRT radiotherapy sessions per patient
27	o # IORT (intra-operative radiotherapy) (unique patients)	Total number of unique patients undergoing IORT (intra-operative radiotherapy)
28	o # IORT radiotherapy sessions per patient	Average number of IORT radiotherapy sessions per patient
29	o # Stereotactic radiotherapy (unique patients)	Total number of unique patients undergoing stereotactic radiotherapy
30	o # Stereotactic radiotherapy sessions per patient	Average number of stereotactic radiotherapy sessions per patient
	Laboratory department	
31	o Type of laboratory department	Insourced (performed by hospital itself) Outsourced (nothing performed by hospital itself but by a contracted company or institution) ... % insourced, .. % outsourced. The tasks which are outsources are: ...
32	o # laboratory tests performed	Total number of all unique laboratory test performed/requested by the institution per annum (including pathology, microbiology, blood tests etc.)

	Treatments performed per annum		
33	o # Bone marrow/stem cell transplants		Total number of unique patients undergoing bone marrow/stem cell transplants
34	o # Samplings/biopsy for tumor diagnosis		Total number of tumor samplings or biopsies for diagnosis per annum
35	o # Unique patients receiving chemo therapy (including immunotherapy)		Total number of unique patients receiving chemo therapies including immunotherapy
36	o # Total number of oncology related surgeries		Total number of oncology related surgeries performed per annum
	Research		
37	o # Early phase clinical trials activated per annum		Total number of phase 1 and/or 2 clinical trails activated per annum; Trials with healthy volunteers to test for safety issues in clinical practice or in the comparison stage: RCT with placebo group.
38	o # Late phase clinical trials activated per annum		Total number of phase 3 and/or 4 clinical trails activated per annum; test in clinical setting with other drugs etc. or studies performed after FDA/EMA approval
39	o # Self-initiated activated trials started per annum		Total number of self-initiated clinical trails by the institution
40	o # New patients included in clinical trials per annum		Total number of patients included in activated clinical trails per annum

2.0 Human resources input

#	Parameters to collect	Annual unit-resource usage or Unit costs	Additional information
	Human resources input	*All parameters collected should be originated from the same year!*	
41	o Total # FTE supportive healthcare professionals		Total number of FTE allied/supportive healthcare professionals EXCLUDING physicians (M.D.), nurses, and pharmacist. (e.g. nutritionist, optometry, paramedic, physical therapist, clinical psychologist, etc.)
42	o Total # FTE physicians		Total number of FTE M.D.'s working for patient care, research and education including compensated overtime
43	o Total # FTE pharmacists		Total number of FTE certified pharmacists
44	o Total # FTE nurses		Total number of FTE certified nurses including compensated overtime
45	o Total # FTE of specialized nurses		Total number of FTE certified specialized nurses (i.e. physicians assistants, nurse practitioners)
46	o Total # FTE clinical laboratorists		Total number of FTE clinical laboratorists working in the laboratory for e.g. pathology, microbiology and blood tests
47	o Total # allied health professionals performing research		Total number of allied health professionals who are spending part of their time on/performing research related tasks
48	o Estimated percentage of FTE spent on research		Estimated average percentage of FTE which are spent by the staff (mentioned in line above) on research
49	o Total # FTE administrative and supporting personnel		Total number of FTE administrative personnel; personnel who are not directly involved in patient treatment (e.g. recruiting staff, management of patient records, co-ordination between board of trustees and the institution, Admin, social worker, institution liaison, etc.)
50	o Total # FTE research staff non-physicians (non-M.D.)		Total FTE of research staff non M.D.; personnel who are partially or fully assigned to research (e.g. research technicians, research fellows and PhDs)
51	o Total # FTE research staff physician (M.D.)		Total FTE of research staff M.D.; M.D.'s who are fully assigned to research (i.e. MD's who are assigned as PhD candidates)
52	o Total # personnel	0	Total number of personnel working in the institution (summation of all FTE in row 38-46)
53	o Average working hours per week		Average amount of contracted working hours per week for all staff (e.g. 36, 38 or 40 hours per week)
55	o Total # FTE dedicated to research who are externally funded		Total number of FTE which are dedicated to research and are externally funded

3.0 Institutions capacities and facilities

#	Parameters to collect	Annual unit-resource usage or Unit costs	Additional information
	Capacities	*All parameters colleted should be originated from the same year!*	
	General institution		
56	o Total # day care chairs and # daycare beds		Total number of outpatient day care beds and day care chairs available in daily practice (<24h stay)
57	o # Openings hours day care beds and chairs department		Average number of openings hours of the daycare beds and chairs department per week (i.e. 40h)
58	o # Inpatient beds for overnight stay		Total number of inpatient beds available for overnight stay (>24h stay)
59	o # Operating rooms for surgeries		Number of class 1-3 operating rooms with < 500 KVE/m 3 (operating rooms exclusively used for brachytherapy should be excluded)
60	o # Adult intensive care unit beds (level 1-3)		Number of beds with the capability of at least providing basic multisystem life support; minimal capable of providing mechanical ventilation and invasive cardiovascular monitoring.
	Radiology department		
61	o # MRI scanners		Number of MRI scanners in use for MRI scans
62	o # CT scanners scanners		Number of CT scanners in use for CT scans
63	o # Mammography scanners scanners		Number of mammography cameras in use for mammography's
64	o # X-ray machines		Number of X-ray machines in use for X-ray scans
65	o # Openings hours radiology department (MRI & CT) per week		Average number of openings hours of the radiology department for regular activities per week (i.e. 40h)
	Nuclear medicine department		
66	o # SPECT cameras		Number of SPECT cameras in use for SPECT scans
67	o # SPECT-CT cameras		Number of SPECT-CT modalities in use for SPECT-CT scans
68	o # PET cameras		Number of PET cameras in use for PET scans
69	o # PET-CT cameras		Number of PET-CT modalities in use for PET-CT scans
70	o # Openings hours nuclear medicine department per week		Average number of openings hours of the nuclear medicine department for regular activities per week (i.e. 40h)
	Radiotherapy department		
71	o # Of total radiotherapy machines exc. brachytherapy's		Total amount of radiotherapy machines able to do either conventional/IMR/Intra-operative/stereotactic excluding machines only used for brachytherapy
72	o # Able to do conventional radiotherapy machines		Number of conventional radiotherapy machines used for conventional radiotherapies (External beam radiation delivered in 2D beams using linear accelerator machines)
73	o # Able to do IMR (e.g. medical linear accelerator)		Number of machines for IMR (e.g. medical linear accelerator) available for intensity modulated radiotherapy (3D beams)
74	o # Able to do intra-operative radiotherapy		Number of intra-operative radiotherapy machines
75	o # Able to do stereotactic treatment machines		Number of stereotactic treatment radiotherapy machines (both dedicated and non-dedicated machines)
76	o # Openings hours radiotherapy department per week		Average number of openings hours of the radiotherapy department for regular activities per week (i.e. 40h)

