

Estonian Higher Education Accreditation Centre

**Evaluation of Research in Medicine (3):
clinical medicine (3.3), public health (3.4), stomatology
(3.5), environmental health, behavior nutrition,
occupational therapy, rehabilitation (3.7)
in Estonia**

Institutes evaluated

Faculty of Medicine, University of Tartu

Department of Pediatrics
Department of Public Health
Department of Dermatology
Department of Sports Medicine and Rehabilitation
Department of Psychiatry
Department of Internal Medicine
Clinic of Traumatology and Orthopaedics
Eye Clinic
Ear Clinic
Department of Polyclinic and Family Medicine

National Institute for Health Development

Department of Epidemiology and Biostatistics
Department of Pulmonology

Evaluation dates

November 2-9, 2003

Expert team:

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Part I

General Overview

Introduction

At the request of the Estonian Higher Education Accreditation Centre, Tallinn (EHEAC), an evaluation team (hereafter named the “Evaluators”) visited institutes in Estonia carrying out research activities in medicine (3). The evaluating team consisted of Prof. Timo Vesikari (University of Tampere), Prof. Osmo Hänninen (University of Kuopio), prof. Stephen Sutton (University of Cambridge) and prof. Barbro Johansson (Wallenberg Neuroscience Center).

The institutions to be evaluated were:

1) University of Tartu, Faculty of Medicine

- Department of Pediatrics (*Head: Prof. Tiina Talvik*)
- Department of Public Health (*Head: Prof. Raul-Allan Kiivet*)
- Department of Dermatology (*Head: Prof. Helgi Silm*)
- Department of Sports Medicine and Rehabilitation (*Head: Prof. Jaak Maaros*)
- Department of Psychiatry (*Head: Prof. Veiko Vasar*)
- Department of Internal Medicine (*Head: Prof. Margus Lember*)
 - Chair of the Propedeutics of Internal Medicine (*Head: Prof. Margus Lember*)
 - Division of Rheumatology (*Head: Docent Riina Kallikorm*)
 - Division of Gastroenterology (*Head: Docent Riina Salupere*)
 - Division of Nephrology (*Head: Docent Mai Ots*)
 - Division of Endocrinology (*Head: Assistant Tatjana Vinogradova*)
 - Chair of Laboratory Medicine (*Head: Pprof. Agu Tamm*)
 - Chair of Infectious Diseases (*Head: Docent Matti Maimets*)

- Clinic of Traumatology and Orthopaedics (*Head: Prof. Tiit Haviko*)
- Eye Clinic (*Head: Ddocent Pait Teesalu*)
- Ear Clinic (*Head: prof. Mart Kull*)
- Department of Polyclinic and Family Medicine (*Head: Prof. Heidi-Ingrid Maaros*)

2) National Institute for Health Development

- Department of Epidemiology and Biostatistics (*Head: Prof. Mati Rahu*)
- Department of Pulmonology (*Head: Dr. H.-M. Loit*)

The evaluators were provided in advance with self-assessment reports from the institutions, prepared by the members of their groups.

After a brief orientation meeting at EHEAC, the evaluators visited the institutions to be evaluated in Tartu and Tallinn during four days. At these meetings staff members of the various departments presented their work. During these presentations as well as during the subsequent discussions additional information about the research activities was provided. This included additional documents such as copies of published papers.

Approach to the evaluation

The evaluators were asked to:

- 1) Judge the activities of research and development in the units evaluated and the research topics implemented by them to ensure the governmental funding for internationally recognised research and development. The Team was asked to concentrate on research units (university departments, laboratories) with specific comments to sub-units, groups if necessary.
- 2) Identify deficiencies in the activities of research and development units.
- 3) Give recommendations on the development concerning research and development and research areas to the state of Estonia.

The Team received the following materials: A working schedule, principles and criteria for evaluation of the research units, evaluation guidelines for the ranking of research units, and self-evaluation reports created by the research units themselves.

On a first evaluation point, the *quality of the research activities* was considered. This assessment is largely based on the records of scientific publications.

