

NIHES
Evaluation
2007-2012

**Conclusions and recommendations
of the
International Review and Advisory Committee
of NIHES**

October 15-16, 2013

General conclusions and recommendations

The core of NIHES consists of an outstanding research and teaching programme, meeting the highest international standards. Accordingly, the International Review and Advisory Committee considers NIHES to be excellent. The research school is internationally very competitive. It has multiple international collaborations with some of the best universities, research groups and researchers in the world. Its teaching programme is internationally acclaimed. NIHES offers a rich environment with many opportunities for excellent multidisciplinary research and comprehensive and high quality education. Therefore, the Committee without any reservations strongly recommends the re-accreditation of NIHES.

A good balance between core funding and external grant funding is essential for the long-term future of NIHES. This makes it important to guarantee the current level of core funding or extend it. This is in particular important for the two productive cohorts: the Rotterdam Study and Generation R, on which a substantial part of the NIHES research is based. Continuing these cohorts at the present high quality level is extremely important to NIHES because the cohorts are essential not only for the research program but also for the MSc and PhD training programmes. The Committee strongly recommends the Board of the Erasmus MC to develop policies and plans to support their infrastructure and to secure the on-going maintenance and survival of these valuable cohorts, especially in today's lean financial times.

The prevailing quality of work in NIHES is outstanding. Five of the departments (Epidemiology, General Practice, Health Policy and Management, Medical Informatics, Public Health) are scored as excellent, with research meeting the highest standards internationally, and one (Child and Adolescent Psychiatry) was scored as very good with internationally competitive research.

The Committee regarded the existence of a strong and fully engaged Biostatistics group as crucial to the future vitality of research in NIHES as a whole. However, at the current time the department of Biostatistics is not well connected to other departments (in NIHES and/or clinical departments at Erasmus MC). Although the Committee is aware of the difficulty of finding the right fit and position for a Biostatistics group within an institution, the Committee recommends a strengthening of the science and research leadership in Biostatistics and the development within NIHES of a strategy to strengthen the collaborations between Biostatistics and other departments.

The relatively small Department of Medical Psychology and Psychotherapy performs research with high societal relevance. This department has recently been assimilated as a division into the Department of Psychiatry, and this change represents a crossroad for Medical Psychology and Psychotherapy. At this time, the Committee notes some lack of focus. The Committee suggests that the department would do well either to focus on a single area of health sciences research and to be a full and successful contributing NIHES partner or to participate in a different research school.

NIHES has been tremendously successful in the past years. The Committee strongly feels that for continuation at the highest-level of research, it is necessary to include bioinformatics into NIHES research. The committee concluded that developing a strong bioinformatics capacity might require a strategic approach at the level of Erasmus MC, although NIHES would need to play a key part in driving this forward.

Links with basic science, biology, and –omics represent new opportunities for the departments in NIHES. The Committee urges NIHES to collaborate with departments in basic science and biology research, either within or outside Erasmus University Rotterdam, to strengthen future research. Medical Delta, the collaboration between the universities of Leiden, Delft en Rotterdam, may be relevant here.

The Committee sees that NIHES has outstanding MSc programmes, an observation which was reinforced by the PhD students who place great emphasis on the value of their MSc degree. For the PhD programs, the Committee notes that an annual research day for all NIHES PhD students might help them to get to

know each other and to provide a new opportunity to present their research to peers and lay persons. This would provide added value to the current training.

Introduction

The Netherlands Institute for Health Sciences (NIHES) is a centre for quantitative research and postgraduate education in medicine and health sciences. It was founded in 1991 as one of the first 'graduate schools' or 'research schools' in the Netherlands. NIHES was launched officially on January 1, 1992. NIHES has a mission to:

- Establish a comprehensive graduate and postgraduate training programme for young researchers in medicine and the health sciences;
- Further improve scientific work on the determinants of diseases and health, the efficiency and effectiveness of healthcare, and the theory and methods of health sciences.

NIHES consists of eight departments, seven of which are part of Erasmus MC: Biostatistics; Child and Adolescent Psychiatry; Epidemiology; General Practice; Medical Informatics; Medical Psychology and Psychotherapy; and Public Health. The eighth department is the Institute for Health Policy and Management of the Erasmus University Rotterdam.

The affiliated partners are four clinical departments of Erasmus MC: Dermatology; Paediatrics; Plastic and Reconstructive Surgery; and Rehabilitation Medicine. NIHES is furthermore strengthened by the affiliated partner Netherlands Cancer Institute / Antoni van Leeuwenhoek Hospital (NKI). The NKI contributes with the Cancer Epidemiology group.

NIHES was first accredited as a research school by the Royal Netherlands Academy of Arts and Sciences in 1992. By the end of 2013 NIHES must apply for a re-accreditation. In preparation for this application, the Board of NIHES has organised an evaluation of its activities by an International Review and Advisory Committee (referred to as 'the Committee'). To inform the Committee, a report of activities and achievements during the period 2007 to 2012 was prepared. The report sets out the research and educational policy of NIHES, the on-going research at the participating departments, an internal review of the past activities, and future developments. Based upon the information in the activities report, the quality of research and training was discussed with the Chair of NIHES and the Science Director, principal investigators from the participating departments, and PhD students and postdocs of the research school.

The Board of NIHES asked the Committee to review and assess the quality of the research programme and the teaching programme delivered by NIHES in the period 2007-2012, and the plans for future research and teaching. In addition, the Committee was invited to give suggestions to further improve the educational and research performance of NIHES.