4.0 Financial: human resources

#	Parameters to collect	Unit-resource usage or Unit costs	Additional information
	Human resources expenditures	***All parameters colleded should be originated from the same year!***	
	Institution level		
77	o Total FTE expenditures in institution per month		Total FTE expenditures per month in whole institution (Excluding overtime expenditures but including on duty fees)
78	o Total compensated overtime expenditures in institution per month		Total compensated overtime expenditures in institution per month
	Profession level expenditures (Excluding overtime expenditures but including on duty fees)		
79	o Average FTE expenditures per month for one allied health professionals		Average expenditures per month on one FTE allied health professionals : healthcare professionals except physicians (M.D.), nurses, and pharmacist. (e.g. nutritionist, optometry, paramedic, physical therapist, clinical psychologist, etc.) including compensated overtime expenditures
80	o Avg. FTE expenditures/month per physician		Average expenditures per month on one FTE M.D.'s including compensated overtime expenditures
81	o Avg. FTE expenditures/month per pharmacist		Average expenditures per month on one FTE certified pharmacists including compensated overtime expenditures
82	o Avg. FTE expenditures/month per nurse		Average expenditures per month on one FTE certified nurses (excluding specialized nurses) including compensated overtime expenditures
83	o Avg. FTE expenditures/month per specialized (oncology) nurse		Average expenditures per month on one FTE certified specialized nurses (e.g. physicians assistants or nurse practitioners) including compensated overtime expenditures
84	o Avg. FTE expenditures/month per clinical laboratorist		Average expenditures per month on one FTE clinical laboratorists (for e.g. blood testing or pathological studies) including compensated overtime expenditures
85	o Avg. FTE expenditures/month administrative and supporting personnel		Average expenditures per month on one FTE administrative personnel; personnel who fulfill general management functions (e.g. recruiting staff, management of patient records, co-ordination between board of trustees and the institution etc.) including compensated overtime expenditures
86	o Avg. FTE expenditures/month research staff non-physicians (non-M.D.)		Average expenditures per month on one FTE research staff non M.D.; personnel who are partially or fully assigned to research (e.g. research technicians, research fellows, and PhDs) including compensated overtime expenditures
87	o Avg. FTE expenditures/month research staff physicians (M.D.)		Average expenditures per month on one FTE research staff M.D.; M.D.'s who are partially or fully assigned to research including compensated overtime expenditures

5.0 Diagnosing and treatments costs

#	Parameters to collect	Annual unit-resource usage or Unit costs	Additional information
	Diagnostic costs		
	Radiology department; average costs scans		
88	o 1 MRI scan		Average cost per MRI scan, including costs for associated personnel, contrast fluids, equipment and depreciation*
89	o 1 CT scan		Average cost per CT scan, including costs for associated personnel, contrast fluids, equipment and depreciation*
90	o 1 Mammography		Average cost per mammography scan, including costs for associated personnel, equipment and depreciation*
91	o 1 X-ray		Average cost per X-ray, excluding mammography's including costs for equipment, depreciation and associated personnel *
	Nuclear Medicine; average costs scans		*see Appendix 1 for a cost per scan calculation tool
92	o 1 SPECT scan		Average cost per SPECT scan, including costs for associated personnel, radiopharmaceuticals and equipment*
93	o 1 SPECT-CT scan		Average cost per SPECT-CT scan, including costs for associated personnel, radiopharmaceuticals and equipment *
94	o 1 PET scan		Average cost per PET scan, including costs for associated personnel, radiopharmaceuticals and equipment*
95	o 1 PET-CT scan		Average cost per PET-CT scan, including costs for associated personnel, radiopharmaceuticals and equipment* *
	Laboratory		*see Appendix 1 for a cost per scan calculation tool
96	o Total costs laboratory tests performed on inpatients		Total costs per annum of all laboratory tests (including the collection) of ambulatory, daycare and in-patients
	Treatment costs		
	Radiotherapy: average costs treatment		
97	o Conventional radiotherapy		Average cost per conventional radiotherapy session (including costs for associated personnel, equipment and depreciation*)
98	o IMRT (Intensity modulated radiotherapy)		Average cost per IMRT session (ncluding costs for associated personnel, equipment and depreciation*)
99	o IORT (intra-operative radiotherapy)		Average cost per IORT session (including costs for associated personnel, equipment and depreciation*)
100	o Stereotactic radiotherapy		Average cost per stereotactic radiotherapy session (including costs for associated personnel, equipment and depreciation*)
	Pharmacy		
101	o Total medication expenditures of pharmacy dept.		Total costs spent on medication provided by the pharmacy per annum for ambulatory, daycare and inpatients
102	o Total expenditures on chemotherapies, immunotherapies and biologicals		Part of the total costs (101) spent on: chemo therapies provided by the pharmacy per annum for ambulatory, daycare and in-patients, including immunotherapies and biologicals
	Cancer operations		
103	o Total costs operation room (OR) department per annum		Estimated total costs of operation room department per annum, including disposables and useables, sterilization, equipment, OR rent/depreciation and personnel wages excluding MD's (e.g. including aesthesiologist - and OR assistants excluding surgeons or aesthesiologist
104	o Openings hours OR		Average openings hours OR rooms
	Intensive care		
105	o Costs intensive care bed costs per 24h		Total costs intensive care bed for a 24h stay (including allied staff costs, machines, equipment etc.)
106	o Costs normal ward bed per 24h		Total costs normal/average ward bed for a 24h stay (including allied staff costs, machines, equipment etc.)

6.0 Institution characteristics for com

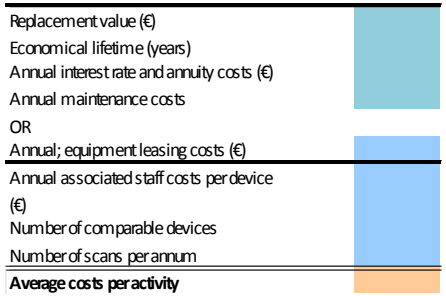
#	Parameters to collect	Annual unit-resource usage or Unit costs	Additional information
	Comparison parameters		
	Institution characteristics	*All parameters collected should be originated from the same year!*	
107	o Type of institution		
108	o Administrative status of healthcare center		
109	o Total institution annual budget		Annual expenditures of whole health care institution including clinical trial funding's and academic components (if hospital is part of bigger institution, please state total hospital budget only)
110	o Capital expenditures per m2		Total expenditures on building rent and depreciation costs divided by the total floor surface of all buildings (including storage rooms, corridors, etc.)
111	o Type of costing physicians		
	Classification by patients		
112	o Number of patients (%) regional		Please identify the number of regional patients; patients who are living in the region of the institution
113	o Number of patients (%) national		Please identify the number of national patients; patients who are not living in the region but from other parts of the country the center is situated
114	o Number of patients (%) international		Please identify the number of international patients; patients who are not living in the country the center is situated in

7.0 Institution financials

#	Parameters to collect	Annual unit-resource usage or Unit expenditures	Additional information
	Financial parameters	*All parameters collected should be originated from the same year!*	
	Revenues		
115	o Total revenues		Total revenues for the entire institution
116	o Total revenues of DRG		Total revenues through declaration of diagnose related groups (DRG)
117	o Total revenues through government		Total revenues through funding by the government (excluding DRG)
118	o Total revenues through patients payment		Total revenues through out of pocket patients payments
119	o Total revenues through clinical studies		Total revenues through clinical studies by sponsoring and industrial funding
120	o Total revenues through funds, grants and external funding		Total revenues through collection of funds and grants and external funding
121	o Total revenues through other, please specify		Through:
	o		Through:
	o		Through:
	o		Through:
	o		Through:
	Expenditures		
122	o Annual expenditures for providing health care		Annual expenditures on the direct provision of health care
123	o Annual expenditures on risk and safety management		Annual expenditures on risk and safety management, e.g. registration, monitoring and prevention of infections and adverse events, including staff and improvement expenditures
124	o Annual expenditures on survivorship programs		Annual expenditures on programs for the recovery and guidance of post active treatment patients
125	o Annual expenditures on information technology		Annual expenditures on information technology for the whole institution including staff and equipment
126	o Capital expenditures on medical equipment		Annual expenditures on buying and maintaining medical equipment
127	o Capital expenditures on infrastructure		Annual expenditures on rebuilding's, renovations, and installations
128	o Annual expenditures on education for personnel		Annual expenditures for e.g. physicians, nurses, administrative personel, for self-improvement courses, seminars etc.
129	o Annual expenditures on clinical trail related research		Annual expenditures on clinical trails related research
130	o Annual expenditures on research		Annual expenditures on research (excluding clinical trail related research)
131	o Annual expenditures other, please specify		Through:
	o		Through:
	o		Through:
	o		Through:

	Other financial parameters		
132	o Net income	€ -	Net income for the entire institution (calculated)
133	o Net income (annual report)		Net income for the entire institution, as mentioned in the annual financial report
134	o Total expenditures		Total expenditures for the entire institution, as mentioned in the annual financial report
135	o Equity		Equity for the entire institution, as mentioned in the annual financial report
136	o Total debts		Total debts for the entire institution, as mentioned in the annual financial report
137	o Total assets		Total assets for the entire institution, as mentioned in the annual financial report
138	o Current ratio		Current assets /Liability
139	o Total (profit) margin	0%	Net income / Total revenues
140	o Solvability ratio	0	Equity / Total assets
141	o Debt ratio	0	Total debts /Total assets

8.0 Appendix 1: device costing



Definitions

Replacement value(€)	Current costs for replacement of a comparable system
Economical lifetime (years)	Time till the planned replacement of the system
Annual interest rate and annuity costs(€)	Annual costs for interests and annuity of the totals ystem costs
Annual maintenance costs	Costs spent on maintained contractor average costs of maintenance per annum
Annual;equipment leasing costs(€)	Annual costs including maintenance when leasing the system
Annual associated staff costs per device(€)	All staff costs directly assigned to operate the system including staff costs spent on diagnosing by M.D. and/or planning of rad iotherapy by the M.D. or physicist.
Number of comparable devices	Total number of comparable devices in the hospital
Number of scans per annum	Total number of scans made per annum on this/these type of machine(s)

For further information please contact Isabelle Nefkens and Joris van Dijk at: isabelle.nefkens@panaxea.eu , joris.van.dijk@panaxea.eu

BenchCan manual

ANNEX 3

MEASURING PATIENT EXPERIENCE AND SATISFACTION

EUROPEAN CANCER CONSUMER QUALITY INDEX (ECCQI)

3

Responsible authors:
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Version 1.0
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TABLE OF CONTENTS

1. INTRODUCTION

To see if care is responsive and personalized, patients are asked for their experiences with the use of a European Cancer Consumer Quality Index (ECCQI). The ECCQI is an internationally accepted patient experience survey based on the CAPHS (Consumer Assessment of Healthcare Providers and Systems) that was developed in the US. This has been translated and validated in different countries, amongst other in the Netherlands for general cancer patients, breast cancer patients, and radiotherapy.

2.TECHNICAL INFORMATION

2.1. Translation of the questionnaire

Please see if a version of the ECCQI is available in your language. The available languages are: English, Dutch, Portuguese, Italian, Hungarian, Lithuanian, and Romanian. Should your language be unavailable, the ECCQI is free to be translated. It is however important to make sure this is done by an official translation company that uses back translation, i.e. after translation the questionnaire needs to be translated back into English again in order to ensure no information is lost in translation. The English version is attached. For further instructions about the proper translations of the ECCQI please see Box 1.

2.2. Sampling

In order to get a representative sample, a minimum of 100 patients needs to fill in the ECCQI. Since patients do not always fill the questionnaire in the correct way some questionnaires might need to be excluded from the analysis. It is therefore recommended to recruit at least 150 patients to start with and preferably as diverse as possible, e.g. all ages above 18, male/female, and different types of cancer. Questionnaires can be distributed on paper or you can decide to use an online tool such as SurveyMonkey. It is advised to assign a contact person who ensures efficient distribution and collection of the questionnaires. Patient organization can also assist in the distribution. It is important that patients feel free to express their opinion; therefore it is crucial that questionnaires are collected anonymously. It is preferred that patients fill in the questionnaire themselves in a private environment, should patients need assistance, please, keep this to a minimum.

Box.1 Cross-translation

1. Forward translation

One translator, preferably a health professional, familiar with terminology of the area covered by the instrument and with interview skills should be given this task. The translator should be knowledgeable of the English-speaking culture but his/her mother tongue should be the primary language of the target culture.

The following general guidelines should be considered in this process:

- Translators should always aim at the conceptual equivalent of a word or phrase, not a word-for-word translation, i.e. not a literal translation. They should consider the definition of the original term and attempt to translate it in the most relevant way.
- Translators should strive to be simple, clear, and concise in formulating a question. Fewer words are better. Long sentences with many clauses should be avoided.
- The target language should aim for the most common audience. Translators should avoid addressing professional audiences such as those in medicine or any other professional group.
- Translators should consider the typical respondent for the instrument being translated and what the respondent will understand when s/he sees the question.
- Translators should avoid the use of any jargons. For example, they should not use: technical terms that cannot be understood clearly; and colloquialism, idioms or vernacular terms that cannot be understood by common people in everyday life.
- Translators should consider issues of gender and age applicability and avoid any terms that might be considered offensive to the target population.

2. Back-translation

Using the same approach as that outlined in the first step, the instrument will then be translated back to English by an independent translator, whose mother tongue is English, and who has no knowledge of the questionnaire. As in the initial translation, emphasis in the back-translation should be on conceptual and cultural equivalence and not linguistic equivalence. Discrepancies should be discussed with the editor-in-chief and further work (forward translations, discussion by the bilingual expert panel, etc.) should be iterated as many times as needed until a satisfactory version is reached.

3.THE ECCQI QUESTIONNAIRE

Introduction

The purpose of this questionnaire is to measure the quality of the care experienced in hospital by cancer patients and to adapt care better to patients' wishes. The questionnaire takes about 20 minutes to complete.

All the information it contains will be treated in the strictest confidentiality. This means that no-one will ever know who gave which answers. Participation in this study is voluntary. We would greatly appreciate it if you could complete the questionnaire.

If you do not wish to complete the questionnaire, mark this box☐ with a cross and return this page to us. Whether or not you participate in this study, it will have no influence on your further treatment.

Instructions for completing this questionnaire

- It is important that the questions are answered by the person whose name is stated on the cover letter, so the questionnaire should not be completed by anyone else. If this person is too ill to complete it, we hope that someone will help them do so. The same applies to people whose command of <English> is not very good. In all cases, the answers should describe the experience of the person the questionnaire was sent to.
- Because a computer will be used to register your answers, please use a soft pencil to put a cross in the box to the left of your answer.
- If you accidentally put a cross in the wrong box, please erase it completely and put a cross in the right box.
- Some questions seem similar. Please answer them all anyway.
- Some questions may not apply to you, or may not apply to an aspect of care that you have not experienced. Please answer such questions with "not applicable", "I don't know", or the extra options that accompany the specific question.
- Sometimes you will be asked to skip a particular question or group of questions. You will then see an arrow that indicates which question you should answer next, as in this example:

☐	Yes ☐ ***now go to question 7***
☐	No

1. In the last 2 years, have you been examined, treated or had aftercare for cancer at NAME OF HOSPITAL?

- ☐ No ☐ ***If you answered no, this questionnaire does not apply to you.***
- ☐ Yes

This questionnaire concerns the care you have had at NAME OF HOSPITAL in the past 2 years. Please do not include any experiences you have had at other hospitals. We wish to know about your experiences in the last 2 years, and not about experiences with any examinations, treatments and aftercare you may have had more than 2 years ago.

