Erasmus MC
Universitair Medisch Centrum Rotterdam

Research Assessment

Theme Dijkzigt
2013-2018

Report on the research review according to the Standard Evaluation Protocol 2015-2021

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Preface

Before embarking on the SEP audit of Theme Dijkzigt at Erasmus MC the committee realized it had to deal with several challenges. First of all, we had to carry out a complete online site-visit due to the COVID-19 situation, requiring extra effort from the meeting facilitators and participants. A second challenge was the mere size of Theme Dijkzigt, necessitating parallel sessions of two sub-committees to make optimal use of the limited time. Finally, the SEP protocol includes various non-quantitative topics to be assessed, which requires absolutely open and unbiased communication.

Looking back at the actual site visit, I feel confident that we have succeeded in meeting these challenges, thanks to meticulous preparation and organization, and to remarkable transparency and openness of the host institution enabling an effective and engaging virtual meeting.

In this report we present our evaluation of the scientific research of Theme Dijkzigt. We were impressed by the quality, the quantity and the relevance of the research carried out by many departments. Needless to say this does not imply that nothing can be improved. Therefore, we sincerely hope that Theme Dijkzigt at Erasmus MC will make use of our findings and reflections when discussing its current and future research strategy. If that happens - and there is no reason to doubt this - the joint effort of Theme Dijkzigt collaborators and committee members has been worthwhile.

We wish the theme all the best and are confident that it will continue to pursue excellence in basic, translational and clinical research.

Eric Fliers, committee chair, Theme Dijkzigt
Amsterdam, 1 February 2021

I. Introduction

Assignment to the committee

The Executive Board of Erasmus University Medical Centre Rotterdam (Erasmus MC) initiated an assessment of the scientific research done at the institute during the period 2013-2018. This quality assessment was part of the regular six-year evaluation cycle of the research of Dutch universities and University Medical Centres (UMCs).

The primary units of research at Erasmus MC are its 48 departments, which are (financially) responsible for carrying out the institute-wide research strategy. Each department is led by a department Head appointed by the Executive Board of Erasmus MC. The Department Head is fully responsible for the core functions (research, education, and if applicable patient care) as well as for the atmosphere and working environment (diversity & research integrity) of the department. Historically, departments are distributed over nine overarching themes:

1. Biomedical Sciences (6 departments)
2. Brain & Senses (6 departments)
3. Daniel den Hoed (3 departments)
4. Diagnostic & Advice (7 departments)
5. Dijkzigt (8 departments)
6. Health Sciences (4 departments)
7. Sophia (7 departments)
8. SPIN (3 departments)
9. Thorax (3 departments)

For the purposes of this assessment, the Executive Board of Erasmus MC appointed a separate committee of international experts for each of its nine Themes, consisting of international experts in the fields of the underlying departments. Each committee conducted its own assessment, amounting to a total of nine assessments. The respective digital site visits to Erasmus MC took place in the period September 2020 to April 2021. The Dijkzigt Theme digital site visit took place on 30 November, 1 and 2 December 2020.

Originally, the members of each committee were intended to meet with one another and with institute and department representatives during onsite meetings. These were scheduled to take place in the spring of 2020. However, due to the global COVID-19 pandemic, the site visits to Rotterdam were first postponed and later replaced by remote meetings via a digital platform. In order to partially compensate for the loss of interpersonal interaction during physical meetings, it was decided to schedule additional online meetings between committee members and use interactive working methods.

This report describes the findings, conclusions and recommendations of the committee that assessed the eight departments that are part of Theme Dijkzigt. Each department was judged along the lines of research programmes of similar disciplines in academic institutions worldwide.

The committee did not attempt to draw a direct comparison between departments within Erasmus MC. Nonetheless, it has taken note of the clinical and research output of the departments in Theme Dijkzigt and discussed them in relation to each other. The committee emphasizes that the assessments performed by external reviewers of the nine overarching themes are essentially incomparable and should not be used as the basis for central funding strategies; each committee assessed the theme in question on its own merits.

Assessment criteria

The assessment of Theme Dijkzigt was guided by the Standard Evaluation Protocol 2015-2021 (SEP) of the Royal Academy of Sciences and Arts of the Netherlands (KNAW), the Netherlands Organisation for Scientific Research (NWO) and the Dutch Association of Universities (VSNU). The three assessment criteria specified in SEP – (1) research quality, (2) relevance to society and (3) viability – formed the starting point for the assessment. In its report, the committee both qualitatively and quantitatively assesses these criteria, using a four-point scale, ranging from world leading/excellent (1) to unsatisfactory (4) (appendix 3). In accordance with SEP, the assessment also includes a qualitative appraisal of Erasmus MC's PhD programme, and its research integrity and diversity policies and practices.

In addition to the SEP criteria, the committee took three specific research-related targets into consideration. These are part of Erasmus MC's current strategy (Strategy23), which designates 'Technology & Dedication' as its guiding principles. In the Terms of Reference (ToR) for the research assessment the Executive Board of Erasmus MC describes the three research-related targets as follows:

1. Positioning ourselves as a partner;
2. Using technology to lead the way in innovation;

3. Focusing on our staff and internal organization.

Committee composition

Members of the committee that assessed the departments of Theme Dijkzigt are:

- Prof. Eric Fliers (chair), Amsterdam UMC;
- Prof. Laurents Stassen (vice-chair), Maastricht UMC+;
- Prof. Donald Fraser, Cardiff University, UK;
- Prof. Elke de Jong, Radboud UMC;
- Prof. Rik Lories, KU Leuven, Belgium;
- Prof. em. Peter Michielsen, Antwerp University Hospital, Belgium;
- Prof. Prabath Nanayakkara, Amsterdam UMC;
- Prof. Wim Schreurs, Radboud UMC;
- Prof. Christian Toso, Geneva University Hospitals, Switzerland;
- Dr Stefania Tuinder, Maastricht UMC+;
- Prof. em. Guy Vanderstraeten, University Hospital Ghent, Belgium.

Dr Meg van Bogaert and Dr Floor Meijer were appointed as independent secretaries to the committee. A short curriculum vitae of each of the committee members is included in appendix 1.

All members of the committee signed a statement of impartiality and confidentiality to ensure a transparent and independent assessment process. Any existing professional relationships between committee members and departments under assessment were reported. The committee concluded that there was no risk in terms of bias or undue influence.

Documentation

Prior to the site visit, the committee received the self-evaluation report of the theme and its underlying departments, including the information and appendices required by SEP. The following additional documents were provided:

- Standard Evaluation Protocol 2015-2021;
- Terms of reference for conducting the site visit;
- A Beginner's Guide to Dutch Academia (The Young Academy, 2018);
- Addendum to the self-evaluation report;
- Strategy23.

Working method

Prior to the site visit, the committee members were asked to read the documentation, formulate preliminary assessments and draft questions for the interviews. In an online kick-off meeting, approximately six weeks prior to the site visit, the committee was introduced to the Standard Evaluation Protocol and agreed upon procedural matters. In a second online meeting, approximately three weeks prior to the site visit, the committee discussed preliminary assessments and formulated questions on relevant topics. These questions were afterwards sent to the department heads in order to facilitate their preparations for the site visit. At the beginning of the digital site visit, the committee held a closed online meeting to prepare for the interviews.

Each member of the committee was primarily responsible for the assessment of one specific department. As 'first assessor', he or she took the lead in preparing for the assessment of this department. For two (larger) departments more than one expert committee member acted as 'first reviewer'. Furthermore, the first reviewer led the online discussions with department staff and eventually drafted an assessment based on the SEP criteria. For reasons of continuity, a 'second assessor' was appointed to each department. Contrary to the first assessor, the second assessor was not necessarily an expert in the field of the department. The sessions with the departments were chaired by the chair and vice-chair of the committee.

The online site visit of Theme Dijkzigt took place from 30 November to 2 December 2020. During the site visit, the committee met with the Executive Board of Erasmus MC, as well as with representatives of the departments. Each department was given a time slot, which it filled with presentations and interviews. Committee members also spoke with PhD candidates of the departments. Prior to this meeting the PhD candidates were requested to fill out a questionnaire, by way of follow-up questions the secretary was able to provide the committee with information on the selection, training and supervision of the PhD candidates. The committee members used this information in two consecutive speed-dates with PhD candidates. During its final meeting, the committee jointly scored all of the departments. To conclude the visit, the committee presented the main preliminary conclusions to the Executive Board of Erasmus MC and the staff of the departments of Theme Dijkzigt. The schedule for the site visit is included in appendix 2.

After the site visit, the chair and the secretaries drafted a first version of the committee report,

based on the assessments drawn up by the first assessors. This draft report was circulated to the committee for all members to comment on. Subsequently, the draft report was presented to Erasmus MC for factual corrections and comments. In close consultation with the chair and other committee members, the secretaries used these comments to finalize the report. The final report was presented to the Executive Board of Erasmus MC.

Structure of the report

This report contains the committee's findings and conclusions on the eight departments constituting Theme Dijkzigt. In accordance with SEP, the committee details its assessments on strategy and targets, research quality, societal relevance and viability in separate chapters for all eight departments. These chapters also discuss particularities with respect to PhD training, diversity and integrity. Overarching and institutional dimensions of such aspects (e.g. policies that are developed at Erasmus MC rather than at the departmental level, general practices at Theme Dijkzigt) are assessed in a general chapter that precedes the chapters on the departments. Details on the composition of the committee, the assessment scale and the setup of the digital site visit can be found in the appendices.

II. Theme Dijkzigt

Organization

Erasmus MC has traditionally been organized in a decentralized manner. It comprises 48 departments, eight of which are part of Theme Dijkzigt. Departments form the primary units for governance, HR and funding. Each department is led by a head of department appointed by the Executive Board of Erasmus MC. The head of department is integrally responsible for core tasks (research, education and, if applicable, patient care) and for formulating and realizing the associated department goals. Also, the head has to ensure a good atmosphere and working environment (diversity and research integrity) within the department. The head of department receives (first stream) research funding directly from the Executive Board.

The nine themes at Erasmus MC are organizational units. As such they are not formally responsible for developing research strategies or distributing funds. Together, the heads of the underlying departments and the theme director, form the Theme Board, which bears collective responsibility for drawing up and realizing the theme's annual and multi-year plans. The Theme Board is accountable to the Executive Board of Erasmus MC. One of the heads of department acts as chairperson of the Theme Board.

Theme Dijkzigt is a large and rather heterogeneous theme. Its eight departments vary greatly in size and subject matter. The committee learned that when the Erasmus MC themes were created in 2012, originally the themes planned were: 'Ageing' (Departments of Surgery, Internal Medicine, Rheumatology and Gastroenterology) and 'Motion' (Department of Orthopaedics, Plastic and reconstructive Surgery, Traumatology and Rehabilitation Medicine). In the final process of reorganization these two intended themes were merged because of hospital management related reasons (new building, shared infrastructure, identical processes in patient handling). The name for this merged theme ('Dijkzigt') was derived from the name of the academic hospital that was in use in the 1960s. The resulting theme was described to the committee as the 'heart' of the large university hospital, including acute and complex patient care and traumatology.

The eight departments within Theme Dijkzigt are linked mainly by patient-related processes and a shared clinical infrastructure. The departments collaborate on patient care (HPB, transplantations, upper GI, trauma surgery/orthopaedics and reconstructive surgery), support each other with complex tasks and share knowledge and initiatives to improve the quality of research. The latter is facilitated by the Erasmus MC-wide organizing principle of Academic Centres of Excellence (ACEs). These virtual centres stimulate cross-departmental research and are led by one or multiple principal coordinator(s).

While departments seem satisfied with the extent of cooperation and exchange of best practices between departments within the theme, the committee sees opportunities to realize even more added value at theme level. In the current situation, some departments have easier access to funding and facilities than others. In the committee's opinion, it would be beneficial for the theme as a whole if forces could be more often combined, thereby resolving current discrepancies between departments.

Funding

In the period which was the subject of the present review, direct (first stream) funding diminished, and a further decrease is expected in the near future. It appears that this is not a specific challenge for Dijkzigt, but an Erasmus MC wide (and even national) issue. Budget cuts might have major impact on the quality of the research and might threaten the viability of the departments. Not only is direct funding essential for the number of tenured positions, it also provides a 'buffer' to deal with the more insecure income by ways of grant funding and contract funding.