Members of the Review and Advisory Committee

The members of the Review and Advisory Committee were:

Prof. Chris van Weel (chair of the Committee)

Emeritus Professor of Family Medicine/General Practice
Radboud University Nijmegen, the Netherlands
Professor of Primary Health Care Research
Australian National University, Canberra, Australia
Field of research: primary care research

Prof. Paul Elliott

Chair in Epidemiology and Public Health Medicine
Head of the Department of Epidemiology and Biostatistics
Imperial College London, United Kingdom
Field of research: epidemiology

Prof. Hugh Gravelle

Professor of Economics
University of York, United Kingdom
Field of research: health economics

Prof. David Leon

Professor of Epidemiology
London School of Hygiene and Tropical Medicine, United Kingdom
Field of research: epidemiology and public health

Prof. Bruce M Psaty

Professor, Medicine & Epidemiology
University of Washington, Seattle, United States
Field of research: genetic and cardiovascular-disease epidemiology

Prof. Frits R. Rosendaal

Professor of Clinical Epidemiology
Leiden University Medical Center, the Netherlands
Field of research: blood coagulation and cardiovascular disease

Secretary to the Committee:

M. Zeegers, PhD
Pallas, health research & consultancy BV
Rotterdam, the Netherlands

Programme and procedures of the site visit

Programme

The site visit took place on October 15 and 16, 2013 at Erasmus MC Rotterdam (for programme see Appendix 1). The site visit started at 19.00 hours on October 15th with an introductory meeting with the Chair of NIHES and the Science Director to discuss NIHES' organisation and management, leadership, strategy, policy, and resources. The next day, after a preparatory meeting, the Committee met with the NIHES partners. In the morning, there were two review sessions with four departments each. In the afternoon, the Committee had ample time to discuss the teaching programme with the Science Director, the Programme Co-ordinator, the Programme Directors, and with a group of PhD students and postdocs. At the end of the day, the future plans of NIHES were discussed with the Chair and Science Director of NIHES.

Procedure of the site visit

The NIHES Board provided the Committee with a guideline with score forms for the assessment of the institute as a whole and the participating departments (Appendix 2). The Committee used the score forms as a tool for their assessment. During the site visit the Committee discussed all aspects of the score form (e.g. leadership, productivity, quality) to reach consensus on an overall score for NIHES as a whole and for every participating department separately.

The procedure during the day was as follows:

- The Chair of the Committee (Prof. Van Weel) asked the representatives of the departments to introduce themselves and, if they would like, to give the Committee any background information or key messages in addition to the written material.
- The round of discussion was started by questions by the Committee members assigned to the specific departments. The written material from each department was reviewed by all committee members, and one of the committee members was selected to lead the discussion for each department (Appendix 1).
- Scoring forms were discussed and filled out during the day. The Committee aimed for consensus.

The overall assessment scores are presented in this report. This overall score generally applies to all aspects of the score form. When certain aspects of the institute or department evoked comments or were otherwise worth mentioning, this has been added in the text of the report.

The Committee would like to thank the leadership of NIHES and the participating Departments as well as the PhD Students and Post Docs for the frank and open discussions during the day that were most helpful in coming to an informed assessment.

Assessment of NIHES as a whole

A brief description of the institute

NIHES is one of Europe's leading schools for research training and education in health sciences, attracting students from around the world. The vision of the NIHES board is that NIHES researchers and alumni will be among the world's leading health scientists and work as influential national and international researchers and health policy-makers. Research at NIHES will contribute significantly to the prevention and treatment of major diseases as well as effective health policy and management.

NIHES' main objective is to provide a stimulating environment for scientists to perform high-quality research. As part of this endeavour, junior scientists are provided with high-quality education and the prospects of an optimal research career. NIHES' research objectives are defined per department.

Committee's reflection on NIHES

The Committee considers NIHES to be outstanding in research and teaching meeting the highest international standards. The overall assessment of NIHES is 'excellent' in all aspects. The Committee briefly comments on the aspects of the assessment: 1) quality, 2) productivity, 3) relevance, 4) vitality and feasibility.

1. Quality

NIHES is a world-leading research school. NIHES consists of a number of excellent departments, where the whole is much bigger than the sum of the parts. Regarding the current organisational setup as mono-university research school, NIHES has a great diversity in research topics and research groups. Its health sciences research covers a wide range of subjects. NIHES has shown tremendous achievements with the resources available. These achievements are especially remarkable in view of the fact that NIHES has no central budget for research.

NIHES is internationally competitive. The former Dean of Erasmus MC and future Rector of Erasmus University Rotterdam pointed out that NIHES is the example to other research schools at Erasmus MC in its international collaborations and the internationalisation of its education. The Committee wholeheartedly supports this observation.

The MSc programme adds value to the NIHES PhD training programme as it attracts multiple disciplines and specialisations. A substantial number of these students after concluding their MSc enter a PhD track. This results in an enlarged recruitment of PhD students, through a further tailoring of their training needs. NIHES offers a rich environment with many opportunities for excellent multidisciplinary research and comprehensive and high-quality education.

2. Productivity

NIHES has a continuous high-level scientific output with public health and epidemiology as the driving forces. Most departments are producing substantial numbers of PhDs and publications at the highest level internationally.

3. Relevance

In all its variety, NIHES research is of high societal relevance. The committee also commends the Departments of Public Health, General Practice and Health Policy and Management on publishing in Dutch journals in addition to publishing in the international literature, hereby making their research more readily available for local implementation.

4. Vitality and feasibility

NIHES has been tremendously successful. It is a challenge to maintain this high level of excellence in view of the overall situation of research funding in the Netherlands. Several key leaders are approaching retirement age. But on the basis of its past performance and its ability to adapt, NIHES is well positioned to cope with these challenges. The Committee sees the addition of expertise in bioinformatics as an important step for NIHES to continue at the highest-level of research. And related to this, the Committee recommends taking advantage of new opportunities to link with basic science, biology, and -omics for more biological oriented research. For instance, collaboration with departments in basic science and

biology research, either within or outside Erasmus University Rotterdam, would provide novel opportunities to follow-up on some of the important genetic findings that have emerged from the cohort studies.