2. Which form of cancer do you have or have you had?

(more than one answer is possible)

- ☐ **Of the digestive organs:** oesophagus/oesophagus, stomach, small bowel, large bowel, rectum, anus, liver, gall bladder, bile ducts, pancreas.
- ☐ **Lung cancer**
- ☐ **Breast cancer**
- ☐ **Of the male reproductive organs:** penis, prostate, testicle
- ☐ **Skin cancer**
- ☐ **Of the blood, bone marrow, and/or lymph nodes**
- ☐ **Of the urinary tract: kidney, pelvis of the kidney, ureter, bladder**
- ☐ **Of the female reproductive organs**: labia, vagina, cervix, body of the uterus, ovary, placenta
- ☐ **Of the head and neck area:** lip, mouth, salivary gland, throat, nose, middle ear, nasal sinus, larynx
- ☐ **Of the central nervous system:** meninges**,** brain
- ☐ **Of the bone or soft tissue:** bone, Kaposi's sarcoma, soft tissue
- ☐ **Of the endocrine glands:** thyroid, adrenal gland
- ☐ **Of the eye or eye socket**
- ☐ **Other, please state** *(in block capitals):*

3. This was <u>diagnosed</u> in:

		month					year

4. For which <u>examinations or treatment</u> have you been to this hospital in the last 2 years? ***(more than one answer is possible)***

- ☐ Examinations, e.g. physical examination, X-ray examination, ultrasound, blood tests, CT scan, MRI scan, PET scan
- ☐ Surgery
- ☐ Radiotherapy
- ☐ Chemotherapy
- ☐ Hormone therapy
- ☐ Immunotherapy
- ☐ Aftercare
- ☐ Other treatment, please state *(in block capitals):*

- ☐ The last examinations, treatment and/or aftercare I received were longer than 2 years ago ☐***If the last examinations, treatment and/or aftercare your received were longer than 2 years ago, this questionnaire no longer applies to you.***

5. Which of the following applies <u>most</u> to your current situation? ***(mark only <u>one</u> answer)***

- ☐ I am having investigations to make a diagnosis
- ☐ I have been diagnosed and will be treated soon
- ☐ I am having treatment that is intended to cure
- ☐ I have been diagnosed and can no longer be treated for my disease
- ☐ The treatment I am receiving is not intended to cure the tumour, but to control the symptoms associated with the disease and/or to slow down the growth of the tumour.
- ☐ I have finished having treatment and attend this hospital for check-ups and/or for treatment of the symptoms associated with the disease

- I have finished having treatment and check-ups
- I no longer remember

6. When was <u>the last time</u> you went to this hospital for examinations, treatment or checks for cancer?

- Less than 1 month ago
- 1-2 months ago
- 2-4 months ago
- 4-8 months ago
- 8-12 months ago
- Over 12 months ago

ACCESSIBILITY

7. Was it difficult to get to NAME OF HOSPITAL (either by your own transport, by public transport or by taxi)?

- Very difficult
- Not very difficult
- Not at all difficult
- ❑ I don't know/I no longer remember

8. Was it difficult to park at NAME OF HOSPITAL?

- Very difficult
- Not very difficult
- Not at all difficult
- Not applicable: I didn't use my own transport

9. Was it difficult to reach NAME OF HOSPITAL by phone?

- Very difficult
- Not very difficult

□ Not at all difficult

□ Not applicable: I didn't try to phone them

ORGANIZATION AT NAME OF HOSPITAL

The following questions concern your experience of waiting times and the speed of the care process.

10. Was your diagnosis of cancer made at this hospital within the last 2 years?

- □ No □ ***now go to question 14***
- □ Yes

11. How long did it last between your referral to the hospital and your first visit there?

- □ Less than 6 weekdays
- □ 6-10 weekdays
- □ 11-15 weekdays
- □ More than 15 weekdays
- □ I don't know/I no longer remember
- □ Not applicable

12. How long did it last between your first visit/examination and your diagnosis?

- □ Less than 6 weekdays
- □ 6-10 weekdays
- □ 11-15 weekdays
- □ More than 15 weekdays
- □ I don't know/I no longer remember
- □ Not applicable

13. Did you hear the diagnosis sooner or later than you had expected?

- ❑ Much sooner
- ❑ Sooner
- ❑ When I'd expected it
- ❑ Later
- ❑ Much later
- ❑ I don't know/I no longer remember

14. Once the diagnosis was known, was it possible to start treatment <u>as quickly as you wanted</u>?

- ❑ No
- ❑ Yes
- ❑ I don't know/I no longer remember
- ❑ Not applicable

15. If you desired this, was it possible at this hospital to plan several appointments for examination and/or treatment (e.g. surgery, radiotherapy, etc.) <u>on the same day</u>?

- ❑ Never
- ❑ Sometimes
- ❑ Usually
- ❑ Always
- ❑ I don't know/I no longer remember
- ❑ Not applicable

YOUR STAY IN HOSPITAL

16. During your treatment, did you spend one or more nights in hospital?

- No → ***now go to question 22***
- Yes
- I don't know/no longer remember

17. Were the toilet, shower and bathroom in or near the room?

- Never
- Sometimes
- Usually
- Always
- I don't know/I no longer remember
- Not applicable

18. Was your privacy sufficiently respected at this hospital (when changing clothes, washing/showering, during visiting hours, no information given in the presence of other patients)?

- Never
- Sometimes
- Usually
- Always
- I don't know/I no longer remember
- Not applicable

19. Were you able to receive visitors at the times you wanted?

- Never
- Sometimes
- Usually
- Always

- I don't know/I no longer remember
- Not applicable

20. Were you able to be undisturbed whenever you wished?

- Never
- Sometimes
- Usually
- Always
- I don't know/I no longer remember
- Not applicable

21. Was it possible to eat at the times you wished?

- Never
- Sometimes
- Usually
- Always
- I don't know/I no longer remember
- Not applicable

SAFETY IN THIS HOSPITAL

22. When you were being given medicine, did anyone check that it was really intended for you – by asking your name, for example, or checking your hospital wristband?

- Never
- Sometimes
- Usually
- Always
- I don't know/I no longer remember
- Not applicable: I did not take any medicine

---

23. Before treatment, examination or an operation began, did anyone check that you were the right person – by asking your name and date of birth, for example?

- Never
- Sometimes
- Usually
- Always
- I don't know/I no longer remember
- Not applicable

ATTITUDE OF HEALTHCARE PROFESSIONALS

The following questions concern your experiences with all the healthcare professionals at NAME OF HOSPITAL who were involved in your treatment – for example, nurses, radiotherapists, oncologist, and/or surgeons.