There is agreement within Erasmus MC that the existing distribution key for direct funding – which is based on a large historical and much smaller performance-based component – is in need of change. The current key favours large and established departments over younger departments. Upcoming departments that acquire a lot of research grants typically have a hard time finding the necessary internal funds for matching of (the increasing) overhead costs (PhD salaries, material costs, housing etc.). According to the committee, the development of a new distribution key is of high importance and should be given urgency in order to give all departments a chance to flourish.

Historical differences in funding affect the composition of the staff of the departments and thus the size of research efforts. Departments with more generous direct funding tend to have larger

numbers of clinical staff members, who can (theoretically) contribute to research. In some other departments, however, growth is regulated by clinical 'business cases', including a clear need for return-on-investment. Dedicated research time is hardly ever included in such business cases.

Conversations with research staff have convinced the committee that different core activities (clinical care, research, education) are increasingly in competition. Staff mentioned that the growing clinical and administrative burden comes at the expense of research. Not all departments can offer staff (the same levels of) dedicated research time. This is a concern, as the committee is strongly in favour of protected research time, which is the best way of ensuring (future) research quality. This may also help to improve the work-life balance experienced by staff.

Facilities

Apart from Erasmus MC wide 'Core Facilities', most facilities are arranged at department (not theme) level. An example of the departmental facilities are dedicated research bureaus that facilitate clinical trial management and execution. Some of the departments within Theme Dijkzigt have such bureaus, while others do not. From the interviews, it was clear that clinical trial bureaus or 'research offices' can have much added value if they offer specialized support to research staff. Research offices are, however, not part of an Erasmus MC wide policy. They are managed and paid for by departments themselves. For some of the departments that are struggling to find the necessary funds for full-service research offices, combining efforts with other Dijkzigt departments could be a solution.

Similarly, data management facilities were until now arranged at and paid for at department level. This is changed by the arrival of the Erasmus MC Research Suite programme and PaNaMa-software. The committee established that Dijkzigt-departments eagerly look forward to this new system for storing, sharing and managing data, which they expect will suit their needs.

Strategy23

Erasmus University Rotterdam (EUR), Erasmus University Medical Centre Rotterdam (Erasmus MC) and Delft University of Technology (TU Delft) have expressed the ambition to structurally strengthen their collaboration. This strategic collaboration ('convergence') is an important part of Strategy23, the Erasmus MC-wide strategy for the 2018-2023 period. Erasmus MC aims to become the first technical academic medical centre in the Netherlands by convergence with TU Delft and Erasmus University. Technology and dedication are the dual focus points of this new strategy.

The committee found that, at departmental level, there is substantial support for the convergence and the Erasmus MC wide aim of becoming a top tier technical medical centre. Although Strategy23, postdates the review period, the committee already encountered a number of fruitful collaborations with TU Delft at department level.

Patient participation

For each department the committee assessed the relevance to society of the research. One aspect concerning relevance to society is relevant to all departments in the theme. The committee recommends to considering mechanisms to increase patient inclusion in all parts of the research agenda and not just as subjects in trials. It is clear that in some departments this issue is already discussed.

Career planning and talent management

An overall conclusion of the committee is that viability is an issue for many of Theme Dijkzigt's departments. Too often valuable and talented young and mid-career researchers pursue opportunities elsewhere and are lost for the departments, while the succession of senior researchers who are due to retire is not secured. The committee is positive about the Erasmus MC wide plans to set up a tenure track programme. It is very important for young, talented researchers to have a clear perspective with clear criteria for their research careers. Ensuring official positions at mid-career level will not just help in retaining talent, it will also increase the attractiveness of Erasmus MC to promising researchers from outside the Netherlands and thereby also the diversity of staff.

Another conclusion is that many young staff members would benefit from establishing a formal mentoring programme. The committee is of the opinion that having an outside mentor is not only helpful to PhD candidates (maybe even bachelor's and master's students) but also for early-career clinician-scientists. Additionally, Erasmus MC could consider providing seeding grants to young talent, as these would help them in gaining independence.

Having dedicated research time for clinicians is another important factor in building viable

departments. The committee notes that protected time arrangements should be made in staff contracts. This may also help to improve the work-life balance experienced by staff.

Research integrity

Erasmus MC endorses the Code of Conduct for research of the Association of universities in the Netherlands (VSNU) and the revised European Code of Conduct for Research Integrity. Its policies on academic/scientific integrity are outlined in the Erasmus MC Research Code that covers the following aspects:

- Research with patient data and biomaterial;
- Data management;
- Guidelines for publishing and authorships;
- Guidelines inducements by companies;
- Intellectual property;

As of early 2018, Erasmus MC has guidelines in case of scientific misconduct.

The committee appreciates the attention paid to research integrity in a mandatory PhD course. At the same time, it is of the opinion that integrity training should not be limited to PhD candidates. It should be part of the formal introduction course for new (staff) members. Moreover, integrity policy should be a recurrent item during the annual appraisal meeting with supervisors.

Diversity

Because of its location in the multicultural city of Rotterdam, Erasmus MC caters to a diverse group of patients and student population. To reflect this diversity in its staff, Erasmus MC aims for a diverse composition of teams in all layers of the organization in terms of ethnic background, age and gender. According to the self-evaluation report, harnessing the benefits of the differences helps to be innovative and to further improve research, training and patient care.

Erasmus MC has specifically developed a number of policy initiatives to support female researchers. These include the Female Talent Class, consisting of various workshops and interventions intended for talented early career researchers (maximum of two years after PhD completion), and the Female Career Development Programme, developed for female scientists (clinical and non-clinical scientists between four and eight years after promotion) who have the potential and ambition to reach the position of associate professor (UHD).

The topic of diversity was extensively discussed with several departments. Despite the policy by the Erasmus MC Board, as described above, and initiatives being undertaken at the level of the departments, the committee concludes that clear policies at departmental level and results seem to be predominantly lacking. The policy concerning gender balance is the most developed aspect of diversity policy. And indeed: the focus on gender balance is important and requires continued attention as this problem will not solve itself. However, other aspects of diversity also require active policy.

The committee established that attention for cultural diversity is still very limited, both in HR policies and in terms of focus on specific patient populations in the multicultural city of Rotterdam. The committee points out that departments have to deal with and may benefit from the diversity of the patient population – which should ideally be reflected in the staff composition. While Erasmus MC is located in an ethnically diverse city, the organisation is still very much at the beginning of making a diversity policy. The committee was pleased to learn that researchers in several departments are increasingly aware of this important topic and encourage the departments, theme and Erasmus MC to work on this issue.

PhD training

Erasmus MC offers three- to four-year (fulltime equivalent) PhD positions in which PhD candidates conduct research, follow a training programme and teach undergraduate students. These activities, as well as agreements on supervision, are detailed in a Training & Supervision Plan (TSP) that is drawn up at the start of a project and signed by the PhD candidate and the supervisor(s). The TSP is expected to be updated annually and to serve as a guide for the yearly evaluation of the progress of the PhD candidate.

Since 2019, Erasmus MC has a database system ('Hora finita') in which the status of PhD projects is registered. The availability of this system is said to greatly aid generation of management data regarding PhD graduations and aid in quality management. However, it was also mentioned in the interviews that the system itself is rigid and not particularly user-friendly. This is an issue that Erasmus MC should look into, given Hora Finita's pivotal role in the streamlining of the Erasmus MC PhD Programme.

PhD training at Erasmus MC is currently organized in five PhD programmes (Health Sciences,

Cardiovascular Research, Neuroscience, Biomedical Genetics, Molecular Medicine), each with their own research school where candidates follow courses and lectures (Nihes, Coeur, Onwar, MGC, MolMed). These research schools will shortly be integrated in an Erasmus MC Graduate School, with the intention of offering master's students and PhD candidates more freedom of choice and higher quality education. Courses that were previously on offer at the research schools will remain available at the central level.

Erasmus MC recommends that PhD candidates obtain 30 EC over the course of their projects, by participating in courses, attending lectures and conferences and teaching undergraduate students. Completed courses and teaching activities are listed in a portfolio at the back of the doctoral thesis. A one-day course on research integrity is mandatory for all Erasmus MC PhD candidates. Candidates who conduct animal experiments are required to follow a course on laboratory animal science, while candidates who are involved in patient-related research take part in a course on good clinical practice.

The committee conducted interviews with PhD candidates from different departments. All PhD candidates indicated that they are pleased with their scientific supervision. They highlighted the approachability of the supervisors and the freedom to determine their own research as positive points. The committee's overall conclusion is that PhD candidates are well trained, guided and supervised. Exact practices seem to vary from research school to research school, department to department and supervisor to supervisor. A number of candidates could benefit from extra support and/or more frequent meetings with their (co)promotors, specifically in the first year of their PhD. The workload can be high and although most PhD candidates regard this as part of their job, it is a point of attention. Specifically during the COVID-19 pandemic, PhD candidates might become isolated. In some departments the (informally registered) drop-out rates seem high. Possibly this could be explained by the fact that many PhD candidates combine clinical work and research.

The development of the Erasmus MC wide Graduate School is in a dynamic phase. The committee has a positive view on the ambition of Erasmus MC to have a more central role and position in the training and supervision of PhD candidates. The Graduate School is expected to change structures and procedures and make the supervision and responsibilities less strongly dependent on the department and even the individual supervisor. A more central role by the Graduate School will allow for more structure for the PhD candidates. Especially in the starting phase this will be very welcome, as most PhDs indicated that the first few months of their projects were challenging because of a lack of clarity on procedures. In addition, not all PhD candidates seem to be actively informed about the criteria that their theses must meet. On top of the Erasmus MC-criteria on number of publications, some departments seem to set (implicit) additional requirements.

Another issue that the Graduate School will be able to deal with is the absence of central monitoring of projects. No central information is currently available on total number of PhD projects, gender distribution, success and drop-out rates. The committee recommends to register this quantitative information, including previous training and discipline and duration of the projects and use these data for future evaluation of the PhD programme.

Practices around the duration of the contract that is offered to PhD candidates vary. While some departments offer contracts for the full (three- to four-year) PhD project, others initially provide a one- to two-year contract. In the latter case, PhD candidates are expected to contribute to securing funding for the remainder of the project (and the start of the projects of the next cohort). Although PhDs are never terminated because of a lack of follow-up funding, this system is (understandably) unpopular amongst PhDs, as the grant application process distracts them from their research and can be stressful.

Many PhD candidates describe their preparation for the labour market as good, or even very good. Their supervisors discuss the available options and are prepared to open up their networks to them. For some PhD candidates, however, this is not the case. In particular PhD candidates who are not MD's or who want to pursue a career outside academia mention that support for the transition to the next phase is limited. In some of the interviews the requirement to have a PhD to be eligible for a residency (specialist training) was discussed. This issue is probably not restricted to these departments, nor to Erasmus MC. Nevertheless, the committee is of the opinion that in some cases this might lead to PhD theses of lesser quality.

Finally, the committee asks attention for an external review opportunity to assess the developments of the PhD candidates' work to make a PhD candidate less dependent on the supervisor and promotor. The committee also suggests to consider a mentoring initiative in which all PhD candidates are connected to a mentor from a different department. Although PhD candidates can approach a confidential counsellor (ombudsperson) in case of problems, the committee is of the opinion that the threshold to contact this person might be high for some candidates. Furthermore, the mentor can also be involved in career development and can discuss more general academic topics.

III. Orthopaedic Surgery

Research quality	Very Good (2)
Relevance to society	Excellent (1)
Viability	Very Good (2)

Mission and strategy

The Department of Orthopaedic Surgery has a clear mission, which is to develop and implement innovative orthopaedic patient care and critically evaluate currently available treatment options. The department strives to be a leading, internationally recognized knowledge centre for clinical, epidemiological and basic research in all of its three research areas. These are:

1) Osteoarthritis;
2) Skeletal Growth and Development;
3) Sport and Traumatic Injuries.

In each of these areas, the department aims to include and connect clinical, epidemiological, translational and basic research.

The objective of being internationally leading on three topics, with each topic including clinical, epidemiological, translational and basic research is certainly ambitious – and may hamper focus. The broad range of research topics could jeopardize a clear profile and makes external communication more difficult. On the other hand, it fits within the dynamic nature and energetic approach of the department, which started with one research line on osteoarthritis and has shown impressive growth in terms of its scope, staff and external funding over the past decade.