Some NIHES departments have indicated the wish to develop research on global health, building on existing expertise and the international reputation of NIHES. The Committee is broadly supportive of these exploratory developments towards establishing research on global health. The Committee sees a need for an explicit long term strategy. It is necessary to bring together multiple partners and ensure a long-term commitment and support from Erasmus University Rotterdam, and sufficient investment.

NIHES does have common ground with CaRe, the Netherlands School of Primary Care Research. Both research schools address general practice, which is a growing societal and scientific interest. NIHES and CaRe together cover this research field, with NIHES taking a macro perspective and CaRe a more micro perspective. The Committee suggests that NIHES and CaRe explore the possibility to fine-tune the research activities of both research schools in this field to maximise complementarity.

A good balance between core funding and external grant funding is essential for the long-term future of NIHES. This makes it important to guarantee the current level of core funding or extend it. This is in particular important for the two productive cohorts: the Rotterdam Study and Generation R, on which a substantial part of the NIHES research is based. Continuing these cohorts at the present high quality level is extremely important to both the research and teaching mission of NIHES. Both cohorts are essential not only to the research program, but also to the MSc and PhD training programmes. The Committee strongly recommends the Board of the Erasmus MC to develop policies and plans to support their infrastructure and to secure the on-going maintenance and survival of these valuable cohorts, especially in today's lean financial times.

The Committee made two observations that were not directly related to the assessed quality of the research and PhD training, but it felt these might be relevant:

1. The Committee was somewhat puzzled of what NIHES is, as it is a main source of the Erasmus MC research output, yet without a clear position in the Erasmus MC organogram: actual deciding power on research remains in the NIHES partner Departments. This makes unclear to whom the findings of this audit review are directed. The Committee realises that this is no specific issue for NIHES, but part of the governance of Research Schools in the Netherlands in general. Nevertheless the Committee thought it prudent to make this observation.
2. In NIHES there are Affiliated Partners – clinical departments that collaborate in their research with NIHES – in addition to the Full Partners. The Committee stresses the importance of collaboration with clinical/hospital departments. But a substantial part of NIHES' actual collaboration with clinical groups concerns others than 'Affiliated Partners'. This makes the status of 'affiliated partnership' unclear, and that might be a reason to reconsider this.

On the basis of these considerations, the Committee comes to the following score of NIHES:

NIHES	
Quality	5
Productivity	5
Relevance	5
Vitality and feasibility	5
Overall score	5

Assessment of participating departments

This section summarizes the comments of the Review and Advisory Committee on the departments that were evaluated. The Committee would like to emphasize that the overall quality of NIHES is exceptional. Five departments have been awarded the highest score (5, excellent).

A brief description of each Department is added in Appendix 3.

The Department of Epidemiology

The Committee considers the work by this department as outstanding (overall score 5) and is very impressed by what has been generated over the past years. The department is internationally leading. The long-term investments, especially in the main cohorts the Rotterdam Study and Generation R, have paid major dividend. The Committee realises that continuation of these cohorts is extremely important for NIHES as a whole and that a viable solution in funding is crucial for future successes. To be able to continue research at the highest level, the department would benefit from institutional support to maintain the infra-structure of the two cohort studies and assure their survival. The Committee was pleased the former Dean of Erasmus MC and future Rector of the Erasmus University Rotterdam reaffirmed his strong support for the cohorts. The Committee is also pleased to hear that the Epidemiology Department is linking with the Department of Clinical Cardiology and that metabolic diseases, including obesity and diabetes, have been identified as important outcomes in the Rotterdam Study and Generation R.

Department of Epidemiology	
Quality	5
Productivity	5
Relevance	5
Vitality and feasibility	5
Overall score	5

The Department of Public Health

The work of this department is considered to be outstanding (overall score 5). It is fully utilizing cross-linkages with other departments. There is a clear funding strategy that has to date been remarkably successful and a clear succession strategy, including stimulating young talent with innovatory approaches. The Committee complements the department on its high level of publishing, not just in terms of numbers of publications but also their impact; it supports the continued parallel commitment of the department to publish work of local public health relevance in the Netherlands.

The Committee is broadly supportive of the exploratory developments towards establishing research on global health in low-income countries; the Committee emphasizes that this should be done with care, with long-term commitment within the broader context of the Erasmus University Rotterdam and including the Department for Health Policy and Management.

Department of Public Health	
Quality	5
Productivity	5
Relevance	5
Vitality and feasibility	5
Overall score	5

The Department of Health Policy and Management

The research at this department is excellent and of the highest international level (overall score 5). The Committee considers the department robust and is impressed by its educational efforts regarding BA, MSc and PhD students that are on a substantial scale. The department has indicated a wish to develop a research programme on Global Health. The Committee sees the societal relevance of this research, but recommends a broader context with multiple Erasmus departments and careful development.

Regarding cooperation within NIHES, the Committee is pleased to see the good collaborations between Health Policy and Management and Public Health, but also sees many more opportunities to work with other areas of research within NIHES. The Committee supports the commitment of the department to publish work of national relevance also in Dutch.

The Committee notes that the department has fewer PhD students per senior researchers than the other NIHES departments and believes this deserves reflection.

Department of Health Policy and Management	
Quality	5
Productivity	5
Relevance	5
Vitality and feasibility	5
Overall score	5

The Department of General Practice

The research at this department is considered excellent (overall score 5). The Committee considers the department's research training for general practitioners, especially with the aim to obtain a PhD degree, to be commendable and exemplary to national and international educational programmes for general practitioners. The NIHES training program plays an important role in educating these GPs.