24. Did the healthcare professionals listen to you attentively?

- No, none of them did
- Some of them did, please specify
  - Only nurses
  - Only doctors
  - Other, …….
- Most of them did
- Yes, all of them did
- I don't know/I no longer remember
- Not applicable

25. Did the healthcare professionals have <u>enough time</u> for you?

- ☐ No, none of them did
- ☐ Some of them did, please specify
  - ☐ Only nurses
  - ☐ Only doctors
  - ☐ Other, ……
- ☐ Most of them did
- ☐ Yes, all of them did
- ☐ I don't know/I no longer remember
- ☐ Not applicable

26. Did the healthcare professionals take you <u>seriously</u>?

- ☐ No, none of them did
- ☐ Some of them did, please specify
  - ☐ Only nurses
  - ☐ Only doctors
  - ☐ Other, ……
- ☐ Most of them did
- ☐ Yes, all of them did
- ☐ I don't know/I no longer remember
- ☐ Not applicable

27. Were there opportunities to talk with your healthcare professionals about how you felt?

- ❑ Never
- ❑ Sometimes, please specify
  - ⍰ Only with nurses
  - ⍰ Only with doctors
  - ⍰ Other, …….
- ❑ Usually
- ❑ Always
- ⍰ I don't know/I no longer remember
- ⍰ Not applicable

28. Did your healthcare professionals pay attention to your loved one(s)?

- ❑ No, none of them did
- ❑ Some of them did, please specify
  - ⍰ Only with nurses
  - ⍰ Only with doctors
  - ⍰ Other, ……
- ❑ Most of them did
- ❑ Yes, all of them did
- ❑ I don't know/I no longer remember
- ❑ Not applicable

29. Did your healthcare professionals show due respect to faith or philosophy of life?

- ❑ No, none of them did
- ❑ Some of them did, please specify
  - ☐ Only with nurses
  - ☐ Only with doctors
  - ☐ Other, ……
- ❑ Most of them did
- ❑ Yes, all of them did
- ❑ Not applicable to contact

COMMUNICATION AND THE PROVISION OF INFORMATION

The following questions concern communication and the information you were given. By "communication", we mean the contact between you and the healthcare professionals (doctors and nursing staff).

30. Did healthcare professionals explain things to you in <u>ways that were clear and understandable</u>?

- ☐ Never
- ☐ Sometimes
- ☐ Usually
- ☐ Always
- ☐ I don't know/I no longer remember
- ☐ Not applicable

31. Did the healthcare professionals give you information about any side-effects of the treatment?

- Never
- Sometimes
- Usually
- Always
- I don't know/I no longer remember
- Not applicable

32. During your treatment, were you informed about its effect (for example whether you were responding to it)?

- Never
- Sometimes
- Usually
- Always
- I don't know/I no longer remember
- Not applicable

33. Was the written information about the examinations or treatment clear?

- Never
- Sometimes
- Usually
- Always
- I don't know/I no longer remember
- Not applicable

YOUR OWN INPUTS

The following questions concern the extent to which you were involved in discussions about your care and treatment and could take part in decisions about it.

34. If you wanted, could you take part in decisions about the care and treatment you received?

- Never
- Sometimes
- Usually
- Always
- I don't know/I no longer remember
- Not applicable: I didn't want to be

35. Was it possible for loved ones to be involved in discussions on your care and treatment?

- Never
- Sometimes
- Usually
- Always
- I don't know/I no longer remember
- Not applicable

COORDINATION DURING YOUR CARE

The following questions concern the various healthcare professionals involved in your care – such as the radiologist, surgeon, internist, nurses and general practitioner/family doctor, and how they collaborated and were coordinated. This only involves healthcare professionals from this hospital

36. Were the <u>treatment and examinations</u> you had from different healthcare professionals (within this hospital) well-coordinated?

- Never
- Sometimes
- Usually
- Always
- I don't know/I no longer remember
- Not applicable

37. Were your healthcare professionals(within this hospital) <u>aware</u> of the appointments you had with other healthcare professionals?

- Never
- Sometimes
- Usually
- Always
- I don't know/I no longer remember
- Not applicable

38. Did you always deal with the same person in this hospital – such as a doctor or nurse – when anything needed to be arranged?

- Never
- Sometimes
- Usually
- Always
- I don't know/I no longer remember
- Not applicable

39. Were you seen by the same care providers during your investigations and treatments?

- Never
- Sometimes
- Usually
- Always
- I don't know/I no longer remember
- Not applicable

SUPERVISION AND SUPPORT

The following questions concern the supervision and support you received during the treatment process.

40. During the diagnostic phase, was attention paid to your pain?

- Never
- Sometimes
- Usually
- Always
- I don't know/I no longer remember
- Not applicable

41. During the treatment phase, was attention paid to your pain?

- Never
- Sometimes
- Usually
- Always
- I don't know/I no longer remember
- Not applicable

42. During aftercare, was attention paid to your pain?

- Never
- Sometimes
- Usually
- Always
- I don't know/I no longer remember
- Not applicable

43. During the diagnostic phase, was attention paid to your complaints about fatigue?

- Never
- Sometimes
- Usually
- Always
- I don't know/I no longer remember
- Not applicable

44. During the treatment phase, was attention paid to your complaints about fatigue?

- Never
- Sometimes
- Usually
- Always
- I don't know/I no longer remember
- Not applicable

45. During the aftercare, was attention paid to your complaints about fatigue?

- Never
- Sometimes
- Usually
- Always
- I don't know/I no longer remember
- Not applicable

46. Did this hospital provide you with information about help with coping with emotions and other forms of counselling on this?

- Never
- Sometimes
- Usually
- Always
- I don't know/I no longer remember
- Not applicable

47. Did this hospital provide you with information about help with dealing with practical problems caused by cancer and other forms of counselling on this?

- Never
- Sometimes
- Usually
- Always
- I don't know/I no longer remember
- Not applicable

48. Did healthcare professionals (within this hospital) inform you about patient organisations?

- Never
- Sometimes
- Usually
- Always
- I don't know/I no longer remember
- Not applicable

49. Was it possible to talk to a spiritual or moral counsellor, such as a hospital chaplain or humanistic counsellor?

- ❑ Never
- ❑ Sometimes
- ❑ Usually
- ❑ Always
- ❑ I don't know/I no longer remember
- ❑ Not applicable

ROUNDING OFF THE TREATMENT

The following questions concern how your course of treatment at NAME OF HOSPITAL was concluded.

50. Was your treatment concluded at the hospital?

- No ***now go to question 56***
- Yes

51. When your treatment in this hospital was concluded, were you informed about possible <u>symptoms or health problems you should be aware of/watch out for?</u>

- ☐ No, not at all
- ☐ Not really
- ☐ More or less
- ☐ Yes, fully
- ☐ I don't know/I no longer remember
- ☐ Not applicable

52. Did you know who you could approach in this hospital with questions or problems <u>after treatment had been concluded</u>?

- ☐ No, not at all
- ☐ Not really
- ☐ More or less
- ☐ Yes, fully
- ☐ I don't know/I no longer remember
- ☐ Not applicable

53. Were important people and organizations, such as your general practitioner/family doctor, homecare provider, rehabilitation centre) informed that your hospital treatment had been concluded?

- ☐ No, not at all
- ☐ Not really
- ☐ More or less
- ☐ Yes, fully
- ☐ I don't know/I no longer remember
- ☐ Not applicable

54. Were the care and support you needed at home arranged for you?

- No, not at all
- Not really
- More or less
- Yes, fully
- I don't know/I no longer remember
- Not applicable

55. Were you offered help with your questions about resuming your day-to-day activities (family, school, work) at the check-up?

- Never
- Sometimes
- Usually
- Always
- I don't know/I no longer remember
- Not applicable

OVERALL OPINION OF NAME OF HOSPITAL

The following questions concern your overall opinion of NAME OF HOSPITAL. Please do not base this opinion on the experiences you may have had at any other hospitals.

56. Which score would you award this hospital? 0 means very bad indeed, 10 means excellent.

- ☐ 0 Very bad hospital
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7
- ☐ 8
- ☐ 9
- ☐ 10 Excellent hospital

57. How likely is it that you would recommend the hospital to other patients with cancer? 0 = very unlikely; 10 very likely.