The department's structure is designed to allow further growth of the research lines and staff numbers in the future. There is a solid research organization, which puts a lot of emphasis on the connectivity of staff members (e.g. monthly meetings of the science committee, quarterly lab-clinical meetings and annual science days). A research coordinator was recently appointed, which seems helpful. All staff members have dedicated research time (on average 15%). Research facilities are shared with other departments, ensuring a stable foundation. Also, the research itself is more cohesive than it seems at first glance. All three research lines focus on generation and degeneration of connective tissues of the musculoskeletal system. Therefore, the methodology used is transferable between the research lines.

The department's research seems to be well incorporated within Erasmus MC, as evidenced by interdepartmental cooperation in ACEs and research and educational programmes. Also, there are firm connections with LUMC and hospitals in the region. Collaboration with TU Delft started some years ago but has been stimulated by Strategy23. There are currently two professors with dual appointments and a shared TU Delft/ Erasmus MC postdoc. Finally, there are many long-lasting contacts with other universities in Europe.

Research quality

The quality of the research is very good, with a high percentage of publications (20%) published in top 10% orthopaedic journals. The department should also be congratulated for publishing some of its research in more general leading medical journals (e.g. The Lancet, BMJ), which is quite exceptional for an orthopaedic department. However, there is some concern over the fact that the mean normalised citation score dropped a little bit in the last years.

The department's contribution to its main research areas is significant. Among the highlights is the cohort study research on development of osteoarthritis during life, which uses the Rotterdam cohort (Generation R) as a source. This cohort is also used to study the prevalence and progression of hip impingement. These studies gained a lot of international attention and are part of international top publications in this field.

The more recently added research area of Skeletal Growth and Development has a very strong basic research line on cartilage that is internationally well known and rewarded by a prestigious award of the International Cartilage Regeneration & Joint Preservation Society (ICRS). The future potential of this line is high. This line is also connected to the research at the separate paediatric orthopaedic centre. Sports and Trauma is a long-running research line that had top publications in 2013 and 2014. More recently, the focus has somewhat shifted to comparing surgical with nonsurgical care. Publications are still in progress, so it is difficult to judge future impact.

The department as a whole has a strong academic reputation, the staff is prominent both at a national and international level. Scientific staff FTE's have increased substantially over the review period, and so have the number of publications. The overall productivity is impressive, although the number of PhD theses is rather limited (on average 3 per year) given the number of research staff and

the many research fields that the department covers. Having limited numbers of PhDs has the advantage that individual PhD candidates are very well taken care of, with supervisors helping them to get to the highest possible level and setting them up for success in future career development. The commitment of the department towards its PhDs positively stood out.

There is a focus on safeguarding research integrity. This topic is addressed individually at the very beginning of the appointment of a new researcher in the department. In addition, the topic is regularly on the agenda in research meetings.

Relevance to society

The societal relevance is excellent: the department focused its research on important societal problems like osteoarthritis, CAM impingement of the hip and sports problems, with the aim of improving care and evaluating the effect of current care. An important outcome in this respect is that the department's research proved that platelet-rich plasma (PRP) injections are not effective in treating tendon problems. As these treatments are very expensive, this result will potentially save societies a lot of money. The department's impact on societal problems is unquestionable.

The committee also appreciates that the department strives to embed its research in local networks, positioning the department as an academic powerhouse that creates the conditions for research, which is then carried out in surrounding hospitals with which the department has contracts. Equally impressive is that the department has been able to attract a lot of attention using both the scientific press as well as general media including journals and podcasts, both national and international. Improving the interaction with the general public, and specifically involving patients in the set-up and evaluation of research, is on the agenda of the department.

Viability

The department has a very good viability, as demonstrated by its strong growth over the review period, access to unique population-based cohorts, strong collaborations and high-quality outcomes for both the scientific community and society at large. Although the situation is not new, there are some concerns over the lack of structural funding (a common problem in the Netherlands) and the dependency on contract research (50% of the research budget), which makes the department vulnerable to sudden budget fluctuations and may interfere with the performance of basic research. Over the past fifteen years the department has built successful research lines with very little direct funding. Being 'mean and lean' was never before perceived as a particular hindrance because the department had no problems in attracting external funding. Having a bit more structural funding would, however, release some pressing issues. Slightly worrisome, for example, is the recent decline in the number of support staff, while at the same time there is an increasing legal and administrative burden, which is said to add significantly to the workload of basic and clinical researchers, as well as clinical staff. The department will consider initiating or joining a Theme-Trial Office, which the committee supports.

An upcoming challenge is the transition of leadership. The committee learned that the current department head, on whose large personal network the department has grown, is close to retirement. His successor, who will be chosen through an open application procedure, may experience difficulties in obtaining the same prominent national and international status. On the other hand, complementary networks from the other professors subsist, and the committee acknowledges that the succession of a leading figure may also bring new opportunities and energy. In any case, the selection process will require careful deliberation and guidance from the central level. On a similar note, the committee encourages the department and Erasmus MC in general to set clear criteria for promotion and – preferably – to adopt a tenure track system, as providing staff with clear career options will improve the long-term stability and robustness of the department.

Orthopaedic surgery is a discipline that has long been dominated by white males. The committee was therefore pleased to note that attention for diversity in growing, with the department aiming for a diverse clinical and research staff, not just in terms of gender, but also in terms of race, religion and sexual preference. Two out of three current professors are female, but amongst clinicians the male to female ratio (and the number of non-Dutch) is less favourable. To promote inclusivity, all scientific meetings are conducted in English.

Recommendations

1. The broad range of research topics could jeopardize a clear profile and makes external communication more difficult. Therefore,

increasing the focus of the research could be considered.
2. Try to become less dependent from contract research and obtain more structural funding for research.
3. Bearing in mind its organization and scientific output, the department could consider training more PhD candidates.

IV. Plastic and Reconstructive and Hand Surgery

Research quality	Very good (2)
Relevance to society	Excellent (1)
Viability	Very good (2)

Mission and strategy

The mission of the Department of Plastic and Reconstructive and Hand Surgery is to improve outcomes and quality of life for patients with congenital malformations of the face, skull or upper extremities, deficits following oncological treatment, and acquired problems of the wrist or hand. The department aims to achieve this objective through multidisciplinary translational and clinical research, in close collaboration with (inter)national partners and patient advocacy groups. In the committee's opinion, the aim of a safe healthcare system for patients with complex conditions and trying to predict, prevent and treat those conditions is perfectly in line with the overall objectives of Erasmus MC.

The department's research is divided into three research lines, which is a suitable number for a department of this size. The research lines themselves are well delineated and coherent. They are:

1) Oncologic reconstructive surgery and wound healing
2) Hand and wrist surgery
3) Congenital craniofacial disorders and cleft lip/palate

The first two research lines focus on problems involving big numbers of patients. Data collection and analysis of results are the main focus of these lines and researchers have access to several unique datasets. The craniofacial line is more specific and involves much less patients.

In the committee's opinion, the department has a carefully laid out strategy that aligns well with the Erasmus MC-wide Strategy18, and its successor Strategy23. The department's strategy opens up very good possibilities for implementation of national and international cooperation and big data collection. In the 2013-2018 period, technology and large-scale data research were present in all three research lines, which means that the department is well positioned for future activities in these prioritized areas. Connections to TU Delft (TUD) are already established.

International, national and local collaborations are at the right level. Specific mention should be made of the participation in the ACEs on Anatomical Congenital Anomalies and Bone, which are particularly helpful for the craniofacial and cleft lip/palate research line, and the mutually beneficial collaboration of the Hand and wrist surgery group with long-term partner Xpert Clinic.

Management and leadership are efficient. The quarterly meetings of the research committee, which are attended by all research-active staff members, are a good way to heighten the sense of commonality within the department. Moreover, the management tries to accommodate staff members in their preferences for research, education or patient care, albeit with time, not with structural funding. To further reinforce the research structure, the department would like to set up a trial bureau/research office, which is currently not in place because of a lack of structural funds. The committee agrees that the services of a trial bureau could be beneficial, though such a bureau should not necessarily be established at the department level, as this would not be cost-effective. A collaboration with a trial bureau of another department could be considered for the oncologic and craniofacial research line. For the hand surgery research line, a trial bureau seems not needed because of the presence of just two full time researchers. The possible enlargement of the team with research nurses could support the continuity of data collection.

Department representatives informed the committee that the new Research Suite data management and sharing facilities and the PaNaMa software are fit for purpose. Prior to the implementation of this new facility, OpenClinica and GemsTracker were used for data storage.

Research quality

The quality of the research is very good and steadily improving. In spite of a lack of high-impact journals in the field, the number of publications and mean normalized citation score has continuously increased over the review period. The scientific quality is reflected by several scientific awards and prizes, research grants, membership of scientific committees, invited lectures and research tools used by peers. Small research topics outside the main research lines were reduced during the assessment period, thereby increasing overall focus.

The research line in congenital craniofacial disorders should certainly be considered world leading. Moreover, the department is (inter)nationally very well known for its hand and wrist research line, which also delivers high quality results and tellingly has two fulltime researchers on board. Oncologic reconstructive surgery and wound healing is not (yet) at international top level, but nonetheless doing a valuable job. To further improve its international standing, this research line could perhaps continue with data collection but also put more emphasis on innovation. Ongoing projects with TU Delft are very promising for the future.

The committee was pleased to find that the department, which handles large volumes of patient information, has good policies and practices with respect to safeguarding research integrity. The main focus lies on the prevention of integrity issues. All new researchers, not just PhD candidates, are briefed on the Erasmus MC Research Code and obligatory procedures. Aspects of integrity such as secured data storage and the disclosure of all data in publications are continuously discussed in research meetings.

The department has a substantial number of PhD candidates and puts effort into setting up and maintaining a basic infrastructure for PhDs. PhD candidates are either scouted from the two-year NIHES research master's programme in Health Sciences or sent to that training programme after they have been recruited. The NIHES-route is thought to increase the effectiveness of the PhD programme, because offering three-year PhD appointments is only feasible when candidates already have some research experience. According to department representatives this approach helps to reduce costs and dropout rates.

Postdoc researchers are much smaller in number, mostly because they have to bring in their own funding and opportunities are scarce. The department would like to increase the number of postdocs, as these fulltime researchers could further boost research efforts. This is an endeavour that the committee fully supports. An appropriate next goal would be to establish a professorship in hand surgery.

Societal Relevance

The committee is impressed by the societal relevance of the department. By collecting and analysing large data sets on patient experiences, the department makes an important contribution to the evaluation of techniques and the relevance of surgical practice for patients and society. The self-stated intention to also expand to international data could well make the department an international authority in this field.

Adding to the department's societal relevance is the fact that it produces manuals, guidelines and policy documents for professionals and practitioners in its main areas of the research. Moreover, the department is coordinator of the European Reference Network (ERN) CRANIO, which highlights its international standing. In the documentation and interviews, many examples were mentioned of interaction with patient organisations (e.g. Borstkankervereniging Nederland, BVN), students and citizens, as well as contributions made to the media.

Viability

The department is very well equipped for the future, mostly because of its stable structure, solid research lines and sound management. Within Dijkzigt, this is one of the smaller departments, but compared to similar departments elsewhere it is sufficiently substantial.

The department has a good understanding of existing challenges. From the interviews, the committee got the impression that threats to future viability are well managed. One such challenge is that in niche sectors such as craniofacial research it is difficult to find sufficient numbers of patients. This, however, is mitigated by stable and well developed local, national and international collaborations, not least through the CRANIO ERN, whose project manager is a staff member of the department. Present and future collaborations with TU Delft are also very promising. The needs of the department are well aligned with the technical solutions that TUD can deliver.

An issue that was flagged in the interviews is the high workload of staff, particularly for those involved in the clinical work. Clinical tasks and research tasks are in constant competition with each other. Nonetheless, it seems that clinicians can spend up to 1-2 days a week on research, which amounts to more dedicated research time than in some other places. Bringing in more postdocs as well as supportive staff would, as previously stated, be a good move.

The department is largely dependent on external funding, most of it (53% in 2018) coming from contract research. Research grants obtained in national scientific competition (e.g., grants from

NWO and KNAW) are much less prevalent and, as elsewhere, direct funding is decreasing.