The Committee supports the department's commitment to publish General Practice work relevant to the Netherlands in Dutch journals.

The department is one of the few worldwide to focus on childhood care within general practice. The Committee is of the view that this is an interesting and valuable line of research. The Committee also stresses the importance of the research line on intellectual disabilities because of the high societal impact and importance for the entire group of people with intellectual disabilities, but questions whether a stand-alone programme is the best approach or integration in the two other programmes should be preferred. The Committee recommends that the department develops a strategy to secure high quality research in this domain.

Department of General Practice	
Quality	5
Productivity	4
Relevance	5
Vitality and feasibility	5
Overall score	5

The Department of Medical Informatics

The Committee considers the work of the department of excellent quality (overall score 5). This methodology-oriented department is active and successful in multiple international collaborations; the Committee however sees room for improvement concerning the integration of the department within NIHES. The Committee would like to particularly highlight the IPCI database. NIHES and also other national and international groups could link with this database more, so that the full potential of this extensive database is used. Bioinformatics and –omics are emerging areas that would provide opportunities for collaboration with other departments in the NIHES, although not currently a focus for the department. The department's strategic decision not to work on the –omics field slightly puzzled the Committee.

Department of Medical Informatics	
Quality	5
Productivity	4
Relevance	5
Vitality and feasibility	4
Overall score	5

The Department of Child and Adolescent Psychiatry

The work of this department is considered to be of very good quality (overall score 4). The department is expected to make a significant contribution to research in this field due to availability of Generation R neuroimaging shortly, which the department has led on. It has good connections with other NIHES departments, sharing PhD students and an endowed professor with the Department of Epidemiology. The relationship with the Department of Epidemiology and Generation R is vital to the research in the department.

The department is the only child and adolescent psychiatry department in the Netherlands that combines clinical care, teaching and research. According to the Committee, this creates an excellent opportunity for cross-fertilisation between these fields.

The department has a clear view and good strategy for the future. The Committee believes that the stated focus on Generation R and neuro-imaging will strengthen the department substantially and increase productivity in the coming period.

Department of Child and Adolescent Psychiatry	
Quality	4
Productivity	5
Relevance	4
Vitality and feasibility	5
Overall score	4

The Department of Biostatistics

The Committee stresses the importance of a strong Biostatistics research group. Biostatistics is of crucial importance to the other NIHES departments, and will be increasing so in the future, as it provides a foundation of excellent research. At the same time NIHES, with a wealth of data and analytic challenges, provides a setting where Biostatistics should be able to flourish. However, while the current biostatistics research is good and solid, the Committee is concerned about the department's apparent lack of engagement with the other departments within NIHES and outside of NIHES. As a consequence, the Committee rates the work by this department as good (overall score 3). The Committee recognises that locating the best fit and position for a Biostatistics group (as independent group or integrated in epidemiology) within any institution is a challenge. This is a commonly encountered problem in the structuring of research programmes everywhere. In addition, the Committee also acknowledges that funding for biostatistics per se is generally difficult to obtain. Nevertheless, the Committee is of the opinion that in the current situation Biostatistics is missing opportunities and recommends a strengthening of the science and research leadership in Biostatistics. This way, the department should develop together with NIHES, a strategy to strengthen the collaborations between Biostatistics and other departments, in NIHES and/or with clinical departments in Erasmus MC).

Department of Biostatistics	
Quality	3
Productivity	3
Relevance	4
Vitality and feasibility	3
Overall score	3*

* please read the accompanying text

The Department of Medical Psychology and Psychotherapy

The Committee considers the work by this department as good (overall score 3). The societal relevance of the department's research is high, but the Committee is concerned at the lack of focus, in particular given the small size of the group. The Committee was informed of the recent integration of Medical Psychology in the Department of Psychiatry and appreciates that, as a consequence, its research focus and mission

may change. The Group indicated that it moved from population research to more patient oriented research and no longer continues working on Generation R. The Committee suggests that the department would do well either to focus on a single area of health sciences research and to be a full and successful contributing NIHES partner or to participate in a different research school.

Department of Medical Psychology and Psychotherapy	
Quality	3
Productivity	3
Relevance	4
Vitality and feasibility	3
Overall score	3

Assessment of the teaching programme

The Committee had the chance not only to discuss the teaching programme with the Science Director, Programme Coordinator and Programme Directors, but with PhD students and postdocs as well. PhD students from the different programmes in various stages of their studies were represented (see Appendix 1).

The quality of the teaching programme is excellent. The Committee sees that NIHES has outstanding MSc programmes, an observation that was reinforced by the PhD students who place great emphasis on the value of their MSc degree.

NIHES serves as an efficient and effective method of providing an MSc level program for the multiple departments involved in NIHES. The PhD programs reside largely within the departments themselves. Some of the PhD students were not aware of this structure. The Committee also notes that NIHES includes multiple joint PhD students, who work at more than one department, but that the majority of PhD students work mono-departmental. For the PhD programs, the Committee notes that an annual research day for all NIHES PhD students might help them to get to know each other and to provide a new opportunity to present their research to peers and lay persons.

The Committee encourages NIHES to continue with the further implementation of the Supervision and Training Plans for all PhD students.

To support the aim for better success rates of PhD graduations the Committee suggests investigating the possibilities to improve the supervision of PhD students, while realising this may be difficult to arrange. A suggestion is to introduce a course on supervision for postdocs. This should also be open for high potential PhD students in the last phase of their track to help them in their transition to the next phase of their research career.