- ☐ 0 Very unlikely
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7
- ☐ 8

- 9
- 10 Very likely

58. Name <u>one</u> thing that <u>should have been different</u> about the care you received in the hospital ***(Please write in block capitals)***

ABOUT YOURSELF

The following questions concern yourself. Your answers will give us insight into different groups of people.

59. What is your <u>age</u>?

- 18–24
- 25–34
- 35–44
- 45–54
- 55–64
- 65–74

- 75 or more

60. Are you a male or female?

- ☐ Male
- ☐ Female

61. Please indicate highest degree of your education (including primary education but excluding short courses)

Number of years:

62. How would you describe your overall physical health?

- ☐ Excellent
- ☐ Very good
- ☐ Good
- ☐ Moderate
- ☐ Poor

63. Did anyone help you complete this questionnaire?

- ☐ No
- ☐ Yes

64. How did this person help you?

(more than one answer is possible)

- ☐ By reading out the questions
- ☐ By writing down my answers
- ☐ By answering the questions for me
- ☐ By translating the questions into my language
- ☐ By helping me as follows:

THANK YOU VERY MUCH FOR COMPLETING THE QUESTIONNAIRE

4. HANDLING THE DATA

3.1. Recoding

Data received through the ECCQI needs to be recoded first, in order to analyse the data in a proper way. Almost all the categories in the ECCQI consist of questions with four response options which can be recoded in: never = 1, sometimes = 2, usually = 3, and always = 4, except for the categories**: 'accessibility',** and **'organisation'**.

The questions of **'accessibility'** have only three response options and therefore, response codes need to be recoded into: very difficult = 1, not very difficult = 3, and not at all difficult = 4.

The category **'organisation'** consists of questions with different response categories. The response codes to question 11 and 12 needed to be reversed and thereby were recoded into: more than 15 weekdays = 1, 11-15 weekdays = 2, 6-10 weekdays = 3 and less than 6 weekdays = 4. Question 13 has five response options and also needed to be revised; response codes were recoded into four codes: much later = 1, later = 2, when I'd expected it = 3, sooner = 4, much sooner = 4. Question 14 has only two response options and therefore, response codes were recoded into: no = 1 and yes = 4.

In addition, the response codes of the questions about demographic characteristics were recoded. The age categories were recoded into three categories: 18 – 34, 35 – 64 and 65 or older. The number of years of education were categorised into: low, moderate and high level of education, where 1 – 8 years is categorised as low, 9 – 13 as moderate and 14 or more as high level of education.

3.2. Missing data

The answers 'I don't know/I no longer remember' and 'Not applicable' are considered as missing data. In addition, questions that are answered while they needed to be skipped (invalid answers) are also considered as missing data. These answers do not count in the calculations.

5. STATISTICAL ANALYSIS

After the recoding, data needs to be analysed. It is advised to record the data in an excel sheet or SPSS file. Analysis can also be done in Excel or SPSS[1]. A description of the sample characteristics can assist in determining whether the tested group in your institute is comparable to the sample or to other institutes.

- Percentage of respondents per age categories
- Percentage of respondents per female/male
- Percentage of respondents per level of education

After this, the mean of each category of the questionnaire can be calculated. This makes it easier to get an overall picture and to calculate whether differences between categories or between centres (applicable if multiple centres participate) are significant. Significance can be calculated by means of a t-test or other statistical measurement. In addition, the overall patient satisfaction can be analysed by means of calculating the mean of all categories. A mean close to 4 indicates a good overall score, while a mean close to 1 indicates a bad score, i.e. room for improvement. To look for specific improvement individual questions can be analysed.

Please note that the *full version of this questionnaire* is available also as a separate downloadable WORD file.

For further information about ECCQI please, contact Anke Wind researcher at ankewind@gmail.com .

[1] Statistical software

BenchCan manual

ANNEX 4

FURTHER SUPPLEMENTARY MATERIAL TO ASSIST BENCHMARKING IN PRACTICE

4

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TABLE OF CONTENTS

INTRODUCTION

This Annex collects templates and information that can further assist carrying out benchmarking in practice.

The PROJECT PLAN FOR A CANCER CENTRE TO ORGANIZE SELF-ASSESSMENT chapter presents a template that can help setting up the internal benchmarking team and assessing the necessary capacities for the exercise. It collects information and contact data about the involved colleagues that can be shared with the partner organisation(s) in benchmarking.

The PLANNING THE SITE-VISIT OF THE EXTERNAL BENCHMARKING TEAM chapter provides a possible agenda for a site visit that can be used in case of third party benchmarking. The agenda can freely be modified and adjusted to the local purposes. The version suggested here was used in the Bench-Can project.

The WRITING THE BENCHMARKING REPORT chapter gives an overview about the possible content of a final benchmarking report that summarises the analysed benchmarking data, the opportunities for improvement, and the identified good practices to be shared among the cancer care organisations for learning.

The IMPROVEMENT ACTION PLAN chapter presents a template developed for the centres to identify areas for improvement for quality of care & patient outcomes based on the results and recommendations of the benchmarking exercise.

The COLLECTING INFORMATION ON GOOD PRACTICES chapter contains a questionnaire to be used in the final phase of the benchmarking process to collect information from the health facilities on good practices in clinical practice including patient experience & operations management. The good practices can be identified during data collection and data interpretation.

The BENCHMARKING CODE OF CONDUCT chapter presents a template of a benchmarking contract. The document is drawn from the European Benchmarking Code of Conduct. It is not legally binding but can guide the benchmarking process.

1. PROJECT PLAN FOR A CANCER CENTRE TO ORGANIZE SELF-ASSESSMENT

Here we present a template that assists the cancer centre to set up the internal benchmarking team.

General Information	
Name of the project	
Name of the cancer centre	
City and country	
Address of the Cancer Centre	
Director of the Cancer Centre	
Email address and phone number of Cancer Centre Director	
Benchmarking contact person	
E-mail address and phone number of the benchmarking contact person	

Organizing the internal benchmarking team within the cancer centre

The following job functions/professionals may need to contribute to completing the benchmarking exercise at the cancer centre. Additional job functions that are not listed below may also contribute to the benchmarking exercise depending on the structure of your organization. The estimated working hours are an average based on the BENCH-CAN Pilot project's Budget Impact Analysis (BIA) and it serves as a tool for you to estimate the amount of resources needed to allocate to conduct the benchmarking.

Please note that this is only an estimate and the actual effort may vary depending on the structure of your organization and that what you decide to benchmark. Please fill in the form with the names, positions/functions, E-mail addresses, and phone numbers of the benchmarking team members.

Team members will collect data and fill in relevant parts of the benchmarking tool. When recruiting participants for benchmarking, please keep in mind that it is recommended that they have relevant work experience (e.g. experience in audits and reviews is highly beneficial).

	Name	**Position/function**	**E-mail address and phone number**	**Responsibilities in relation to the benchmarking project**	**Estimated hours of work on the benchmarking exercise**
Project leader in the centre				*Acts as a point of contact for project communication.* *Recruits colleagues to participate in the benchmarking.* *Organises completion of the benchmarking tool, drafting improvement plans, and coordinating review visits (if applicable).*	*≈80 hours*
Administration				*Assists project leader at the centre with project coordination, interpretation of project documents, if needed.*	*≈30 hours*

Clinical representative*				*Participates in completing the benchmarking tool.*	*≈10 hours*
Financial Manager				*Participates in completing the benchmarking tool.*	*≈10 hours*
HR Manager				*Participates in completing the benchmarking tool.*	*≈10 hours*
IT Manager				*Participates in completing the benchmarking tool.*	*≈10 hours*
Patient representative*				*Participates in completing the benchmarking tool.*	*≈10 hours*
Quality Manager				*Participates in completing the benchmarking tool.*	*≈20 hours*
Research Representative				*Participates in completing the benchmarking tool.*	*≈10 hours*

*Clinical Representative: This may include Clinical Directors, or Department Heads of Medical Departments who oversee clinical activities and clinical data for the entire organization.