Leadership of the department is relatively young, and succession is therefore not an immediate issue. Nonetheless the committee believes that a well-established tenure track could benefit the department and prevent future issues in this respect. The gender balance within the department is good, but diversity in terms of nationality/ethnicity could be improved.

Recommendations

1. Monitor the balance between clinic and research for the staff members involved in both activities. Possible strategies to lessen the workload of staff members are:
   a) Possible association to trial bureaus of other departments in the future;
   b) Including research nurses in the team.
2. Future monitoring of the collaboration with TU Delft, setting clear annual goals, above all in the field of innovation.
3. Introducing a hand surgery professorship

V. Surgery

Research quality	Excellent (1)
Relevance to society	Very Good (2)
Viability	Very Good (2)

Strategy and targets

The mission of the Department of Surgery is to contribute to a healthy population and pursue excellence in the areas of oncology, gastrointestinal, hepatobiliary, vascular, transplantation and trauma surgery, by providing high-quality, timely, and efficient patient care, research, and education.

The department is organised in four sections, each headed by a full professor, assisted by one or two associate professors who coordinate and support the research lines. These four sections are:

1) Hepatobiliary and transplantation surgery;
2) Gastrointestinal surgery and surgical oncology;
3) Trauma surgery;
4) Vascular surgery.

During Strategy18, the department worked on developing a clear profile, aimed at complex, tertiary patient care in combination with research. The department recognizes the need for an integrative, multidisciplinary, translational approach, which has involved extending the department's local and regional network.

Strategy and goals are currently nicely developed, responding to timely and clinically relevant questions. However, the committee would have preferred to see the wider context of surgery reflected in the department's strategy. It encourages the department to reflect more fully on the shifting context that it finds itself in, notably on the effect of the changing position of surgery in healthcare and therefore research, and on the changing position of academia versus the (growing magnitude) of non-academic hospitals. Also, the committee stresses the importance of careful strategizing around succession of current leadership and around securing dedicated research time, which is continuously under pressure (cf. 'Viability'). Both of these are issues that also deserve specific attention of Erasmus MC in general.

The department seeks alignment with Strategy23 by incorporating related goals in its annual plans. This is felt as a gradual shift in focus and not as a sudden change, illustrating that there was prior alignment to the general course Erasmus MC was taking. The committee notes that there are deliberate connections with TU Delft (TUD) in almost all sections, aimed at finding technical solutions for clinical problems. This is strategically wise and necessary for advancing and innovating surgery. Notable examples are the cooperation on developing an organ incubator that allows for prolonged storage and regenerative interventions for kidneys (hepatobiliary and transplantation surgery), the development of an Innovation Lab Health Care that will allow 3D printing and biomechanical evaluation of implants (trauma surgery) and the development of a 'smart knife' (gastrointestinal surgery and surgical oncology; a project that includes two joint Erasmus MC-TUD post-docs). In the interviews, such joint projects were described as exciting and promising.

The committee welcomes the recent (2017) establishment of a research office, which supports the department's (clinical) research by monitoring projects, managing data and safeguarding research integrity. The range of tasks of the research office has not yet fully crystallized. According to the committee it could be further sharpened and expanded (e.g. by adding manuscript proofreading, editing services and support in grant applications) in order to more fully support the research staff.

Research quality

The overall quality of the research is excellent. In most of its research areas, the department should be considered world leading. This is reflected by a very high mean normalised citation score and by the highly respectable percentage of papers that is published in top 25% journals. Research is performed at all levels (basic, translational, clinical) and the research topics are globally novel, timely, and with a significant potential impact. They respond to the areas of clinical expertise at Erasmus MC and generally take a multidisciplinary approach. The academic reputation of the department is similarly excellent: many key staff members are renowned experts and part of networks, societies and boards.

Almost a hundred PhD theses have been defended in the past six years, which is impressive. The high numbers of excellent PhD candidates appear to be a key element in the success of the department. Almost all of the PhD candidates (>95%) are MDs whose initial ambition is to become surgeon. Most (>95%) of them successfully finish their PhD projects. The PhDs that took part in the review are satisfied with the supervision and training that they receive.

After an earlier incident, the department has suitably intensified its efforts to safeguard research integrity. The department established a Scientific Integrity Committee in 2013, in which four members represent each section. This committee prepared the department's first Scientific Integrity Plan in 2014. All new researchers follow a mandatory course on research integrity, which is coordinated by the research office. Also, the topic of integrity is regularly addressed in research meetings.

Societal Relevance

The department's main impact on society is through the application of scientific results derived from high-quality high impact studies, e.g. randomized trials and translational studies. All four sections have very good societal relevance through the high-quality products that their research lines deliver and that, in many cases, have a positive impact on patient care. The department's societal relevance is also clear from the contributions that it makes to the development of guidelines and through staff member's membership of research and policy organisations.

There is no particular societal relevance strategy, but the management informed the committee that the department is now much more proactive in encouraging staff to pursue societally relevant research activities than it was ten years ago. Further progress could be made in communicating with stakeholders and the general public and in involving patients in research. The committee was, for instance, told that meetings with patient organisations take place ('Hart/Vaat café'), but there is no formal structure or policy in place to support this. A suggestion would be to ask the research office to coordinate such activities. In light of Erasmus MC's multicultural context, the department may also wish to reflect on making tailored contributions to specific cultural groups.

Viability

The viability of the Department of Surgery is very good, based on its impressive earning capacity, its high-impact output and the quality of its staff. Established researchers have good track records and the committee observed significant potential in younger staff. Nevertheless, attention should be given to developing a strategy on the succession of senior staff that has retired or will retire soon. Such a strategy should include plans for supporting and promoting internal talent (by way of a tenure track programme) as well as plans for identifying and recruiting external talent. This is particularly relevant for gastrointestinal surgery, but also applies to the other sections.

On a similar note, the committee was made aware that staff are under high pressure because of the multitude of their tasks, with clinical duties claiming priority over research tasks. Giving dedicated research time to talented young researchers (as has been done recently) is an appropriate first step, but as the department is well aware, this will not completely solve the problem. Employees can easily become fully immersed in clinical and administrative duties, even if they have protected research time. The committee believes that a proper strategy for safeguarding research time should be developed, preferably supported by Erasmus MC-wide policies.

The composition of the staff also requires a bit of attention. The department needs more postdoc researchers and assistant/associate professors in order to maintain and further develop its research strengths and offer career perspective for the younger staff members. The committee was pleased to hear of some recent appointments but feels that more should follow. The staff is appropriately diverse: there is an almost equal gender balance amongst fulltime research staff and many different nationalities are represented at the department.

Finally, the committee feels that investing in transversal structures (like the research office, which according to the SWOT-analysis has not yet reached its full potential) should be promoted, thus responding to the growing complexity of research-related administrative duties.

Recommendations

1. In order to sustain the current high research quality, research efforts should be better supported, by offering appropriate assistance with research-related administrative duties (e.g. well-equipped research office, research nurse) and by protecting research time.
2. The department needs a succession strategy for retiring staff including a clear communication plan, based on promoting and nurturing home-grown talent and/or recruiting the necessary external talent.
3. The committee encourages the department to reflect more fully on the shifting context that it finds itself in, notably on the effect of the changing position of surgery in healthcare and therefore research, and on the changing

position of academia versus the (growing magnitude) of non-academic hospitals.

4. The department could better communicate on (and thereby profit from) the high societal relevance of its research activities

VI. Gastroenterology and Hepatology

Research quality	Excellent (1)
Relevance to society	Excellent (1)
Viability	Very Good (2)

Strategy and targets

The mission of the department is to have an impact in better understanding of and care in the major areas of gastroenterology and hepatology associated with tertiary care. To achieve this clear but very broad mission, it has chosen to organize its research in two different dimensions. The first dimension is related to organs (i.e. oesophagus, stomach, pancreas, small intestine, large intestine and liver), while the second relates to disease type (i.e. cancer and inflammation). The committee notes that these two dimensions are helpful in giving direction to the research efforts in what is by all standards a vast research domain. For each organ of the GI tract, research is performed in these two dimensions: malignancy and inflammation. This is a useful distinction to make.

The documentation and interviews made clear that the current research strategy is the result of careful deliberation, which took place after the Hepatology Section lost one of its key researchers. The committee was pleased to learn that the department does not shy away from making strategic research choices, in relation to its HR policies. Over the course of the review period, some research topics were abandoned in favour of other, more viable, topics. The targets that the department sets itself are suitably challenging. Furthermore, the strategy of the department is compatible with Strategy23. A focus on promoting a healthy population and cooperation with TU Delft with the aim of technical innovation was already in place in the 2013-2018 period.

The organization of research is sound. Strategic research decisions for the department as a whole are taken by the head of the department in close consultation with the head of the laboratory and the head of the Hepatology Section. The department management team plays an advisory role. Individual staff members have considerable autonomy in their research efforts, which they clearly appreciate. Despite its substantial size, the department as a whole appears harmonious and cohesive. Ever firmer cross connections between hepatology and gastroenterology and between lab and clinic are being established. This is aided by the fact that the whole department is now housed in one location.

Research support is organized in a decentral, ad hoc manner. In the self-evaluation report, the clinical trial bureau and dedicated team of administrative and research staff (i.e. laboratory managers, secretarial support, statisticians, etc.) were described as a particular asset of the department. At the same time, however, the size of available support staff has not kept pace with the size of the research output, which tripled in size during the evaluation period. The department is aware that this disconnect may well become problematic and should be dealt with without further delay. Research accountability, integrity and data storage are firmly on the agenda. The committee learned that, in recent years, there have been some problems with data storage and back-ups. The department therefore looks forward to the arrival of the centrally organized Research Suite.

Research quality

The department performs world-leading and original research in the different research lines dealing with the different domains of the GI tract and the liver, resulting in a very high mean normalised citation score and numerous papers being published in peer-reviewed journals with a high impact factor. In all of these domains there's a combination of clinical, translational and basic research.

In the field of oesophageal diseases, the department was the largest contributor of patient samples to the Oesophageal Adenocarcinoma Consortium clarifying the genetic basis of Barrett's oesophagus. This led to a landmark publication in Nature Genetics in 2012, just before the evaluation period. Analysis continued during the period with e.g. a publication in Gastroenterology in 2018 (IF 19.2). The department is also conducting large scale randomized clinical trials on management of pancreatic diseases in conjunction with the Dutch Pancreatitis Study Group. In some trials, the department is leading with publications in high-ranking Journals as Lancet 2015, 2018 (IF 59.1) and N. Engl. J. Med 2014 (IF 70.7). The department also contributed to the WHO aims to largely eliminate chronic viral hepatitis B and C by 2030 by designing a road map for its elimination, published in Lancet Gastroenterol Hepatol 2019 (IF 14.8). The liver transplantation programme is the largest in the Netherlands, allowing important studies to take place on this tertiary activity in collaboration with the Department of Surgery.

The excellent academic reputation of the department and its key researchers is evident from the substantial number of scientific awards and prizes, invited lectures, personal research grants, collaborative research grants coordinated by the department, memberships of scientific committees and visiting and honorary professorships.

A further sign of strength is that the department thinks carefully about the research areas in which it can achieve the best possible outcomes, and therefore the highest impact. Funding strategies are equally careful and deliberate.

The department hosts large numbers of international PhD candidates, which is a sign of its international visibility. The committee established that supervision and training are solidly organized. The department puts a lot of effort into offering proper guidance to its foreign PhD candidates, many of whom are from China. Particularly appreciated is a buddy system which the department initially adopted for clinical PhDs, and which will now also be extended to PhDs in the lab. For each novel PhD candidate a so-called 'buddy' is appointed, who is a more experienced second or preferably third year PhD candidate acting as the first point of contact for small problems or questions that may arise. Foreign PhDs ideally get two buddies, one from a Dutch background and one from their own country of origin (if available). In combination with other measures, this system assures that PhDs are sufficiently aware of requirements, including those on research integrity and proper data management. To further ensure that all PhD candidates receive ample supervision and instruction, the department has recently decided to put a cap on the number of foreign PhDs.

Relevance to society

The department's research is highly relevant to society as it makes a major contribution to preventing disease in gastroenterology as well as to improving treatment options. Strategies aimed at the early detection of carcinomas have proven their value in the field of colon cancer and are now being copied to, and tested for, stomach and liver cancer. The department is to be congratulated on the fact that there is active policy on disseminating results to society and involving stakeholders in research. Staff members are encouraged to be proactive in this respect, and relevant activities are discussed during their annual appraisal. This policy seems to have contributed to the department's success in terms of societal relevance.