<i>Excellent</i>	<i>The majority of the submitted works are at a high international level and virtually all others at a good international level.</i>
<i>Excellent to good</i>	<i>At least one third of the submitted works are at a high international level and many others at a good international level, these together comprise a clear majority.</i>
<i>Good</i>	<i>The majority of the submitted works are at least at a good international level and virtually all others at a fair international level</i>
<i>Good to satisfactory</i>	<i>At least one third of the submitted works are at a good international level and many others at a fair international level, these together comprise a clear majority</i>
<i>Satisfactory</i>	<i>The majority of the submitted works are at least at a fair international level</i>
<i>Satisfactory to unsatisfactory</i>	<i>A minority of the submitted works are at a fair international level</i>
<i>Unsatisfactory</i>	<i>None, or virtually none, of the submitted works are at a fair international level</i>

Regarding the grading of the research activities, the evaluation team was instructed by the EHEAC to reserve the term **excellent** for groups, which were found to be among the best 10% of the European groups in the corresponding field. Similarly, the term **excellent to good** should be used if the evaluated group was found to be among the best 25 % of corresponding European groups. The full scale comprised 7 levels, in addition to the highest ones the grades are **good**, **good to satisfactory**, **satisfactory**, **satisfactory to unsatisfactory**, and **unsatisfactory**.

Secondly, the *over-all capability* of a research unit was evaluated based on a the combined assessment of the following criteria (each graded in three levels):

	Grade 0	Grade 1	Grade 2
Originality/novelty of past and ongoing research activity	descriptive, no novelty	some novelty/originality	original/novel
The strategy and	no or bad strategy, no or	fair strategy and	clear strategy and very

perspective of research	unclear perspective for further research	perspective for further research	perspective for further research
Multidisciplinarity and relevance for other research areas	no multidisciplinarity, no relevant for other research areas	some multidisciplinarity, some relevance	good multidisciplinarity, good relevance for other research areas
The competence of research groups and their capability for development	low competence	there is competence, but no young postgraduate and postdoctoral students	there is competence and postgraduate and postdoctoral students
National and international co-operation	no particular national and international co-operation	some national/international co-operation	good or tight national/international co-operation
Success in applying for funds and grants	no particular success	fair success	applying successfully for grants and funds

Excellent - 12-10 (total grade), **Good** - 9-7 (total grade), **Satisfactory** - 6-4 (total grade) and **Unsatisfactory** - 3-0 (total grade). As the result of this assessment one of the four grades **excellent, good, satisfactory** or **unsatisfactory** was given for the group.

Thirdly, the *implementation opportunities* for the research results and their importance for the Estonian society were commented upon.

Finally, on a fourth evaluation point *the critical comments and recommendations* were asked to be given by the evaluation team.

Part II General Comments Introduction

The Evaluation Team (from hereon referred to as the “Team”) had the task of reviewing the research conducted at 10 departments of clinical medicine (including public health) of the University of Tartu, and 2 departments of the National Institute for Health Development in Tallinn. Each Unit had provided a self-assessment report for the use of the Team. These were generally well prepared, although not quite uniform in style. Some also had a lot of repetition, making them unnecessarily long. The Team conducted a site visit to each Unit, and found the visits very useful. The overviews by the Unit Heads were usually well prepared, and discussions with both senior and junior research staff members helped the Team to get a much clearer picture of the research activities in a given Unit.

The general impression of the Team was that research activities in the five-year period 1998-2002 had increased considerably in both quantitative and qualitative terms. Several Units had reached an internationally appreciable level just during these years, and could be regarded to be “post-transitional”, whereas others were still struggling with the transition.

In the best Units, The Team was met with an atmosphere of enthusiasm among both senior and junior research workers. While a shortage of staff and funding was a

common finding, the high spirit seemed to compensate for some lack of resources. On the other hand, the best Units seemed to be capable of attracting more funding, even though the sizes of individual grants were quite small. The team was also generally impressed by the extent of international collaboration in the best of the Units. As these are critical issues for future activities, the Team has made recommendations on financial support and international collaboration in the future at the end of the evaluation report.

Part III

Evaluation of institutions and research groups

1. Faculty of Medicine, University of Tartu

1.1. Department of Pediatrics (*Head: prof. Tiina Talvik*)

Main research fields

The main topics have been the epidemiology of several childhood diseases combined with molecular-genetics, immunological, biochemical or bacteriological aspects. Our collaborators have been Institute of Microbiology, Institute of Biochemistry, Cell's Biology group and Dept. of Immunology of the Institute of Common and Molecular Pathology, Maternity Hospital and the Laboratory of Molecular Genetics of the Tartu University Clinics. Epidemiological and quality of care studies have played an important role in policy making, planning, and prioritization the resources in health care in Estonia.