*Patient Representative: This may include an independent legal representative of patients at your organization, or patient representatives from patient organizations which are not part of your organization, but may work closely with your cancer centre.

*Research Representative: This may include anyone working in a senior research position who oversees the cancer centre's research portfolio.

2. PLANNING A SITE-VISIT OF THE BENCHMARKING TEAM

Below you can find an example of a site visit between an external review team and an internal benchmarking team in case of third party benchmarking. The agenda could be subject to variations for each individual cancer centre.

From	To	Min	Activity	Department/Professional discipline at the centre	Content	Name of participant(s) from the centre	Function	Location
8:30	8:40	10	Opening Presentation	Members of the internal benchmarking team at the centre	Presentation: Objectives of the meeting.			
8:40	8:50	10	Presentation by the internal benchmarking team	Members of the internal benchmarking team at the centre	General feedback on data collection (both qualitative and quantitative).			
9:00	9:20	20	Presentation by the internal benchmarking team & discussion	Members of the internal benchmarking team at the centre	Highlighting 3 indicators of the benchmarking tool on which your centre is doing really well and can provide best practices to others.			
9:20	9:50	30	Interview	IT	Discussion/clarification of data submitted.			
		10	**Break**					
10:00	10:20	20	Interview	HR	Discussion/clarification of data submitted.			
10:20	10:50	30	Interview	Patient Representative	Discussion/clarification of data submitted.			
		10	**Break**					
11:00	11:50	50	Interview	Quality Control	Discussion/clarification of data submitted.			
		10	Break					
12:00	12:45	45	Lunch	Working Lunch				
		15	**Break**					
13:00	13:50	50	Interview	Head of Clinical Department (or Head Physician)	Discussion/clarification of data submitted.			
		10	**Break**					
14:00	14:50	50	Visiting a selected care unit of the centre	Head of Unit/Department	Discussion/clarification of data submitted.			
		10	**Break**					
15:00	15:50	50	Interview	Head of Research (or Head of a Research Department)	Discussion/clarification of data submitted.			
		10	**Break**					
16:00	16:30	30	Wrap up meeting	Members of the internal benchmarking team	Summary and closure			

3. WRITING THE BENCHMARK REPORT

3.1. Proposed Table of Contents for benchmark report based on data collected by Benchmarking tool for BT1 – Institutional tool

8. References

3.2. Proposed Table of Contents for benchmark report based on data collected by Benchmarking tool for BT2 – Pathway tool

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6. Conclusion

7. List of good practices

8. References

4. DEVELOPING AN IMPROVEMENT ACTION PLAN

Here we present a template for preparing an improvement plan. This plan is to be filled in by centres after receiving the post-benchmarking report, which summarises the results and identifies opportunities for improvement.

Improvement Action Plan Template

Based on the data analysis as outlined in the attached Benchmark Report, the following areas were identified as opportunities for potential improvement. We kindly ask your team at your site to discuss the below items and fill in the improvement action plan template in agreement with members of senior management. **Please send it back to :** **By:**

Opportunities for potential improvement identified during the bencmarking excercise:	**Please tick the appropriate box whether you agree/partially agree/disagree with the opportunities for improvement:**			**Please provide any comments/feedback you may have on why you agree/partially agree/disagree with the opportunities for potential improvement.**			**If you agreee with an opportunity for improvement: please describe the action (in a few sentences) that could be taken to address it; identify whether the action could be accomplished in short, medium, or long term by ticking the appropriate box; assign the responsible(s) for completing the action; and list any potential risks/barriers for implementation (including lack of financial or other resources, or any other type of risks/barriers).**					
	Agree	Partially agree	Disagree				Action to be taken	Short-term	Medium-term	Long-term	Responsible person(s)	Potential risks/barriers for implementation
								(1 year)	(2-5 years)	(6-10 years)		
Opportunity for Improvement 1												
Opportunity for Improvement 2												
Opportunity for Improvement 3												
Opportunity for Improvement 4												
Opportunity for Improvement 5												
Opportunity for Improvement 6												

The above improvement action plan has been prepared by (please list names and functions):

The above improvement action plan has been presented to the following members of senior management at the centre (please list names and functions):

5. COLLECTING INFORMATION ON GOOD PRACTICES

Best practice refers to systems and processes associated with operational management and the qualitative attainment of best clinical practice for patient experience (Kay, 2007[1]).

This questionnaire can be used to collect information on good practices of health facilities in clinical practice including patient experience & operations management. Providing more insights into these practices would enable other cancer centres to implement them in order to raise the quality of care on a European scale, thus leading to increased benefits for patients.

The good practices can be identified during the benchmarking process.

Good Practice Framework

Implementing change that leads to good practice can be challenging for any types of organisation, especially in cancer care where cancer centres may be part of a larger hospital with complex organisational structures and multiple stakeholders. In order to gain further insights into the identified good practices, a common framework was selected that can be applied across a wide spectrum of organisations regardless of size, structure or regional differences.[2]

Figure 1: John Kotter's 8-Step Model for Leading Change (2014) Source: http://www.kotterinternational.com

During the benchmarking process we identified one or several good practices at your institution based on the analysis of the submitted benchmarking data and the learnings from the site visit. We kindly ask you to answer the questions below (not longer than a paragraph each) in relation to the good practice selected at your organization.

Please send the completed questionnaire to: **By:**

Please note that depending on the nature of the designated good practice at your institution, not all questions may apply.

[1] JLF Kay (2007). Health care benchmarking. Medical Bulletin 12(2): 22–27

[2] The "8-Step Process for Leading Change" developed by Harvard Business School Professor John Kotter (http://www.kotterinternational.com/the-8-step-process-for-leading-change/) was identified to present the good practices in comprehensive cancer care in a way that they are potentially measurable, replicable, and adaptable at other organizations. In 2014, based on thorough research, Kotter updated his 1996 model and revised the steps to make them relevant to today's environment. The questions in this questionnaire are grouped around Kotter's updated model.

Please, provide a brief description of the selected good practice at your centre.

Please, provide detailed information about this good practice according to the 8-steps Process of Leading Change.

1. CREATING A CLIMATE FOR CHANGE

Change in the following questions refers to the designated good practice) *(Steps: 1. Create a Sense of Urgency, 2. Build a Guiding Coalition, 3. Form a Strategic Vision & Initiatives)*

a. What was the strategic vision behind the planned change?

b. What was the reason (opportunities/threats) that triggered the implementation of the change?

c. What was the expertise of the key group members involved (department heads, members of management board etc.) in the process of leading this change?

d. What were the main goal(s) to be achieved?

2. ENGAGING AND ENABLING THE ORGANIZATION

(Steps: 4. Enlist a Volunteer Army, 5. Enable Action by Removing Barriers, 6. Generate Short-term Wins)

a. How was the change communicated across the organization?

b. How were employees involved and motivated to participate in the change?

c. What were the critical infrastructures/systems (facilities, IT infrastructure, etc.)/human resources/financial/time requirements to be in place in order to drive the change?

d. What were the main barriers to implementing the change (e.g. resistance from staff, financial barriers, organizational structure etc.)? Which actions were taken to remove these barriers?