From the documentation and interviews, the committee established that there is abundant interaction with society, as is apparent from the department's contributions to (inter)national manuals, guidelines, policy papers, newspapers and journals for professionals and practitioners. Furthermore, there is active (and growing) participation in various governmental and (inter)national societal bodies (e.g. NVDML, NVGE, NVH, ICC, PWN). Many staff members are active members or consultants of Patient Societies within their respective specialties and several have been awarded public prizes. There are also a number of spin-off companies that use technology developed by the department. Some of the research (17% in 2018) is paid for by research contracts with pharmaceutical companies, government councils, societal groups, patient organizations and private individuals in the Netherlands and abroad.

Viability

The committee is convinced of the viability of the department, which has a solid historical foundation, a number of excellent, internationally leading research lines, sound strategies and funding policies, and a dedicated staff with an appropriate gender balance. The department is looking firmly ahead and addresses challenges head on, as is evident from the way that it is handling the upcoming succession of three senior staff members who are nearing retirement. The committee was pleased to learn that the department has set up a tandem construction, in which younger staff members already share in the responsibilities of older staff members who they will most likely succeed in time.

The committee also identified a number of challenges, most of which require attention at the central Erasmus MC level. For example: the department would unquestionably benefit from an Erasmus MC-wide tenure track system which could help the department in nurturing, promoting and retaining talented staff members. Safeguarding dedicated research time, which appears to be under a lot of pressure because of increasingly demanding clinical and administrative duties, is a related issue that requires an Erasmus MC-wide strategy. The workload of staff members should be based on a realistic assessment of what they can reasonably handle. Moreover, the department could use support for its currently understaffed clinical trial bureau.

A final issue that the committee wishes to raise is that a number of starting PhD candidates are not

funded for the entirety of their appointment. In these cases funding runs out after 1-2 years and the PhDs themselves play a role in securing the necessary follow-up funding for the remainder of their project and the start of the projects of the next cohort. PhD candidates indicated to the committee that grant-writing takes up a lot of valuable time that otherwise could be spent on research. Not funding PhDs for the entirety of their project seems to cause unease and stress and should perhaps be reconsidered.

Recommendations

1. Action is needed on reorganization and increase of the research support to keep pace with the research output of the department.
2. Problems with storage and back-up of data should be managed, probably at Erasmus MC level.
3. The department would benefit from an Erasmus MC-wide tenure track system for promoting and retaining talented staff members.
4. The workload of staff members should be based on a realistic assessment of what they can reasonably handle; dedicated research time could aid in this issue
5. In order to reduce unease and stress, the department should reconsider its policy on PhD candidates who are not funded for the entirety of their appointment, signifying that they have to play an important role in securing the necessary continuation of their own appointment by grant writing.

VII. Internal Medicine

Research quality	Excellent (1)
Relevance to society	Excellent (1)
Viability	Very Good (2)

Strategy and targets

The Internal Medicine Department has the mission to pioneer innovation in research, education and care by bringing science to the patient. To achieve this, the department has a tandem approach of close interaction and collaboration between the laboratory and the clinic.

The department consists of eight sectors: Endocrinology, Nephrology, Pharmacology-Vascular and Metabolic Diseases, Infectious Diseases, Clinical Immunology and Allergology, Geriatrics, Acute Medicine and Nursing Sciences. For each sector, a sector head is appointed who has delegated responsibilities for research and clinical care. The department has nine research laboratories: five endocrine laboratories, a pharmacology lab and a lab for vascular and metabolic diseases, a renal insufficiency and organ transplantation lab and two full diagnostic laboratories.

The Internal Medicine Department is large and disparate, undertaking a wide range of research endeavours and linked to many clinical specialties. There are clear benefits of scale, and critical mass of connected experts. There is also, though, inevitably a portfolio aspect to the research undertaken and fragmentation is a potential risk. Collaborations between sectors within the (clinical) department seem not very prominent and may be reinforced. The “Clinical and Experimental Medicine initiative” (CEMi) as well as the formation of a think tank that came into effect in the course of 2020, will probably improve coherence and effectiveness of research governance of the department.

The department has a long track record and a very established reputation in certain fields. This brings the advantages of national as well as international esteem and visibility, but also the risk of stagnation if change is never considered. There are clear differences in sizes of the various sectors, in particular the small and young sectors like Geriatrics versus larger and older sectors. There is a disadvantage for the small sectors, as historical budget (direct funding) is low. At the same time, the current changes in strategy and governance of the department may provide particularly these small sectors with opportunities to grow. These pros and cons have been considered in a very clear-headed way by the leadership of the department, who presented them clearly and thoughtfully during the virtual site visit.

There is a significant change agenda within the department, which finds itself needing to respond to recent changes, for example decreases in direct funding and core funded posts, increased clinical workloads, and to its own desire to ensure inclusivity in determining departmental activity and research direction among its staff. The departmental initiatives around a periodic think tank exercise through 2019-20 and the current CEMi initiative have shown very promising initial results, and the wider departmental staff give a sense of a unified team that are working together to build on their history of strength. It is all the more impressive that this has been achieved during the current COVID-19 pandemic, which has itself necessitated profound changes in work patterns.

During the virtual meetings, the committee established an open culture in which many issues are discussed. Clearly, the department has contemplated upon its strategy and although it is still work in progress, the committee is positive about the dynamic and reflective phase the department is going through.

The committee wants to compliment the department on the developments with regard to the independent monitoring and evaluation of PhD candidates. Although the committee agrees with the department that such an initiative is best developed at Erasmus MC level. Until then, the committee encourages the department to continue assessing the progress of PhD candidates independently of the supervisor.

Research quality

The Internal Medicine Department is a very large department and is overall internationally very well known. Although a department of this size inevitably has a variation in the quality of the research, the committee notes that there were several excellent achievements during the evaluation period. The department combines basic research with clinical research in a fruitful and truly translational way and there seem to be no major infrastructure issues in this respect. The collaborations and crossovers between sectors seem to be most visible in the laboratory, where a wide range of technologies and equipment are used by the different sectors. The best outputs of

the department are regularly published in the very top medical journals. Some of the researchers are considered opinion leaders with excellent visibility who are in the position to switch gears and initiate changes, e.g. by representation of one of the PIs in the field of neuroendocrinology as past president of the European Society for Endocrinology, and by excellent international positioning and visibility of another PI in the thyroid field.

The quality of the research by the sectors varies between very good and excellent with many outstanding researchers and research lines. The research is typically nationally leading, internationally recognised and in several areas internationally leading. This high quality is reflected in the metrics. With 1,93 the mean normalised citation score is impressive for such a large department. The ongoing work is clearly world leading in several fields, and of international interest throughout.

Collaborations within the department appear limited, which is acknowledged in the self-evaluation report and explained by the diversity of research topics in the different sectors. The fact that the research in the department takes place at three distinct sites may further limit the intradepartmental collaboration.

Strong collaborations are observed with several universities in the Netherlands. In particular the collaborations with TU Delft and the convergence are considered an opportunity by the department. Examples of existing projects with TU Delft are impressive, like Doctor 2.0, e-monitoring of immunology patients and the use of apps in diabetes care. National and international collaborations appear to vary significantly by sector, but some very strong examples were mentioned in the self-evaluation report.

Relevance to society

Societal relevance of the work of the department was convincingly demonstrated through the portfolio of evidence presented in the written reports and in the presentations during the site visit. Examples included impact on policy makers and new treatments for orphan therapies. Another impressive feature is that many patient advocacy groups collaborate with the sectors. Finally, the department reaches out in the media, including national radio and television, on many occasions. Especially for prevalent diseases with a considerable societal impact there is excellent representation, for example in news items covering diet and obesity, or thyroid disease and pregnancy. This is facilitated by various population-based studies (Generation R) that the various sectors participate in.

Viability

An open research culture was evident in the department during the virtual site visit. There was a shared sense of mission and of an enjoyable work environment that challenged staff to do their best without undue stress that was seen in discussions with leadership, investigators, and PhD candidates. The department has a long and eminent track record, and this history enhances the security of the department looking ahead.

There are some significant changes (planned and unplanned) which necessarily impact on viability of the department in the short term. The support from the senior decision makers of Erasmus MC for the department will be crucial in navigating these such that the department meets its potential on the other side of them. These include:

- The re-evaluation of research goals and inclusivity agenda being enacted via the think tanks and CEMi;
- Recent decreases in central funding and consequent reduction in FTE staff;
- Increased clinical pressures. COVID has contributed, wider issues were also iterated, around need for clinical business cases and high levels of activity for academic staff;
- Increased administrative pressures.

Regarding the last, increased administrative load on researchers was a recurring theme. Additional support here has the potential to empower research staff to achieve more. A specific example was uncertainty of residual grant funding in active projects, leading researchers to feel the need to “shadow book keep” their projects, so that they could plan activity adequately.

The department has a long track record of productivity and overall success. The many examples of nationally and internationally leading work, the scale of the department, core importance of the research topics and past performance provides the department with a robust and stable position for the future. The SWOT analysis, future targets and changes that are currently made in governance and strategy leads to the conclusion that the department appears highly viable.

Recommendations

1. The committee fully supports CEMi as a means to improve coherence and intradepartmental collaboration, and to reduce fragmentation
2. Pay attention to opportunities for small sectors to grow
3. Develop a strategy to compensate for the decrease in direct funding, e.g. by actively supporting the writing of grant applications.

VIII. Dermatology

Research quality	Very Good (2)
Relevance to society	Excellent (1)
Viability	Very Good (2)

Strategy and targets

The mission of the Department of Dermatology is to improve the diagnosis, treatment and outcome of patients with dermatological conditions. The department carries out clinical, epidemiological, cost-effectiveness, qualitative and translational research to detect conditions at early stages, improve treatment and prognosis and change public health policies.

The department is organised in four major clusters: research, education, care and general management. The research of the Dermatology department consists of three relatively new and large research lines:

1. Oncology: mainly non-melanoma skin cancer;
2. Eczema and atopy;
3. Hidradenitis suppurativa.

All three lines deal with research in diseases that involve large groups of patients. These patients are suffering from diseases that substantially influence the patients' lives, and therefore the diseases have a high societal impact.

In addition to these three main lines, there are six more research lines. These lines will either be discontinued in the near future or are relatively new and are expected to grow. The research lines in the latter category get the chance to develop and – if successful – might be combined with the three main research lines.

The department has a clear organisational structure of the research, with PI's for the three main research lines and adequate numbers of research staff.

Within Erasmus MC and the Dijkzigt theme, the Dermatology Department collaborates with many other departments. There are also collaborations with the Technical University of Delft (e.g. on laser assisted delivery of medication) as well as with the CHDR (Center for Human Drug Research) in Leiden. Collaborative activities are furthermore observed on (inter)national registries and with large databases. The research staff of the department is involved in setting up (inter)national guidelines and (inter)national projects. Finally, the committee establishes that the research staff collaborates closely with patient organisations.

The Dermatology Department has a well-established research department with an energetic research staff and is well-prepared for the important current and future scientific issues in the dermatological landscape.

Research quality

The review by the committee on the research quality is predominantly based on the three main research lines. The committee is positive about the strategy of this relatively small department, which has opted for three main lines of approach and also provides room for both phasing out lines of research and including new and promising lines of research. The department opts for focus while there are opportunities for new initiatives and possibilities. The committee expects that the phasing out lines of research will indeed be terminated after a certain period of time.

The quality of the research in the department is high and internationally recognized. The scientific output in numbers is very good with an impressive mean normalised citation score of 1,93. In addition, the number of successful PhD defences is very good with an average of five per year, also in the years 2019 and 2020. Large epidemiological studies on non-melanoma skin cancer have been published together with established Investigators from USA, as well as a high impact paper regarding an international trial on Hidradenitis Suppurativa. High quality studies are set up on drug delivery and pharmacology with CHDR Leiden. Furthermore, a large number of studies on severe atopic dermatitis in adults in children with high output are funded by ZonMw. Several large Investigator-Initiated proposals have been granted in the last years, such as systems medicine approach to atopic dermatitis, national longitudinal registration and analysis of cutaneous squamous cell carcinoma, and artificial Intelligence for prediction and progression of non-melanoma skin cancer.