General Comments

The Department Pediatrics has just recently undergone a successful generation change, with Professor Tiina Talvik retiring and Vallo Tillman stepping in as a Head of the Department. Professor Talvik has been by many accounts a very successful leader in the transition period. She has developed her own area, pediatric neurology, to a high level, and, at the same time, overseen the development of research in many other pediatric subspecialties to an international level

A measure of success is the number of Ph.D. theses, which at 9 within the five-year period is outstanding in the Medical Faculty. Also the number of CC articles, 52, is exceptionally high. Another measure is the inclusion of the Department in the Centre of Excellence of Molecular and Clinical Medicine. This is because of the emphasis in Neurosciences as a general research area in the Department Pediatrics, including research into neurodegenerative diseases, neonatal neurology, cognitive development of children, and behavioral studies of newborns.

On the other hand, the Team was uncertain as to why the whole Department of Pediatrics had become a member of the Centre of Excellence when only some of the research areas fell within the general topic of neurosciences and had reached a sufficient level to justify inclusion into the Centre.

The Team experienced an atmosphere of enthusiasm within the Department, and felt that there were several motivated research groups to carry on into the future from the ground that Professor Talvik had left.

Evaluation of Research Activities

The team of evaluators judged the overall quality of the research to be *Good*

Evaluation of Overall Capability

The team of evaluators judged the overall capability to be *Good*

	Grade
Originality/novelty of past and ongoing research activity	1
The strategy and perspective of research	1
Multidisciplinarity and relevance for other research areas	2
The competence of research groups and their capability for development	2
National and international co-operation	2
Success in applying for funds and grants	1

The implementation opportunities for the research results and their importance for the Estonian society

The Department has been active and quite successful in communicating research findings to the Estonian medical community. This is well in line with the role of leading paediatric centre in Estonia, which the Department has rightfully assumed.

Recommendations

A good deal of the scientific achievements of the Department of Pediatrics in the recent years has been thanks to active international collaboration, particularly with Sweden and Finland. A challenge for the near future is to continue with this collaboration and at the same time establish more independent research tradition in the Department. An example could be research in allergy and asthma, which has been nurtured in collaboration with the University of Linköping, and should be continued at home ground. Research on coeliac disease has already been established as relatively independent from international support, but in this highly competitive area more critical mass will be needed. Work on childhood diabetes may still benefit from collaboration with Finland, which has a long tradition in the field.

The Team noted that there are a number of new thesis works in progress in the Department. However, many of the subjects appear somewhat ordinary and not particularly innovative.

The Team felt that the Department should continue to focus on its areas of strength, particularly neurology and neurosciences in a broad sense, and to prepare for a generation change in research leadership, along the line of successful change in administration. Also neonatology, which has been a successful research area in the recent past, will need more clear directions and leadership in the future.

1.2. Department of Public Health (Head: Prof. Raul-Allan Kiivet)

Main research fields

- Longitudinal development of risky behaviour and risk factors for non-communicable and communicable diseases in children and youth;
- causal association between personality, biological markers and risky behaviour;
- epidemiology and prevention of injuries;

- epidemiology of HIV and sexually transmitted diseases in Estonia;
- indoor air quality and its health consequences;
- drinking water quality and its impact on health;
- data quality of disease registers;
- methodology for analysis of medical data;
- public health aspects of pharmacoepidemiology and pharmacoconomics;
- patient satisfaction and quality of treatment in health care institutions;
- needs assessment for health care services;
- economic evaluation of medical services and health programmes.

Structure of the Department

- Chair of Epidemiology and Biostatistics (Prof. Mati Rahu)
- Chair of Environmental and Occupational Health (Docent Eda Merisalu)
- Chair of Health Promotion (Docent Maarike Harro)
- Chair of Health Care Management (Prof. Raul-Allan Kiivet)
- Chair of Health Economics (Docent Kersti Meesaar)

Target financed projects

TARTH0820 CONNECTIONS BETWEEN HEALTH STATUS AND UTILIZATION OF HEALTH CARE RESOURCES IN ESTONIA – GENDER AND AGE DIFFERENCES AND DEPENDENCE ON SOCIAL STATUS AND SUBSISTENCE (1999-2003). Principal investigator: **Raul Kiivet**. Investigators: Maarike Harro, Kersti Meesaar, Krista Fischer, Diva Eensoo, Liis Roováli, Liis Merenäkk, Kersti Pärna. Financing used: 1 857 000 EEK