Similarly, a course on grant writing may be valuable for senior PhD students, who can increase their chances of a postdoc continuation if they obtain their own grants.

The Committee also recommends that NIHES structurally tracks its PhD alumni. Their career development may lead to insights into improvements of the training programme and act as a steering and evaluation tool.

NIHES has indicated that it wishes to develop more distance learning and e-learning modules. The Committee supports this intention, but stresses that it is an expensive endeavour.

Finally, the Committee also wishes to include a comment from the PhD students. They pointed out that recent legislation requires medical doctors to have clinical experience within the five years after obtaining their degree. NIHES may want to consider giving PhD students the opportunity to combine research with work in the clinic (e.g. one day a week). This should be formalized for the outside world to ensure that medical doctors who do a PhD project do not lose their license. The current programme for general practice, where general practice registrars combine PhD training with their clinical training might serve as a model.

Appendix 1 Agenda of the site-visit

Programme Site Visit NIHES 15th and 16th of October 2013

Panel members are expected to arrive in Rotterdam in the morning or afternoon of Tuesday 15 October. A preparatory panel meeting will be held during dinner in the evening of the same day.

The panel will have its main meeting from 8.30 a.m. to 17.30 p.m. on Wednesday 16 October.

Tuesday 15th of October – location Bilderberg Parkhotel

19.00 – 20.00 **Introductory meeting** with Chair and Science Director NIHES

Prof. Mackenbach, Chair

Prof. Hofman, Science Director

Presentation and discussion NIHES organization and management, leadership, strategy, policy, resources

20.00 **Dinner**

Wednesday 16th of October – location Erasmus MC, Na24.02

8.30 – 9.00 **Preparatory meeting site visit Committee**

Procedure for the day:

- The chair of the Committee (Prof. Van Weel) will ask the representatives of the departments to introduce themselves, and if they would like to give the Committee any background information/key messages in addition to the written material.
- Round of discussion will be started by questions by the Committee members assigned to the departments (see below)
- Scoring forms will be filled out during the day: the Committee will aim for consensus
- Draft of the site visit report will be prepared by Mijke Zeegers and will be circulated among the members of the Committee.

09.00 – 09.15 Welcome

Prof. Pols, former Dean and member of the Board of Erasmus MC, from November 2013
Rector and member of the Board of Erasmus University Rotterdam

NIHES board is present:

Prof. Lesaffre, Department of Biostatistics

Prof. Verhulst, Department of Child and Adolescent Psychiatry

Prof. Hofman, Department of Epidemiology

Prof. Bindels, Department of General Practice

Prof. Schut, Department of Health Policy and Management

Prof. Van der Lei, Department of Medical Informatics

Prof. Van Busschbach, Department of Medical Psychology & Psychotherapy

Prof. Mackenbach, Department of Public Health

Drs. Lubbe, Managing Director

Presentation Research Activities

09.15 – 10.45 Discussion with research groups from Erasmus MC. The discussion will include the heads of departments as well as senior researchers.

Department of Biostatistics: discussion led by **Prof. Gravelle**

Department of Child and Adolescent Psychiatry: discussion led by **Prof. Psaty**

Department of Epidemiology: discussion led by **Prof. Elliott**

Department of Public Health: discussion led by **Prof. Leon**
Present:
From the Department of Biostatistics: Prof. Lesaffre, Dr. Rizopoulos
From the Department of Child and Adolescent Psychiatry: Prof. Verhulst, Dr. White
From the Department of Epidemiology: Prof. Hofman, Prof. Van Duijn, Prof. Franco Duran, Dr. Jaddoe
From the Department of Public Health: Prof. Mackenbach, Prof. Steyerberg, Prof. De Koning; Prof. Burdorf

Coffee/tea

10.45 – 12.15 Discussion with research groups from Erasmus MC. The discussion will include the heads of departments as well as senior researchers.

Department of Health Policy and Management: discussion led by **Prof. Gravelle**
Department of General Practice: discussion led by **Prof. Van Weel**
Department of Medical Informatics: discussion led by **Prof. Psaty**
Department of Medical Psychology & Psychotherapy: discussion led by **Prof. Rosendaal**
Present:
From the Department of Health Policy and Management: Prof. Schut, Prof. Brouwer; Prof. Van Doorslaer; Prof. Nieboer
From the Department of General Practice: Prof. Bindels, Prof. Koes, Prof. Evenhuis
From the Department of Medical Informatics: Prof. Van der Lei, Dr. Kors
From the Department of Medical Psychology & Psychotherapy: Prof. Van Busschbach

12.15 – 13.00 **Committee:** Evaluation and scoring morning sessions

13.00 – 13.45 **Lunch meeting with NIHES Board**

Presentation Educational Activities

13.45 – 14.15 **Meeting with Educational Committee**

Discussion educational programmes regarding the overall setup and joint-ness

- presentation Prof. Hofman
- discussion with
 - o current programme directors/teachers, and programme coordinator

Prof. Hofman, PD Epidemiology
Prof. Van Duijn, PD Genetic Epidemiology
Prof. Burdorf, PD Public Health
Prof. Schut, PD Health Services Research
Dr. Redekop, Health Services Research
Dr. Bout-Tellegen, Programme Coordinator

14.15 – 15.15 **Meeting with Ph.D. students & postdocs & Ph.D. committee**

Discussion with NIHES PhD students, postdocs and representative of the PhD committee

Ms. Gaultney, PhD student at Department of Health Policy and Management
Mr. Van der Lee, PhD student at Department of Epidemiology with NIHES MSc degree
Mr. Leening, PhD student at Department of Epidemiology with NIHES MSc degree
Ms. Schoufour, PhD student at Department of General Practice
Ms. Selwaness, PhD student at Department of Epidemiology
Ms. Verlinden, PhD student at Department of Child and Adolescent Psychiatry with NIHES MSc degree