Relevance to society

The Dermatology Department carries out research on common diseases of which the severe forms have a major impact on patients' daily lives and society. The mission statement explicitly mentions the patient perspective. This means that the department wants to focus on the needs of patients and translate these into research. When setting up research projects, the patient is increasingly included in advance in the design of

the research. The department does this, for example, in patient focus groups, but also with healthcare providers. The department actively seeks collaboration with patient organizations to get their input. Support was also provided in the organization of meetings for rare diseases and hidradenitis suppurativa (Netherthon syndrome or basal cell naevus syndrome). The department actively supported the establishment of the patient organization for people with non-melanoma skin cancer (www.hukas.nl).

Although it is relatively difficult to obtain external research funding for a number of common disorders, the department has its own knowledge agenda to conduct research into these disorders as well. After all, these are 60-70% of the conditions a dermatologist sees in practice.

Furthermore, the researchers of the department are well recognized by the international dermatological society and are involved in international collaborations and organization of international conventions.

Viability

During the evaluation period, the department went through a transition in which major lines of research from the past are being phased out, focus has been put on research and new lines of research have been started up. The start-up and development of these lines of research and a rejuvenation of the research staff have resulted in a temporary dip in successful fundraising. Recent results show that the department is absolutely capable of attracting large and prestigious grants, for example from ZonMW. In 2019-2020, for example, more than 5 million Euros has been raised in grants. The committee welcomes the statement of the head of department that efforts should be made to obtain second stream money, in addition to pharma-funding, which is relatively easier to acquire.

A challenge for the viability is described by the department as the lack the infrastructure (e.g. lab equipment) and personnel (e.g. research technicians) to carry out experimental and translational research within the department. In addition, access to the core facilities can be difficult with waiting times and costs for analyses. This issue is particularly important to deal with as the department plans to increase translational research in the near future.

The committee is fully supportive of the department's objective to develop more strongly its translational research. By strengthening the connection between epidemiological research and the laboratory and by increasing focus, the research quality will further increase. By strengthening the molecular part, the trajectory from molecule to human and to population the attention will strengthen as a whole. The committee has every confidence that the current departmental management can effectively support and facilitate this ambition.

Recommendations

1. Work towards more focus on the main research lines.
2. Further develop more strongly along the three major research lines.
3. Continue the current line of fundraising and keep expanding towards VENI, NWO.
4. Explore reasons for relatively high drop-out rates of PhD's.

IX. Rheumatology

Research quality	Very Good (2)
Relevance to society	Excellent (1)
Viability	Very Good (2)

Strategy and targets

The Department of Rheumatology is a small department with a limited number of senior academic staff, most of which are also clinically active with the exception of the translational research leader. This translational research leader is in charge of the translational wet laboratory. The Department of Rheumatology is considered as a department in transition, as the previous head retired unexpectedly and is replaced by the current ad interim head of department. This led to an open position in senior staff. The department has three clear research lines: Early arthritis, Reproductive rheumatology and IL17/IL23 pathways.

The reproductive rheumatology research line is directed by the ad interim department head. The research line on reproductive medicine and rheumatic diseases is very original and fairly uniquely positioned at the global level. This is an area with high potential for growth and further positioning as world-leading experts. This also results in clear recognition and structural funding at the national level.

The IL17/IL23 pathway research line by translational research leader has dealt with a number of challenges it has been facing over the last years, and aims to increase local collaboration (e.g. with dermatology) and diversify (e.g. move away from animal models towards alternatives). This research line is well respected internationally. It does seem to suffer from a change in the Dutch research funding climate, in particular the reluctance to support primarily animal model studies. The research facilities available are extensive yet represent a potential trap and weakness. The costs for the department to sustain the independent lab facility appears to be around 250.000 euros per annum. It is structurally very difficult for the department to work on the basis of such a net a priori investment to grow. Therefore, a critical reappraisal of the needs, of integration with other immunology laboratories and clearer collaborations with core facilities seems required. Such an approach would alleviate the financial risks for the department and help the organization and its research.

The early arthritis research line was directed by the retired department head and is now strengthened by the arrival of a part-time full professor who is also affiliated with the Leiden University Medical Centre (LUMC). This research line is more difficult to assess. It may be dependent for the future on part-time appointments of senior academic staff and has some challenges to differentiate itself from word-leading institutions in the Netherlands such as LUMC, risking that Erasmus MC remains underrecognized. The focus on psoriatic arthritis with strong staff members present at Dijkzigt, rather than early rheumatoid arthritis, is an opportunity to become more independent and visible and is encouraged by the committee. In addition, the committee is of the opinion that there are potential opportunities In the Erasmus MC as well as the region. The collaborating care networks focused on rheumatology represent a unique tool and opportunity to become national and European leaders in this area. Hence further recruitment and commitment of junior staff will likely help establish this leadership.

Research quality

As mentioned previously, the three research lines have different profiles. The combination of the research performed is very interesting, is considered to be of good to excellent quality and with great potential for the future. The work in the reproductive rheumatology research line is very good with some excellent output (top journals in the field). This research line has a clear identity and the group is well represented in recommendation committees and international societies. The output of the translational lab is good. Despite some funding struggles during the review period, the research line produced high quality papers in very good journals. The PI of this research line enjoys an outstanding reputation in the field. The renewed focus, also in collaboration with the early arthritis research line and the excellent fit of the IL17/IL23 pathway research with psoriatic arthritis, is an excellent opportunity to strengthen the translational research. The quality of the early arthritis research line is very good with increasing impact in the field of psoriatic arthritis. The full benefits of the part-time appointment of senior academic staff from LUMC have yet to be established.

A major opportunity for this department in transition is moving forward from a somewhat introspective department towards a more diverse, open and intellectually stimulating setting in which the ambitious young researchers can thrive in the presence of more experienced leaders. A stronger

presence in representative functions in Dutch rheumatology, in international societies and active participation in international congresses will benefit the external view on rheumatology at Erasmus MC and could position the department as an international clinical and scientific centre of excellence.

Relevance to society

Most of the research in the Rheumatology Department is directly patient-linked or translational research. The impact on society is considerable and in particular in the field of reproductive rheumatology with clinical referrals from across the country, leading roles in scientific recommendations and recognition as key opinion leaders in major international conferences. This internationally recognized clinical and scientific expertise of senior staff members is another indicator of the societal impact. The willingness to have an effect on society by reaching out towards the general public, contributing to guidelines, and representation in qualified bodies is excellent, in particular in the context of the reproductive medicine research line. Given the small size of the team, the current strategies work well. As also highlighted above, the committee sees opportunities in a more concerted action with the Public Health Department and a stronger focus on psoriatic arthritis.

Viability

Despite an impressive performance on research quality and relevance to society, the committee identifies some threats to the viability of the Rheumatology Department. It is important that the department develops a good funding strategy, targeting the different programmes available in the Netherlands and beyond. The department has the potential to be successful in NWO-calls but also ReumaNederland and at the European level. The committee suggests to further build on the internal interaction and make maximal use of the supporting services provided by Erasmus MC.

The staff number is low, representing a real threat in case of a health issue or an unexpected departure. Furthermore, it seems that not all staff members appear to be at the same level of commitment to scientific contributions. The part-time appointment of an external PI in the early arthritis research line was a good idea to boost the relationship with LUMC. In addition, she can bring a new vibe to this research line.

For the future research strategy and resources, the recruitment of new senior staff will be crucial, as well as the appointment of a new department head. Whatever way these positions will be filled, the urgency of establishing strong links with the dynamic current team members will be essential to define its success.

Income – in particular second stream funding – is rather variable, in particular for the translational research team. The current head ad interim or new head of department will need to ensure a strategy, maximum engagement and fallback options.

A final concern are the high costs for the laboratory infrastructure, most of these being paid internally. The annual amount of these costs appears to be proportional to the surface rather than to the number of people working there. It is recommended that the department seeks a solution, for example moving or merging. This way, the department can assure that it properly invests in research rather than in square meters.

Recommendations

1. Commitment by the organisation towards the recruitment or confirmation of a new Head of staff (or alternatively new senior staff).
2. Active solution for the excessive cost-model of the translational research infrastructure.
3. Initiatives to enhance visibility of the national and international level.
4. Recruitment of a more diverse and international group of translational and clinical researchers.
5. Priority setting to the existing research lines, with alignment of the current and new staff in this setting.

X. Rehabilitation Medicine

Research quality	Very Good (2)
Relevance to society	Excellent (1)
Viability	Very Good (2)

Strategy and targets

The mission and focus of the Rehabilitation Medicine Department have changed during the period of evaluation. As a result of a changing rehabilitation staff, the department adapted to the current mission and vision.

The strategy is well developed and described, especially for the future triangle Erasmus MC, TU Delft and the Rijndam Rehabilitation Centre. The appointment of a strategic adviser was a good initiative that led to many positive changes. The strategic adviser initiated more structure for research throughout the department. It is important to maintain this function in the future, although the focus could and should shift, for example towards challenging the new cooperation with TU Delft. The committee supports the strategy to invest in research on innovative Rehabilitation Technology in close collaboration with TU Delft (in accordance with the convergence and Strategy23) and to use the clinical partners as test centres.

The research in the Rehabilitation Medicine Department is divided into several research topics, acquired brain injury (ABI), Cerebral Palsy (CP), Spinal Cord injury (SCI), Hand rehabilitation after hand surgery (Handrehab) and Cardiac rehabilitation (Cardiac).

There are impressive and important collaborations with external partners from Europe and beyond. Although the collaborations in general strengthen the research and research output, the committee warns the department not to have too many collaborative partners. The committee has the opinion that collaborations should be related to the actual research lines in the department and should be structural as much as possible. According to the committee it is important to keep a focus in research and limit the number of research topics to make sure that the focus lies on quality of the research.

Research quality

The quality of the research in the Rehabilitation Medicine Department is very high. This is exemplified by the high impact scores of the publications, in particular when taking into account the generally low impact factors of rehabilitation medicine journals (compared to longer existing specialties). The quality of the research output is in accordance with the number and seniority of staff members. The research output by the department is definitely nationally leading and some is internationally recognized. Research products and their use by peers are excellent considering the different research lines and the staff of the department received numerous science awards and prizes.

In the period of the review, the acquisition of external funding decreased and in the first years the department lacked an updated mission and shared strategy. The arrival of the current head of department in 2018 created momentum to reorganize the department and redefine its mission and strategy. Also, the cohesion in the department is increasing and the committee observes an upward trajectory. Consideration has been given to applying focus and limiting the number of research topics. This is a good development, although according to the committee it is still a broad portfolio for a relatively small department.

Relevance to society

The research of the department reflects a high level of societal relevance. Many interventions are targeted to specific diseases or problems, and a significant proportion either targets or has relevance to particular societal groups, e.g. ageing related. In the self-evaluation report a number of impressive narratives were provided on societal impact, for example the National Guideline Traumatic Brain Injury, transition research in children and young adults with CP towards adulthood.

The committee appreciates the increasing number of clinical researchers doing research in the department, joining forces with senior research staff. This step towards translational research and societal impact is important for the societal impact of the department as a whole.

Internationally, there is a transition towards inclusion of patients and public in the research, from priority setting through trials design, participation and valorisation. Patients are highly involved in the work that is performed in the department by virtue of inclusion in trials and as beneficiaries of the changes in practice that occur as a consequence. Patient participation might be the next step for this department to consider.

In general, the committee observes a major effort of translating research outcomes into input for society. The research of this department is fully recognized for making an outstanding contribution to the society, also leading to important guidelines which can be applied in the society.

Viability

As was mentioned above, the Rehabilitation Medicine Department has gone through a period of changes and improvements. The hiring of a strategic adviser has had positive effects, as did the decision to focus the research. The committee stimulates the department to continue with the realization of the new mission and strategy and to redefine the task of the strategic adviser to the changing situation. The committee also recommends to keep paying attention to research focus and coherence in the department.

The cooperation with TU Delft is important for the viability of the department. Many research lines concern innovations and new technologies in rehabilitation medicine for the future, for example wearables, robotics, exoskeletons and telerehabilitation. Increasing the collaboration with TU Delft will lead to the requirement of engineers to be able to enrich both parties. The intensification of the collaboration with TU Delft might also provide an opportunity to deal with the increasing needs for more innovative laboratory facilities. Also, the initiative to start incorporating clinicians in the research is good and should be continued and even increased.