TARTH2164 Postdoctoral target financing (2002-2003) TREATMENT OF THE SEXUALLY TRANSMITTED DISEASES IN ESTONIA: CONSISTENCY WITH THE EVIDENCE BASED MEDICINE PRINCIPLES. Postdoctoral student: **Anneli Uusküla**. Financing: 395 000 EEK

General comments

This is an active department with many enthusiastic young researchers. Output of CC publications (a total of 41 in the assessment period) was quite impressive, although only two doctoral theses were completed during the assessment period. Although it was not possible to meet all the members of the Department, the Team was particularly impressed by Maarike Harro and Krista Fischer.

Evaluation of Research Activities

The Evaluation Team judged the overall quality of the research to be **Good**

Evaluation of Overall Capability

The team of evaluators judged the overall capability of the research group to be **Good**

	Grade
Originality/novelty of past and ongoing research activity	1
The strategy and perspective of research	1
Multidisciplinarity and relevance for other research areas	2
The competence of research groups and their capability for development	2
National and international co-operation	1
Success in applying for funds and grants	1

The implementation opportunities for the research results and their importance for the Estonian society

The work of this Department is of great importance to the nation's health. A good example is the work on prevention of sexually transmitted diseases.

Recommendations

1. The Department is attempting to cover a very wide range of diverse topics. This is partly because it is under pressure to accept external contracts. Additional funding would allow the Department to concentrate on fewer topics of strategic importance and to study them in more depth. To the same end, the projects conducted by Masters students should be linked in a more strategic way.
2. The appointment of Maarike Harro as the new director of the National Institute of Health Development should help to facilitate further collaboration between this Department and the Institute. However, this may mean that Dr. Harro will have less time for direct involvement in the Department's research. We therefore recommend that the health promotion unit be strengthened by the appointment of one additional researcher.
3. We understand that the head of the Biostatistics section, Krista Fischer, is the only senior biostatistician in the whole of Estonia. We recommend that funding is given to the Department for an additional postdoctoral biostatistician to support Dr. Fischer's research and to provide statistical advice to other groups in the Department..

1.3. Department of Dermatology (*Head: Prof. Helgi Silm*)

Main research fields

Currently the main research interests in the Department of Dermatology are directed to revealing pathogenetic mechanisms of inflammatory skin diseases as well as investigating epidemiology of cutaneous and sexually transmitted diseases (STD). The following projects are carried out at the Department of Dermatology at the moment:

1. Participation of oxidative stress in the pathogenesis of contact dermatitis and its longstanding consequences to health.
2. Role of nitric oxide in the pathogenesis of inflammatory skin diseases.
3. Th1 and Th2 cytokine genes' polymorphisms associated with psoriasis.
4. Implementation of behavioural interventions for STD risk reduction.

Target research financing

Title: CUTANEOUS AND SEXUALLY TRANSMITTED DISEASES: PATHOGENETIC MECHANISMS AND EPIDEMIOLOGY IN ESTONIA. Code: 0182128s02. Duration: 2002-2006. Funding for 2002-2003: 744 000 EEK. Principal investigator: H. Silm. Investigators: A. Volke, M. Eisen, K. Kingo, A. Uusküla, M. Karelson, S. Kaur

General comments

This is a relatively small but active department with two young award-winning researchers and with research projects of wide public relevance. Two doctoral theses

were successfully defended during the assessment period, and the Department currently has four doctoral students.

Evaluation of Research Activities

The Evaluation Team judged the overall quality of the research to be *Good*

Evaluation of Overall Capability

The team of evaluators judged the overall capability of the research group to be *Good*

	Grade
Originality/novelty of past and ongoing research activity	1
The strategy and perspective of research	1
Multidisciplinarity and relevance for other research areas	1
The competence of research groups and their capability for development	2
National and international co-operation	1
Success in applying for funds and grants	2

The implementation opportunities for the research results and their importance for the Estonian society

The research on sexually transmitted diseases is extremely important, and urgent measures to reduce the incidence of HIV infection would be of huge benefit for the Estonian society.