3. IMPLEMENTING AND SUSTAINING CHANGE

(7. Sustain Acceleration, 8. Institute Change)

a. What were the identifiable risk factors that could confine the implementation of the change?

b. What were the main success factors that contributed to the success of the good practice?

c. What were the main lessons learnt during the process of implementing the change at your organization?

Thank you for taking your time to answer the questions.

6. BENCHMARKING CODE OF CONDUCT

Here we present a template of a benchmarking contract. This document, drawn from the European Benchmarking Code of Conduct is not legally binding and is merely guidance for a benchmarking process.

The Benchmarking Code of Conduct [3]

Introduction

This Code of Conduct is the result of a consultation and development process coordinated by The Performance Improvement Group with the help of The Eurocode Working Group. The latter comprises senior Benchmarking managers and legal representatives from the following organizations: BT, Department of Trade and Industry (UK), European Foundation for Quality Management, IFS International, KPMG Peat Marwick (USA), Shell International, Siemens, The Benchmark Network, and The Post Office.

Contributions were also gratefully received from the following institutions: American Productivity and Quality Centre, British Quality Foundation, Prudential Assurance, Swedish Institute of Quality, Strategic Planning Institute, The Benchmarking Centre UK, The Benchmarking Club Italy, The Law Society, and The Quality Network.

Benchmarking - the process of identifying and learning from best practices in other organizations - is a powerful tool in the quest for continuous improvement and performance breakthroughs. The authors and sponsors have produced this European Code of Conduct to guide benchmarking encounters and to advance the professionalism and effectiveness of benchmarking in Europe. It is closely based on the widely used APQC Code of Conduct promoted by the International Benchmarking Clearinghouse, and the authors gratefully acknowledge this source. The wording has been modified to take into account the rules of European Union competition law. The layout and presentation have been modified to provide a more constructive chronological approach.

Adherence to this Code will contribute to effective, efficient, and ethical benchmarking process.

[3] Source: http://www.au.dk/fileadmin/www.au.dk/om_au/strategi_og_politik/benchmarking/codeofconduct

1.0 Principle of Preparation

Demonstrate commitment to the efficiency and effectiveness of benchmarking by being prepared prior to making an initial benchmarking contact.

Make the most of your benchmarking partner's time by being fully prepared for each exchange.

Help your benchmarking partners prepare by providing them with a questionnaire and agenda prior to benchmarking visits.

Before any benchmarking contact, especially the sending of questionnaires, take legal advice.

2.0 Principle of Contact

Respect the corporate culture of partner organizations and work within mutually agreed procedures.

Use benchmarking contacts designated by the partner organization if that is its preferred procedure.

Agree with the designated benchmarking contact how communication or responsibility is to be delegated in the course of the benchmarking exercise. Check mutual understanding.

Obtain an individual's permission before providing their name in response to a contact request.

Avoid communicating a contact's name in open forum without the contact's prior permission.

3.0 Principle of Exchange

Be willing to provide the same type and level of information that you request from your benchmarking partner, provided that the principle of legality is observed.

Communicate fully and early in the relationship to clarify expectations, avoid misunderstanding, and establish mutual interest in the benchmarking exchange.

Be honest and complete.

4.0 Principle of Confidentiality

Treat benchmarking findings as confidential to the individuals and organizations involved. Such information must not be communicated to third parties without the prior consent of the benchmarking partner who shared the information. When seeking prior consent, make sure that you specify clearly what information is to be shared, and with whom.
An organization’s participation in a study is confidential and should not be communicated

externally without a prior permission.

5.0 Principle of Use

Use information obtained through benchmarking only for purposes stated to and agreed with the benchmarking partner.

The use or communication of a benchmarking partner's name with the data obtained or the practices observed requires the prior permission of that partner.

Contact lists or other contact information provided by benchmarking networks in any form may not be used for purposes other than benchmarking.

6.0 Principle of Legality

If there is any potential question on the legality of an activity, you should take legal advice.

Avoid discussions or actions that could lead to or imply an interest in restraint of trade, customer allocation schemes, price fixing, bid rigging, bribery, or any other anti-competitive practices. Don't discuss your pricing policy with competitor's.

Refrain from the acquisition of information by any means that could be interpreted as improper including the breach, or inducement of a breach, of any duty to maintain confidentiality.

Do not disclose or use any confidential information that may have been obtained through improper means, or that was disclosed by another in violation of a duty of confidentiality.

Do not, as a consultant, client or otherwise pass on benchmarking findings to another organization without first getting the permission of your benchmarking partner and without first ensuring that the data is appropriately 'blinded' and anonymous so that the participants' identities are protected.

7.0 Principle of Completion

Follow through each commitment made to your benchmarking partner in a timely manner.

Endeavour to complete each benchmarking study to the satisfaction of all benchmarking partners as mutually agreed.

8.0 Principle of Understanding and Agreement

Understand how your benchmarking partners would like to be treated, and treat them in that way. Agree how your partner expects you to use the information provided, and do not use it in any way that would break that agreement.

Important Notice:

This Code of Conduct is not a legally binding document. Though all due care has been taken in its preparation, the authors and sponsors will not be held responsible for any legal or other action resulting directly or indirectly from adherence to this Code of Conduct. It is for guidance only and does not imply protection or immunity from the law.

Benchmarking Protocol

Benchmarkers:

- Know and abide by the European Benchmarking Code of Conduct.
- Have basic knowledge of benchmarking and follow a benchmarking process.
- Should have:
    - Determined what to benchmark
    - Identified key performance variables to study
    - Recognized superior performing organizations
    - Completed a rigorous internal analysis of the process to be benchmarked before initiating
    - Contact with potential benchmarking partners.
- Prepare a questionnaire and interview guide, and share these in advance if requested.
- Possess the authority to share and are willing to share information with benchmarking partner's.
- Work through a specified contact and mutually agreed arrangements.

When the benchmarking process proceeds to a face-to-face site visit, the following behaviors are encouraged:

- Provide meeting agenda in advance.
- Be professional, honest, courteous, and prompt.
- Introduce all attendees and explain why they are present.
- Adhere to the agenda.
- Use language that is universal, not one's own jargon.
- Be sure that neither party is sharing proprietary or confidential information unless prior approval has been obtained by both parties, from the proper authority.
- Share information about your own process, and, if asked, consider sharing study results.
- Offer to facilitate a future reciprocal visit.

- Conclude meetings and visits on schedule.
- Thank your benchmarking partner for sharing their process.

Benchmarking with Competitors

The following guidelines apply to both partners in a benchmarking encounter with competitors or potential competitors:

- In benchmarking with competitors, ensure compliance with competition law.
- Always take legal advice before benchmarking with competitor's. (Note: When cost is closely linked to price, sharing cost data can be considered to be the same as price sharing).
- Do not ask competitors for sensitive data or cause the benchmarking partner to feel they must provide such data to keep the process going.
- Do not ask competitors for data outside the agreed scope of the study.
- Consider using an experienced and reputable third party to assemble and 'blind' competitive data.
- Any information obtained from a benchmarking partner should be treated as you would treat any internal, confidential communication. If 'confidential' or 'proprietary' material is to be exchanged, then a specific agreement should be executed to indicate the content of the material that needs to be protected, the duration of the period of protection, the conditions for permitting access to the material, and the specific handling requirements that are necessary for that material.

Please note that the *full version of Annex 4* is available also as a separate downloadable WORD file.

BenchCan **COLLABORATING PARTNERS**

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