Despite the many changes that are already made over the past years, and the department being very well equipped for the future, there are still a number of challenges and points of attention. The creation of a more positive financial position is the main challenge. The department has to find a solution for the decreased funding via research grants. This is a challenge that is not unique for this department, but a balance between different funding streams is important to remain viable. The hiring of several postdocs is a good first step, as this is a group of researchers that is eligible to apply for grants. The increase of contract research funding is considered a potential opportunity by the department. The committee agrees that this has the potential to strengthen the department, but also brings some risks around governance and independence in the strategy setting. The link with TU Delft will possibly create new oxygen and open new horizons that are complementary to the current research lines.

Concluding, the department appears clear-headed about its strategy and intended direction, including insights in the strengths and development areas. Based on the history of the department and its current positive trajectory the viability of the department is high.

Recommendations

1. Continue with the realization of the new mission and vision with the department head and strategic adviser.
2. Find a solution for the decreasing direct funding and research grants (by trying in particular to increase the contract research funding).
3. Avoid too many or supplementary scientific research topics, especially within international collaborations

Appendices

Appendix 1: Curricula Vitae of committee members

Eric Fliers (chair) is Professor of Endocrinology at the University of Amsterdam and serves as head of the Department of Endocrinology and Metabolism at Amsterdam UMC. He received a PhD in neuroscience, followed by his MD (with honours) from the University of Amsterdam. He was subsequently trained as an internist-endocrinologist. Fliers was one of the founders of the Netherlands Brain Bank. His current research interests include the hypothalamus-pituitary-thyroid axis, and the neuro-endocrine response to illness. Eric Fliers was chair of the Dutch Endocrine Society from 2012 until 2015 and served as Executive Committee member of the European Thyroid Association (2016-2019).

Laurents Stassen (vice-chair) is a gastrointestinal surgeon and full professor at Maastricht UMC+. He trained at Maastricht University and Erasmus MC and specializes in operations on the colon and rectum, both for cancer and benign intestinal disorders. As a surgeon and researcher, he is particularly interested in minimally invasive surgery and improvement of care. In Maastricht UMC+, the region and nationally, he actively participates in various forms of multidisciplinary consultation, guideline development and projects to improve the quality of care. He is also involved in specialty training at Maastricht UMC+ and the national level.

Donald Fraser is Professor of Nephrology at Cardiff University School of Medicine. His research addresses the mechanisms underlying injury and scarring in the kidney and peritoneum, in the contexts of chronic kidney disease and peritoneal dialysis. He is also Director of Wales Kidney Research Unit, a Biomedical Research Unit funded by Health and Care Research Wales to deliver an All-Wales strategy for the study of diagnosis, prevention, treatment and social context of kidney disease. Fraser is clinically active as a consultant nephrologist within Cardiff and Vale University Health Board band Medical Lead for the UHB's Clinical Research Facility.

Elke de Jong is Professor of Dermatology and Head of the Department of Dermatology of Radboudumc in Nijmegen (the Netherlands). Her main research topic is psoriasis and autoimmune disease, e.g. the generation of Real World Evidence (RWE) on effectiveness, safety, costs and personalized dosing of systemic treatments for psoriasis, in particular biologics. She established for this purpose a prospective multicenter registry on biologic treatment in daily practice, BioCAPTURE. De Jong has served a.o. others as board member and secretary of the National Board of the Dutch Association of Dermatologists (NVDV), as member and treasurer of the board of the Dutch and Belgian CME Dermatology and Venereology (SNNDV). She received grants from ZonMw, KCE and EU for appropriate use of medication and biomarkers for targeted therapies, and is involved in (inter)national guidelines.

Rik Lories is Full Professor at KU Leuven. He is the Chair of the Division of Rheumatology at the University Hospitals Leuven. He is also the Chair of the Department of Development and Regeneration and director of the Skeletal Biology and Engineering Research Center that includes the Laboratory for Tissue Homeostasis and Disease that he is leading together with Prof. Silvia Monteagudo. His research focuses on endogenous tissue responses in the joint with specific attention towards translational questions in chronic arthritis, in particular osteoarthritis, axial spondyloarthritis, and psoriatic arthritis. As past chair of the EULAR (European League against Rheumatism) Standing Committee on investigative rheumatology, he was a member of EULAR's Executive Committee from 2014 to 2017. He is board member of the Royal Belgian Society of Rheumatology and Scientifc Chair of the Rheumatology Research Fund Belgium. Currently, he serves as associate editor for the journals Annals of the Rheumatic Diseases and Osteoarthritis and Cartilage, and previously for Rheumatology (2014-2017) and RMD Open (2015-2020).

Peter Michielsen is Professor Emeritus in Gastroenterology at the University of Antwerp, Belgium. He studied Medicine in Antwerp and specialized in Internal Medicine and Gastroenterology. He did a PhD thesis on physiopathology of portal hypertension ant the University of Antwerp in 1986. He was vice chairman of the Department of Gastroenterology and Hepatology at the University Hospital of Antwerp till his retirement in December 2019. Currently he is consultant at this Department. Since January 1, 2020 he is chairman of the Medical Ethics Committee of the University and the University Hospital of Antwerp. He was founding member of the Belgian Association for the Study of the Liver (BASL), and is member of several national and international gastroenterological associations. He was Belgian representative at the Eurotransplant Liver and Intestinal Advisory Committee (ELIAC) from 2008 till end of 2019. His interests are a.o. experimental and clinical research on portal hypertension and non-alcoholic fatty liver disease, elaluation of liver stiffness, clinical research on viral hepatitis, evaluation of biomarkers in alcohol (ab)use and screening for hepatocellilar carcinoma in hepatitis B patients in sub-Saharan Africa (Uganda).

Prabath Nanayakkara is Professor in Acute Internal Medicine and head of the section acute and general internal medicine of the Amsterdam UMC the Netherlands. Nanayakkara studied medicine at Colombo University (Sri Lanka) and at the VU, where he specialized in internal medicine (acute medicine and vascular medicine). Nanayakkara is coordinator of large scientific projects such as the

HARPOON trial (research into delirium prevention), PHANTASI trial (research into the effect of administering antibiotics in the ambulance in patients with suspected sepsis0 and CURIOS @ trial (research into unexpected re-admissions in an acute chain). He is mainly engaged in scientific research in acute genetics themes and coordinator of the national research on patients with unexplained complaints with silicone breast implants.

Wim Schreurs is an orthopaedic surgeon and professor of National registration of orthopedic implants and surgical procedures at Radboud University / Radboudumc (the Netherlands). This special chair is an initiative of the Dutch Orthopedic Association (NOV). Schreurs has a special interest in hip arthroplasty in young patients and in technical demanding cases (CHD, Perthes), as well as in revision surgery in failed implants. Schreurs has a large orthopedic network both within and outside the Netherlands. Among other things, he was president of the European Hip Society from 2016 to 2018.

Christian Toso is Professor of surgery at the University of Geneva, and Chief of Division of abdominal surgery. He studied medicine in Geneva and trained as a general abdominal surgeon in Switzerland, subsequently specializing in liver and pancreas, and transplant surgery at the University of Alberta (Canada), where he obtained his PhD. Toso directs a clinical and basic research group whose main themes are surgery and transplantation of the liver, mainly for cancer.

Stefania Tuinder is a plastic surgeon at Maastricht UMC+ (the Netherlands). She studied in Varese (Italy) and the Netherlands. Her areas of expertise are breast reconstruction, head neck reconstruction and facial reconstruction. Tuinder has conducted extensive anatomical research into new breast reconstruction techniques, leading to the revolutionary discovery of the SC-GAP and the LTP, which are likely to be increasingly used as breast reconstruction techniques in the coming years.

Prof. Em. **Guy Vanderstraeten**, MD, PhD, FRCP is specialist in Physical and Rehabilitation Medicine He was head of the department of Physical and Rehabilitation Medicine and Head of the Rehabilitation center for locomotor and neurological disorders, University Hospital Ghent, Belgium. He was Dean of the Faculty of Medicine and health Sciences, Ghent University, Belgium and member of the department of Rehabilitation sciences and physical therapy and member of the department of Physical Medicine, Rehabilitation, Orthopedics and Traumatology .He was President of the European Academy of Rehabilitation Medicine, Former President of the European Federation of PRM, Former President of the European Board of PRM, member of different national ,European (UEMS) and international societies and organizations. His scientific research is situated In different domains of Physical and Rehabilitation Medicine , mainly in the field of locomotor disorders especially low back pain with focus on diagnostics and conservative treatment including the evaluation and the effects of specific exercises. Focus as well on Evidence Based Medicine of the different physical and rehabilitation treatments in musculoskeletal disorders

Appendix 2: Schedule of the site visit

Monday 30 November

Time	Topic sub-committee 1	Topic sub-committee 2
11.30-13.00	**Preparation meeting: Complete committee** Purpose: The complete committee is introduced to each other. Preparation site-visit, everyone clear on the agenda etc. Last minute questions are addressed.	
13.00-14.00	Committee members: lunch break	
14.00-14.30	Welcome & general introduction by the dean	
14.30-14.45	Introduction and preparation **Dept. Surgery**	Introduction and preparation **Dept. Rehabilitation Medicine**
14.45-15.45	**Department of Surgery session 1** Management/Leading staff	**Department of Rehabilitation Medicine session 1** Management/Leading staff
15.45-16.00	Committee members: break	Committee members: break
16.00-16.15	Debriefing first session Surgery committee members	Debriefing first session Rehabilitation Medicine committee members
16.15-17.15	**Department of Surgery session 2** Academic staff	**Department of Rehabilitation Medicine session 2** Academic staff
17.15-17.30	Committee members: break	Committee members: break
17.30-17.45	Debriefing second session Surgery	Debriefing second session Rehabilitation Medicine
17.45-18.15	Feedback with committee members and discuss concept report department	Feedback with committee members and discuss concept report department
18.15-18.45	Debriefing day 1	

Tuesday 1 December

Time	Topic sub-committee 1	Topic sub-committee 2
09.00-09.15	Introduction and preparation **Dept. Gastroenterology and Hepatology**	Introduction and preparation **Dept. Rheumatology**
09.15-10.15	**Department of Gastroenterology and Hepatology session 1** Management/Leading staff	**Department of Rheumatology session 1** Management/Leading staff
10.15-10.25	Committee members: break	Committee members: break
10.25-10.40	Debriefing first session Gastroenterology and Hepatology committee members	Debriefing first session Rheumatology committee members
10.40-11.40	**Department of Gastroenterology and Hepatology session 2** Academic staff	**Department of Rheumatology session 2** Academic staff
11.40-11.50	Committee members: break	Committee members: break
11.50-12.05	Debriefing second session Gastroenterology and Hepatology	Debriefing second session Rheumatology
12.05-12.35	Feedback with committee members and discuss concept report department	Feedback with committee members and discuss concept report department
12.35-13.45	Committee members: break	Committee members: break
13.45-14.00	Introduction and preparation **Dept. Plastic and Reconstructive Surgery and Hand Surgery**	Introduction and preparation **Dept. Dermatology**
14.00-15.00	**Department of Plastic and Reconstructive Surgery and Hand Surgery session 1** Management/Leading staff	**Department of Dermatology session 1** Management/Leading staff
15.00-15.15	Committee members: break	Committee members: break
15.15-15.30	Debriefing first session Plastic and Reconstructive Surgery and Hand Surgery committee members	Debriefing first session Dermatology committee members
15.30-15.50	Questions by committee to dean about initial findings	
15.50-16.50	**Department of Plastic and Reconstructive Surgery and Hand Surgery session 2** Academic Staff	**Department of Dermatology session 2** Academic staff
16.50-17.00	Committee members: break	Committee members: break
17.00-17.15	Debriefing second session Plastic and Reconstructive Surgery and Hand Surgery	Debriefing second session Dermatology
17.15-17.45	Feedback with committee members and discuss concept report department	Feedback with committee members and discuss concept report department
17.45-18.15	Debriefing day 2	