Understanding of the pathogenetic mechanisms underlying atopic dermatitis, contact dermatitis and psoriasis is essential for establishing better treatment for these very common problems in society. More successful treatment strategies will have an impact on the quality of life of patients as well as on the economy of the country.

Recommendations

More available financial support for young investigators should have high priority. It is important that young talented students remain in scientific work.

1.4. Department of Sports Medicine and Rehabilitation (*Head: Prof. Jaak Maaros*)

Main research activities

During the period of 1999-2003, the main research and developmental directions of the Department of Sports Medicine and Rehabilitation have been the investigation of functional reserves and physical ability within healthy and sick persons:

1. evaluation of cardiorespiratory functional reserve and physical capacity in complex cardiac rehabilitation after acute coronary syndromes
2. oxidative stress and use of antioxidants in healthy population and in cardiac patients
3. health promotion and the analyse of risk factors of coronary heart disease among the inhabitants of Estonia and the students of the Tartu University
4. impact of complex rehabilitation (aquatic exercise) in chronic renal failure patients
5. effect of physical exercise on the blood parameters in athletes.

General Comments

The Department of Sports Medicine and Rehabilitation is still in the phase of transition. The former All Union responsibility in the Soviet time to educate and train as well as to keep updated all sports physicians (total number 800) has disappeared, and the Soviet time paradigm in rehabilitation has been replaced by a more modern approach. As these changes have been greater than in any other clinical field it is understandable that the research activities of this department are modest compared with national and practical clinical needs in the University hospital. International collaboration and the number of postgraduate students are also rather low compared to the needs of this important area of medicine. Fortunately the Department has been able to obtain modern instrumentation for the service functions. It helps to develop new research projects. Unfortunately there are only a few senior members in the personnel, and the generation shift is soon expected.

Evaluation of Research Activities

The Evaluation Team judged the overall quality of the research to be *Unsatisfactory*

Evaluation of Overall Capability

The team of evaluators judged the overall capability of the research group to be *Unsatisfactory*

	Grade
Originality/novelty of past and ongoing research activity	0
The strategy and perspective of research	1
Multidisciplinarity and relevance for other research areas	1
The competence of research groups and their capability for development	1
National and international co-operation	0
Success in applying for funds and grants	0

The implementation opportunities for the research results and their importance for the Estonian society

The Department has great responsibility as the rehabilitation needs cover very many areas of medicine. Furthermore, the problems of the overweight and obesity already common in western countries can become serious problems in future also in Estonia. It is recommended to have services both for the general population as well as for patients in fitness testing and personal counselling. In sports medicine the national agreement of testing the junior sportsmen has been a step forward as the safety measure of heavily training youngsters. It is clear that the physiotherapy and rehabilitation of new groups is important as the age expectation of the people increases.

Recommendations

More international networking is recommended as this would speed up the paradigm shift. More young people are needed to join the postgraduate studies especially in the area of rehabilitation to help the Department over the generation shift, which is expected to take place in the near future. Training periods abroad are highly recommended.

1.5. Department of Psychiatry (*Head: prof. Veiko Vasar*)

Main research fields

The work of the research group of psychiatry is focused on the epidemiology as well as on the role of genetic variability in the manifestations of psychiatric disorders and psychobiological markers of morbidity and treatment response in mental disorders. The following main directions of research in psychiatry are included:

- Epidemiology and psychosocial factors of mental disorders
- Biological markers of schizophrenia, mood and anxiety disorders; relationship of genetic variability to psychiatric disorders and personality traits
- Pathogenesis and prevalence of sleep disorders

Targeted research funding

1998-2002 – SF0180423s98 “EPIDEMIOLOGY AND PATHOLOGICAL MECHANISMS OF ANXIETY DISORDERS, MOOD DISORDERS AND SCHIZOPHRENIA”. PI: Prof. Veiko. Vasar. Annual budget in 2002: 750,000 EEK.

General comments

The Department has steadily built up its research programme over the last five years and should be commended for its achievements to date. The number of CC papers published over the assessment period (23 in total) is relatively high for a small department. In addition, four doctoral theses were completed during the assessment period. The Team sensed that Department members were satisfied with their current level of research activity and showed little desire or ambition to expand into new research areas.