Mr. Van Blijderveen, PhD student at Department of Medical Informatics with NIHES MSc degree
Ms. Jansen, PhD, postdoc at Department of Child and Adolescent Psychiatry with NIHES MSc degree
Ms. Kavousi, PhD, postdoc at Department of Epidemiology
Ms. Coloma, PhD, postdoc at Department of Medical Informatics with NIHES MSc degree

15.15 – 15.45 Coffee/tea
Committee: Evaluation and scoring afternoon sessions

Future plans

15.45 – 16.15 **Presentation future plans NIHES**
Prof. Mackenbach, Chair
Prof. Hofman, Science Director

16.15 – 17.15 **Committee:**
- Scoring all sessions
- Drafting conclusions and recommendations

17.15 – 17.30 **Parting thoughts**
Prof. Mackenbach, Chair
Prof. Hofman, Science Director

Appendix 2 Guideline for assessment and scoring forms

Guideline for assessment / scoring form

Site-visit NIHES

October 15-16, 2013

Following the guidelines of the Royal Netherlands Academy of Arts and Sciences (KNAW), the evaluation included the following criteria:

Assessment criteria, sub-criteria and aspects to be considered

CRITERIA	SUB-CRITERIA	ASPECTS THAT MAY BE CONSIDERED
Quality	A1. Quality and scientific relevance of the research	Originality of the ideas and the research approach, including technological aspects; Significance of the contribution to the field; Coherence of the programme; Quality of the scientific publications; Quality of other output; Scientific and technological relevance
	A2. Leadership	Leadership of primary individuals; Mission and goals; Strategy and policy
	A3. Academic reputation	(Inter)national position and recognition; Prominence of the programme director and other research staff; Impact and significance of research results in the field
	A4. Resources	Human resources; Funding policies and earning capacity; Relevance of research facilities
	A5 PhD training	Objectives and institutional embedding; Structure of programmes; Supervision; Success rates; Educational resources
Productivity	B1. Productivity strategy	Productivity goals; Publication strategy; Rewards and sanctions
	B2. Productivity	Scientific publications and PhD-theses; Professional publications; Output for wider audiences; Use of research facilities by third parties
Relevance	C Societal relevance	Societal quality; Societal impact; Valorisation
Vitality and feasibility	D1. Strategy	Strategic planning; Investments and collaboration; Research topics planned for the near future and their perspectives; Flexibility and anticipation of expected changes.
	D2. SWOT-analysis	Analysis of the position of institute and programmes; Analysis of strengths and weaknesses
	D3. Robustness and stability	Research facilities; Financial resources; Staff competition; Mobility and attractiveness; Expertise within the institute

For the quantified assessment a five-point scale was used:

5. Excellent
 - Work that is at the forefront internationally, and which most likely will have an important and substantial impact in the field. Institute is considered an international leader.
4. Very good
 - Work that is internationally competitive and is expected to make a significant contribution; nationally speaking at the forefront in the field. Institute is considered international player, national leader.
3. Good

- Work that is competitive at the national level and will probably make a valuable contribution in the international field. Institute is considered internationally visible and a national player.
2. Satisfactory
 - Work that is solid but not exciting, will add to our understanding and is in principle worthy of support. It is considered of less priority than work in the above categories. Institute is nationally visible.
 1. Unsatisfactory
 - Work that is neither solid nor exciting, flawed in the scientific and or technical approach, repetitions of other work, etc. Work not worthy of pursuing.

Scoring form NIHES:

Name member site visit committee:

How do you evaluate the institute/department with respect to:	5	4	3	2	1
A1. Quality and scientific relevance of the research					
A2. Leadership					
A3. Academic reputation					
A4. Resources					
A5. PhD training					
B1. Productivity strategy					
B2. Productivity					
C. Societal relevance					
D1. Strategy					
D2. SWOT-analysis					
D3. Robustness and stability					
Overall assessment					

Remarks:

Appendix 3 Brief description of NIHES and its departments

NIHES consists of eight departments, seven of which are part of Erasmus MC: Biostatistics; Child and Adolescent Psychiatry; Epidemiology; General Practice; Medical Informatics; Medical Psychology and Psychotherapy; and Public Health. The eighth department is the Institute for Health Policy and Management of the Erasmus University Rotterdam.

The affiliated partners are four clinical departments of Erasmus MC: Dermatology; Paediatrics; Plastic and Reconstructive Surgery; and Rehabilitation Medicine. NIHES is furthermore strengthened by the affiliated partner Netherlands Cancer Institute / Antoni van Leeuwenhoek Hospital (NKI). The NKI contributes with the Cancer Epidemiology group. The NIHES affiliated partners focus on clinical research with epidemiological tools. They cooperate closely with the NIHES full partners in research projects.

The full partners constitute the core research body of NIHES. Each contributes actively to NIHES Master's and PhD programmes. All full partners are also represented in the NIHES board.

Biostatistics

The objective of the Biostatistics Department is to improve the methodological quality of the research of clinical and epidemiological colleagues within and outside Erasmus MC. For the benefit of a range of research projects, the department develops statistical models and software tools. This department therefore has an indirect but important effect on the scientific community.

The research carried out in the Department of Biostatistics focuses on:

- I. Joint modelling of longitudinal and survival processes.

With these novel statistical models researchers can work on better analyses of longitudinal studies where there are missing-not-at-random mechanisms and analyse survival studies when dealing with time-dependent covariates.

- II. The development of new models for analysing growth curves. The department focuses on multivariate growth curves.