Tuesday 1 December

Time	Topic sub-committee 1	Time	Topic sub-committee 2
09.00-09.15	Introduction and preparation **Dept. Orthopaedic Surgery**	08.45-09.00	Introduction and preparation **Dept. Internal medicine**
09.15-10.15	**Department of Orthopaedic Surgery session 1** Management/Leading staff	09.00-10.30	**Department of Internal Medicine session 1** Management/Leading staff
10.15-10.25	Committee members: break	10.30-10.40	Committee members: break
10.25-10.40	Debriefing first session Orthopaedic Surgery committee members	10.40-10.55	Debriefing first session Internal Medicine committee members
10.40-11.40	**Department of Orthopaedic Surgery session 2** Academic staff	10.55-12.25	**Department of Internal Medicine session 2** Academic staff
11.40-11.50	Committee members: break	12.25-12.35	Debriefing second session Internal Medicine
11.50-12.05	Debriefing second session Orthopaedic Surgery	12.35-13.00	Feedback with committee members and discuss concept report department
12.05-12.35	Feedback with committee members and discuss concept report department	13.00-13.45	Committee members break
12.35-13.45	Committee members: break		
13.35-13.45	General introduction of online speed date session by the secretary		
13.45-14.10	Speed date round 1		
14.10-14.35	Speed date round 2		
14.35-14.55	General session PhD-students and committee members		
14.55-15.15	Debriefing session PhD-students by committee members		
15.15 -15.30	Committee members: break		
15.30-16.45	Preparation for giving general feedback		
16.45-17.00	Committee members: break		
17.00-18.00	Feedback session heads of department and committee		
18.00-18.15	Time for questions by heads of department		
18.15-18.30	Final appointments/conclusion of site-visits		

Appendix 3: Quantitative data on the departmental composition and financing

Orthopedic Surgery Department

Composition of the department

	2013		2014		2015		2016		2017		2018	
	#	FTE	#	FTE	#	FTE	#	FTE	#	FTE	#	FTE
Scientific staff	19	9.1	22	10.4	27	12.5	24	14.3	29	16.6	31	15.5
Support staff	20	8.1	14	5	13	5.8	9	3.6	9	3.1	6	2.8
Total staff	**39**	**17.2**	**36**	**15.4**	**40**	**18.3**	**33**	**17.9**	**38**	**19.8**	**37**	**18.4**

Financing of the department

	2013		2014		2015		2016		2017		2018	
	FTE	%	FTE	%	FTE	%	FTE	%	FTE	%	FTE	%
Direct funding	4.69	27%	3.60	23%	3.55	19%	3.16	18%	4.26	22%	4.57	25%
Research grants	1.91	11%	4.02	26%	5.81	32%	4.66	26%	3.95	20%	3.22	18%
Contract research	9.41	55%	6.16	40%	7.56	41%	9.81	55%	10.65	54%	9.60	52%
Other	1.19	7%	1.62	11%	1.37	7%	0.30	2%	0.89	4%	0.95	5%
Total funding	**17.21**		**15.41**		**18.28**		**17.93**		**19.75**		**18.37**	

Plastic and Reconstructive Surgery and Hand Surgery Department

Composition of the department

	2013		2014		2015		2016		2017		2018	
	#	FTE	#	FTE	#	FTE	#	FTE	#	FTE	#	FTE
Scientific staff	15	9.1	26	11.5	21	11.4	17	9.1	23	11.2	13	9.2
Support staff	6	3.4	9	4.0	8	3.7	7	4.6	9	5.3	8	4.2
Total staff	**21**	**12.5**	**35**	**15.5**	**29**	**15.1**	**24**	**13.7**	**32**	**16.5**	**21**	**13.3**

Financing of the department

	2013		2014		2015		2016		2017		2018	
	FTE	%	FTE	%	FTE	%	FTE	%	FTE	%	FTE	%
Direct funding	7.87	63%	5.51	36%	3.91	26%	4.01	29%	6.41	39%	5.28	40%
Research grants	-	0%	-	0%	-	0%	-	0%	0.09	1%	1.00	8%
Contract research	4.58	37%	9.99	64%	11.15	74%	9.7	71%	9.96	61%	7.04	53%
Other	-	0%	-	0%	-	0%	-	0%	-	0%	-	0%
Total funding	**12.45**		**15.50**		**15.06**		**13.72**		**16.45**		**13.31**	

Surgery Department

Composition of the department

	2013		2014		2015		2016		2017		2018	
	#	FTE	#	FTE	#	FTE	#	FTE	#	FTE	#	FTE
Scientific staff	88	32.7	90	90.0	88	28.4	89	30.25	85	34.0	63	38.6
Support staff	29	13.6	35	14.4	31	14.6	21	9.73	51	14.0	43	15.3
Total staff	**117**	**46.3**	**125**	**43.3**	**119**	**43.0**	**110**	**40.0**	**136**	**48.0**	**106**	**53.9**

Financing of the department

	2013		2014		2015		2016		2017		2018	
	FTE	%	FTE	%	FTE	%	FTE	%	FTE	%	FTE	%
Direct funding	34.07	74%	26.77	62%	27.42	64%	23.79	60%	31.53	69%	34.37	61%
Research grants	1.00	2%	1.00	2%	0.73	2%	2.60	7%	3.04	6%	7.14	13%
Contract research	11.22	24%	14.32	33%	13.42	31%	13.25	33%	13.29	25%	14.43	26%
Other	-	0%	1.29	3%	1.37	3%	0.35	1%	0.16	0%	-	0%
Total funding	**46.28**		**43.38**		**42.95**		**39.98**		**48.02**		**55.94**	

Gastroenterology & Hepatology Department

Composition of the department

	2013		2014		2015		2016		2017		2018	
	#	FTE	#	FTE	#	FTE	#	FTE	#	FTE	#	FTE
Scientific staff	71	40.9	67	42.5	67	39.1	68	38.1	74	41.3	80	48.0
Support staff	32	19.3	25	14.4	24	13.7	22	11.6	26	16.1	33	17.9
Total staff	**103**	**60.2**	**92**	**56.9**	**91**	**52.8**	**90**	**49.7**	**100**	**57.4**	**113**	**65.9**

Financing of the department

	2013		2014		2015		2016		2017		2018	
	FTE	%	FTE	%	FTE	%	FTE	%	FTE	%	FTE	%
Direct funding	41.64	69%	40.79	72%	36.29	69%	36.10	73%	46.94	81%	54.67	83%
Research grants	5.49	9%	7.51	13%	8.44	16%	5.01	10%	3.02	5%	-	0%
Contract research	13.05	22%	8.64	15%	8.11	15%	8.61	17%	7.27	13%	11.07	17%
Other	-	0%	-	0%	-	0%	-	0%	0.16	1%	0.11	0%
Total funding	**60.17**		**56.94**		**52.84**		**49.72**				**65.85**	

Internal Medicine Department

Composition of the department

	2013		2014		2015		2016		2017		2018	
	#	FTE	#	FTE	#	FTE	#	FTE	#	FTE	#	FTE
Scientific staff	120	83.6	122	82.1	121	74.9	111	65.9	106	65.3	105	67.5
Support staff	85	41.4	75	34.8	76	34.3	69	31.5	67	33.0	89	34.2
Total staff	**205**	**125.0**	**197**	**116.9**	**197**	**106.2**	**180**	**97.4**	**173**	**87.3**	**194**	**101.7**

Financing of the department

	2013		2014		2015		2016		2017		2018	
	FTE	%	FTE	%	FTE	%	FTE	%	FTE	%	FTE	%
Direct funding	96.70	77%	81.86	70%	67.46	64%	63.36	65%	59.16	60%	63.44	62%
Research grants	14.37	11%	15.38	13%	14.83	14%	7.40	8%	5.91	6%	7.48	7%
Contract research	12.62	10%	19.66	17%	23.72	22%	26.52	27%	32.56	33%	28.76	28%
Other	1.33	1%	-	0%	0.21	0%	0.08	0%	0.63	1%	2.02	2%
Total funding	**125.03**		**116.90**		**106.23**		**97.36**		**98.27**		**101.69**	

Dermatology Department

Composition of the department

	2013		2014		2015		2016		2017		2018	
	#	FTE	#	FTE	#	FTE	#	FTE	#	FTE	#	FTE
Scientific staff	20	11.7	28	14.5	31	15.2	30	16.3	38	17.2	34	16.9
Support staff	9	3.6	14	4.0	9	3.4	5	1.3	6	2.8	10	4.3
Total staff	**29**	**15.3**	**42**	**18.5**	**40**	**18.6**	**35**	**17.6**	**44**	**20.0**	**44**	**21.3**

Financing of the department

	2013		2014		2015		2016		2017		2018	
	FTE	%	FTE	%	FTE	%	FTE	%	FTE	%	FTE	%
Direct funding	7.55	49%	11.96	%	7.76	42%	6.92	39%	9.64	48%	11.46	54%
Research grants	5.60	37%	3.94	%	2.34	13%	1.07	6%	1.92	10%	1.67	8%
Contract research	2.12	14%	2.61	%	8.53	46%	9.59	55%	8.41	42%	8.16	38%
Other	-	0%	-	0%	-	0%	-	0%	-	0%	-	0%
Total funding	**15.28**		**18.50**		**18.62**		**17.58**		**19.97**		**21.28**	

Rheumatology Department

Composition of the department

	2013		2014		2015		2016		2017		2018	
	#	**FTE**	**#**	**FTE**	**#**	**FTE**	**#**	**FTE**	**#**	**FTE**	**#**	**FTE**
Scientific staff	15	12.3	18	12.3	30	12.0	22	9.5	17	8.8	13	7.6
Support staff	12	4.4	13	4.5	13	5.5	13	5.5	16	54	6	4.4
Total staff	**27**	**16.6**	**31**	**16.8**	**43**	**17.5**	**35**	**15.0**	**33**	**14.2**	**19**	**12.0**

Financing of the department

	2013		2014		2015		2016		2017		2018	
	FTE	%	FTE	%	FTE	%	FTE	%	FTE	%	FTE	%
Direct funding	4.95	30%	4.10	24%	5.83	33%	6.38	43%	5.16	36%	5.89	49%
Research grants	1.21	7%	1.47	9%	0.81	5%	0.63	4%	2.62	18%	-	0%
Contract research	10.50	63%	11.25	67%	10.86	62%	7.94	53%	6.41	45%	6.08	51%
Other	-	0%	-	0%	-	0%	-	0%	-	0%	-	0%
Total funding	**16.65**		**16.81**		**17.50**		**14.95**		**14.19**			

Rehabilitation Medicine Department

Composition of the department

	2013		2014		2015		2016		2017		2018	
	#	**FTE**	**#**	**FTE**	**#**	**FTE**	**#**	**FTE**	**#**	**FTE**	**#**	**FTE**
Scientific staff	26	10.4	17	8.5	21	8.5	24	8.5	24	13.3	26	14.4
Support staff	8	2.6	6	2.1	6	1.5	6	1.9	9	2.3	8	2.8
Total staff	**34**	**13.1**	**23**	**11.6**	**27**	**10.0**	**30**	**10.3**	**33**	**15.5**	**34**	**17.2**

Financing of the department

	2013		2014		2015		2016		2017		2018	
	FTE	%	FTE	%	FTE	%	FTE	%	FTE	%	FTE	%
Direct funding	6.35	49%	7.19	62%	7.22	73%	7.25	70%	9.87	65%	8.42	49%
Research grants	4.21	32%	3.43	30%	1.68	17%	0.66	6%	1.95	12%	2.00	12%
Contract research	1.64	13%	0.50	4%	0.57	6%	2.05	20%	3.58	22%	4.39	26%
Other	0.86	7%	0.49	4%	0.48	5%	0.36	3%	0.13	1%	2.37	14%
Total funding	**13.06**		**11.61**		**9.95**		**10.32**		**15.53**		**17.18**	

Appendix 4: SEP Assessment Scale

	Meaning	*Research quality*	*Relevance to society*	*Viability*
1	World leading/ excellent	The relevant research unit has been shown to be one of the few most influential research groups in the world in its particular field.	The relevant research unit is recognised for making an outstanding contribution to society.	The relevant research unit is excellently equipped for the future.
2	Very good	The relevant research unit conducts very good, internationally recognised research.	The relevant research unit is recognised for making a very good contribution to society.	The relevant research unit is very well equipped for the future.
3	Good	The relevant research unit conducts good research.	The relevant research unit is recognised for making a good contribution to society.	The relevant research unit makes responsible strategic decisions and is therefore well equipped for the future.
4	Unsatisfactory	The relevant research unit does not achieve satisfactory results in its field.	The relevant research unit does not make a satisfactory contribution to society.	The relevant research unit is not adequately equipped for the future.