Evaluation of Research Activities

The Evaluation Team judged the overall quality of the research to be *Good*

Evaluation of Overall Capability

The team of evaluators judged the overall capability of the research group to be *Good*

	Grade
Originality/novelty of past and ongoing research activity	1
The strategy and perspective of research	1
Multidisciplinarity and relevance for other research areas	1
The competence of research groups and their capability for development	2
National and international co-operation	1
Success in applying for funds and grants	2

The implementation opportunities for the research results and their importance for the Estonian society

Mental health problems are an enormous burden on Estonian society. In that sense, the Department's work is extremely important. The Department has also developed questionnaires that can be used to screen for possible psychiatric disorders in the general population.

Recommendations

The Department should be encouraged to adopt a more ambitious approach to developing new research areas (e.g. treatment research) and to seeking additional funding to support such development.

1.6. Department of Internal Medicine (*Head of the Department: prof. Margus Lember*)

The structure of the department of Internal Medicine is as follows:

- Chair of the propedeutics of internal medicine covering general medicine ward (Head: Prof. Margus Lember)
- Division of Rheumatology (Head: Docent Riina Kallikorm)
- Division of Gastroenterology (Head: Docent Riina Salupere)
- Division of Nephrology (Head: Docent Mai Ots)
- Division of Endocrinology (Head: Assistant Tatjana Vinogradova)
- Chair of Laboratory Medicine (Head: Prof. Agu Tamm)
- Chair of Infectious Diseases (Head: Docent Matti Maimets)

Target-Funded Research Projects

Current projects

CHANGED CLINICAL MANIFESTATIONS OF CHRONIC INTERNAL DISEASES, PECULARITIES OF REMISSION DEPENDING ON TREATMENT, QUALITY OF CARE AND SOCIAL CONTRIVING AS FACTORS INFLUENCING PATIENTS' QUALITY OF LIFE: COMPARISONS OF GENERAL POPULATION AND PRIMARY AND SECONDARY CARE PATIENTS. (2002-2006). Supervisor: Prof. Margus Lember. There are currently two researchers (H.Kolk, M.Tender) and one PhD-student (M.Tammaru) working on the project.

RESEARCH IN THE PATHOGENESIS OF VASCULAR DAMAGE OF THE KIDNEY TRANSPLANT (JOINT PROJECT WITH THE DEPARTMENT OF SURGERY UNDER THE THEME CHRONIC INFLAMMATION IN SURGICAL DISEASES. (2003-2007). Supervisor: docent M.Ots. Investigators: molecularbiologist Ingrid Liiv and Dr. Ülle Pechter. Funding 2003: 147 000 EEK

Completed target-funded projects

CHRONIC LIVER DISEASES (CHRONIC VIRAL HEPATITIS, AUTOIMMUNE HEPATITIS, PRIMARY BILIARY CIRRHOSIS, ALCOHOLIC LIVER DISEASE) IN ESTONIA: EPIDEMIOLOGY, MANAGEMENT, PROGNOSIS (1998-2001). Supervisor: Prof. Vello Salupere. Investigators: Triin Remmel MD, Dr.Med; Riina Salupere MD, PhD; Karin Kull MD, Dr.Med; Eva Zusinaite MD, postgraduate student. Total cost of the project: 1 002 300 EEK (1998-193 300 EEK, 1999-305 000 EEK, 2000-244 000 EEK, 2001-260 000 EEK)

SYSTEMIC LUPUS ERYTHEMATOSUS (SLE) IN ESTONIA: EPIDEMIOLOGY, CLINICAL SUBTYPES, IMMUNOLOGICAL AND GENETICAL MARKERS, PROGNOSIS OF COURSE AND OUTCOME. (1998-2002). Supervisor: professor Reinhold Birkenfeldt. Main coworkers: senior researcher Svetlana Päi, docent Riina Kallikorm, dr Eino Sinimäe and dr Elviira Seppet
Budget: 830 300 EEK

General Comments

The Department appears as a rather traditional Department of Internal Medicine, with many subspecialties that are quite independent in their general work as well as research. This results in an impression that there is lack of focus or clear direction for the future. The Head of the Department since 2000, Professor Margus Lember, comes

from the Department of Family Medicine, and has strengthened the polyclinical medicine in the Department. It is still somewhat unclear how this is or will be reflected in joint research with the other subspecialties.