- III. New statistical techniques developed for analysing longitudinal genome-wide association studies (GWAS).

These techniques are expected to speed up the GWAS computations by a factor of about 500.

- IV. The development of new Bayesian statistical techniques.

These techniques are used to analyse complex hierarchical and longitudinal studies, which include blood bank data, ophthalmologic longitudinal data, and Bayesian variable selection techniques.

- V. The development of models and algorithms for high-volume "omics" data.

This research concerns haplotype estimation, analysis of sequencing data, proteomics, metabolomics, construction of biological networks from gene expression data and the classification and prediction with gene expression and methylation data.

- VI. Multistate Markov models for modelling longitudinal and time-to-event data.

This includes developing a modelling framework, based on Markov models, which are used to estimate progression rates of chronic diseases, using various types of observational data.

Child and Adolescent Psychiatry

The main objective of the Child and Adolescent department is to study child psychiatric disorders, such as anxiety, depression, aggressive and antisocial behaviours, hyperactivity, and neurodevelopmental disorders (autism, learning disorders, mental retardation). In the last five years, a shift in focus has taken place from descriptive to etiological epidemiological studies.

The research programme of the department is designed to ensure:

- I. The development of assessment instruments, diagnostic procedures and biomarkers of illness and illness progression.
- II. The assessment of the prevalence and incidence of child and adolescent disorders.
- III. The determinants of the onset and course of psychopathology from infancy to young adulthood using longitudinal research designs.
- IV. The assessment of the effectiveness of treatment approaches.

The programme uses epidemiological methods to study child psychopathology in the general population, populations at risk, and clinical samples. The current research is carried out in three main epidemiological samples:

1. Generation R (a birth cohort of 10,000 from the general population)
2. Trails (a cohort of 10-12-year-olds from the general population)
3. Spectrum (a cohort of 150 children with autism spectrum disorder)

Epidemiology

The main objective of the Department of Epidemiology is to reveal the determinants of the occurrence and prognosis of disease. The department has three extensive research programmes:

I. Epidemiology of Diseases

This programme includes scientific research on a) cardiovascular epidemiology, b) neuro-epidemiology and c) ophthalmic epidemiology. Cardiovascular epidemiologic research focuses on the determinants of atherosclerosis and coronary heart disease in the elderly (e.g. inflammation markers and haemostasis), and on the determinants of cardiovascular diseases in women (effects of menopause, endogenous hormones and hormone replacement therapy). The research is based on the Rotterdam Study (a prospective cohort study of 10,994 men and women aged 55 and over from among the general population). Neuro-epidemiologic research focuses on the aetiology of neurodegenerative and cerebrovascular diseases, including dementia and Alzheimer's disease, Parkinson's disease, stroke and cerebral white matter lesions. Ophthalmic epidemiologic research focuses on determinants of macula degeneration and glaucoma, such as genetic and vascular factors.

II. Basic Epidemiological Research

This programme includes research on the fields of a) genetic epidemiology, b) endocrinological epidemiology and c) developmental epidemiology. Genetic epidemiologic research quantifies the population risk of disorders associated with genetic risk factors and at identifying new genetic factors involved in complex genetic disorders. The work on endocrinologic epidemiology focuses on the question whether circulating hormone levels (e.g. sex and thyroid hormones) are associated with 'incident' diseases among the elderly (osteoporosis, osteoarthritis) and with parameters of frailty. Research on developmental epidemiology focuses on *in-utero* and early life determinants of diseases. It comprises work on reproductive epidemiology and paediatric epidemiology; it is largely based on the Generation R cohort study.

III. Clinical Epidemiology

This programme comprises two parts: a) clinical epidemiology in collaboration with the Department of Radiology and b) pharmaco-epidemiology. The clinical epidemiology group collaborates with the Department of Radiology in a joint research programme for the Assessment of Radiological Technology (ART programme). This programme focuses on assessing diagnostic imaging and image-guided therapies, with an emphasis on cardiovascular disease and trauma imaging. Pharmaco-epidemiological research focuses on the unintended effects of medication, and the effects of medication use under normal circumstances in large populations.

General Practice

The objective of the Department of General Practice is to provide evidence that will improve daily clinical practice for adults with musculoskeletal disorders and osteoarthritis, children and the intellectually disabled. The department is also responsible for training and educating general practitioners (GPs), specialist training of physicians for people with intellectual disabilities and postgraduate training for GPs with a special interest in musculoskeletal disorders. It also participates in the basic training of doctors.

The department has three research interests:

I. Musculoskeletal disorders and osteoarthritis

This research focus is designed to improve and evaluate the management of acute and chronic musculoskeletal disorders in general practice. There is a clear need for reliable and valid evidence for developing and updating the current musculoskeletal clinical guidelines in primary care. Another research focus is osteoarthritis, one of the main diseases in an ageing society.

II. General practice for children

With the aim of improving and evaluating the management of frequently occurring diseases in childhood in general practice, this research focuses on generating reliable valid evidence for developing and updating the current clinical guidelines in primary care. Research includes children with musculoskeletal disorders, overweight, allergic rhinitis, asthma and atopic dermatitis and fever.

III. Intellectual disability medicine

Innovative research on intellectual disability medicine among those with intellectual disabilities also generates insights into the underlying mechanisms of frailty. Research on frailty in handicapped groups has not been done before. Its outcomes, which resonate in the intellectual disability field, both nationally and internationally, have led to several care improvement initiatives.

The studies of the Department of General Practice are designed from a clinical epidemiological perspective and include large prospective cohort studies, diagnostic studies and randomised clinical trials.

Health Policy and Management

The objective of the Institute of Health Policy and Management is to create, disseminate and apply scientific knowledge in the field of health policy and management, through excellent education and research. Its education and research combines scientific excellence with practical relevance.

The Institute's research is organised in three programmes:

I. Competition and regulation in healthcare

This research focuses on the relationship between the organisation, financing and performance of healthcare systems. From an economic, legal and political-administrative perspective, the performance of healthcare systems is explored with regard to quality, affordability, efficiency, solidarity and accessibility of healthcare. With this research, the Institute intends to contribute significantly to better organisation of healthcare systems around the world.

II. Quality and efficiency in healthcare

In this research programme the main focus is on assessing and evaluating the quality, the relative effectiveness and efficiency of healthcare provision and healthcare technologies. Primary objectives are quality assessment and evaluation of the cost-effectiveness of healthcare interventions. Research outcomes provide useful insights that contribute to establish well-founded and more patient-oriented quality policies and more efficient delineation of the basic benefits package. The research provides healthcare insurers, healthcare organisations, care providers and patients with important information, which they can use to underpin decision-making.

III. Management and organisation of healthcare delivery

This research focuses on healthcare delivery. Issues of special interest are quality and safety, the organisation of health processes, human resource management, finances and ICT, and improving the methods and techniques used in several fields of study. The main goal is to equip healthcare organisations with useful insights and instruments to help them perform well in an increasingly complicated environment.

There are six research groups within the Institute: Healthcare Governance, Health Economics-iMTA, Health Insurance, Health Services Management & Organisation, Law & Healthcare and Socio-Medical Sciences. Researchers from each group participate in one or more of the themes.

Medical Informatics

The objective of the Medical Informatics Department is to create and validate the knowledge and data models that are used within healthcare and the biomedical sciences. In as far as these models have signals or images of specific organs as their input, signal analysis and image processing are also involved.

The department has three research programmes:

I. Structuring of medical knowledge

This research deals with the formalization of medical knowledge so that such knowledge can be made operational in computer systems. Knowledge is provided by experts or is described in journals and books, and through the semi-automatic extraction of knowledge from databases, patents, and electronic health records. Attention is paid to automated learning techniques for modelling medical knowledge, tailored to specific problems in the medical domain. The research results are tested in close collaboration with other investigators and clinical partners.

II. Structuring of medical data

Researchers working in this programme study methodologies that make it possible to effectively record data. The scientific challenge is to formulate generic models that are applicable to different medical specialties. Together with other researchers, those working in this department analyse observational databases and study issues involved in naturalistic trials. With researchers in other countries, the researchers develop infrastructure that supports the aggregation of medical data across a number of countries.

III. Developing acquisition and processing techniques for diagnostic imaging

The objective of this programme is to develop and implement novel biomedical image acquisition and analysis technologies, which will improve biomedical research and help detect and diagnose disease and plan therapies. Another aim is to develop tools to monitor the effects of therapy, and to provide solutions for minimally invasive, image-guided procedures. The programme is a joint initiative with the Department of Radiology.

The department has six main research themes: cardiovascular image analysis, image-guided interventions, image registration, model-based image analysis, neuro-image analysis, and cellular and molecular image analysis.

Medical Psychology and Psychotherapy

The objective of the Department of Medical Psychology and Psychotherapy is to improve a) the communication between patients and medical doctors and b) the patients' ability to cope with a disease and the effects of disease (such as fear, uncertainty, precepts, making choices, and quality of life). This research covers children, adolescents and adults.

Examples of current research:

I. Psychological and ethical aspects of kidney donation

This research programme is carried out in close cooperation with the Department of Internal Medicine (Nephrology and Transplantation) of Erasmus MC. Together they study the psychological and ethical aspects of live kidney donation.

II. Quality of Life research, especially of generic quality of life

The section is involved in developing the EQ-5D, a standardised instrument for use as a measure of health outcome, which has become the world's dominant quality of life questionnaire in health economics.

III. Evaluations of interventions, such as chronic pain, psychotherapy, lifestyle for diabetics and obesity

IV. Palliative care, e.g. communication with cancer patients in the palliative phase

V. Reproductive medicine, in particular among immigrant patients, e.g. the burden of various fertility treatment strategies.

To further increase clinical involvement, the department has developed long-lasting cooperative ventures; from a single involvement in clinical counselling in genetics to involvement in the clinical care and diagnostics of patients with unexplained symptoms, chronic pain, diabetics and weight problems in both adults and children.

Public Health

The main objective of the department is to conduct leading research and education that will have a discernible impact on population health at the local, national, and international level. Its goals include high-quality scientific publications on relevant and innovative topics, and disseminating knowledge and expertise to support evidence-based public health.

The department has two research programmes:

I. Determinants of population health and primary preventive interventions.

This research addresses the specific contribution of a wide array of factors affecting population health, often by applying novel quantitative methods that can capture the complex interrelationships among individual characteristics and behaviours and the living and working environment. This knowledge is subsequently used to develop and evaluate the effectiveness of primary preventive interventions and associated costs and benefits. These interventions are conducted in a variety of environments, such as schools, workplaces, and neighbourhoods. The programme brings together four research groups: social determinants of population health, occupational health, cancer surveillance, and youth healthcare.

II. Effects of screening and medical interventions on population health.

This research is designed to contribute to improved population health by evaluating the favourable and unfavourable effects – and the cost-effectiveness of – healthcare interventions, in particular screening for diseases, clinical interventions, interventions in end-of-life care and tropical disease control. This programme consists of three research groups: evaluation of screening, medical decision-making and infectious diseases control.

The department's commitment to improving population health is combined with a strong emphasis on quantitative research methods, thus maximising quality and public health impact. The researchers conduct observational as well as experimental studies and often use advanced statistical methods and computer simulation models.