Evaluation of Research Activities

The Evaluation Team judged the overall quality of the research to be *Satisfactory*

Evaluation of Overall Capability

The team of evaluators judged the overall capability of the research group to be *Satisfactory*

	Grade
Originality/novelty of past and ongoing research activity	1
The strategy and perspective of research	1
Multidisciplinarity and relevance for other research areas	1
The competence of research groups and their capability for development	1
National and international co-operation	0
Success in applying for funds and grants	1

The implementation opportunities for the research results and their importance for the Estonian society

As internal medicine carries a lot of public interest, there is need to communicate research findings to Estonian physicians and the public. The Department has done quite well in this respect. Especially the work of Professor Agu Tamm in creating normal reference value for laboratory tests should be mentioned in this respect.

Recommendations

The Department should make efforts to focus on areas of strength and to increase collaborative research within the Department, as well as with other departments, to make the best use of available resources. At present, the number research personnel per division is small, and clearly not sufficient to create any critical mass for high quality international level research. An area that would have greater potency for development, given more resources, is clearly nephrology.

1.7. Clinic of Traumatology and Orthopaedics (Head: Prof. Tiit Haviko)

Main research activities

- Screening and preventive treatment of osteoporosis
- Biomechanical estimation of musculo-skeletal injuries
- Fractures of proximal femur and orthopaedic diseases of hip joint
- Early diagnostics and rehabilitation in osteoarthritis

Target-financed projects

Subject: EARLY DIAGNOSTICS AND REHABILITATION IN OSTEOARTHRITIS: CLINICAL, ANATOMICAL AND BIOMECHANICAL COMPLEX INVESTIGATION (2002 – 2006). Supervisor of theme: Tiit Haviko, MD, MScD, Prof. Main investigations: Helena Gapeyeva, b. 1958, Dr Sp Sc, scientist, Katre Maasalu, b. 1968, Dr med, scientist, Mati Pääsuke, b. 1954, Cand. biol, Prof, Ivo

Kolts, b. 1957, Dr. med, Docent, Aalo Eller, b. 1944, Cand med, Docent. Financing in 2002 - 400000 crowns.

General Comments

The Clinic of Traumatology and Orthopaedics has a number of interesting projects, and some of the findings suggest that even very basic "facts" about anatomy, as described in standard texts, may need to be questioned. The collaboration with the Faculty of Physical Education and physiotherapist education and training is a special resource, which happens to have a long tradition in the University of Tartu as the founder of that Faculty has its roots in former professor of orthopaedics. This substantially increases the research capability of the department even to the level of basic biomechanical research. The heavy practical workload of the Department provides a unique source of material in this context. The two faculties have postgraduate students working together. Good results can also be reached at the international level when the intellectual and human resources of two faculties (Faculty of Medicine and Faculty of Physical Education) are combined.

Evaluation of Research Activities

The Evaluation Team judged the overall quality of the research to be *Satisfactory*

Evaluation of Overall Capability

The team of evaluators judged the overall capability of the research group to be *Satisfactory*

	Grade
Originality/novelty of past and ongoing research activity	1
The strategy and perspective of research	1
Multidisciplinarity and relevance for other research areas	1
The competence of research groups and their capability for development	1
National and international co-operation	1
Success in applying for funds and grants	1

The implementation opportunities for the research results and their importance for the Estonian society

With the increasing age of the population the need for orthopaedic operations will increase. This will increase the significance of the expertise. The development of prostheses will increase quality of life and lessen the consumption of other health and social services in Estonia. Orthopaedic services in Estonia are concentrated in this clinic.

Recommendations

Further research collaboration with the Department of the Sports Medicine and Rehabilitation should be encouraged, especially given its close proximity..

The Department could also perhaps be the education and training centre for the other Baltic Countries.

1.8. Eye Clinic of the University of Tartu (Head: docent Pait Teesalu)

Main research fields

1. Methods of the diagnosis of glaucoma
2. Exfoliation syndrome
3. Study of the aetiological factors of cataract
4. Screening of diabetic retinopathy
5. Study of Estonian people with visual disabilities
6. Molecular mechanisms of the gelatinous drop-like corneal dystrophy
7. Cultivation and transplantation of corneal stem cells
8. Changes in corneal endothelium in cataract surgery and in donor patients

General comments

This is a small department consisting of a few ophthalmologists with large clinical duties and one doctoral student.

Evaluation of Research Activities

The Evaluation Team judged the overall quality of the research to be *Satisfactory*

Evaluation of Overall Capability

The team of evaluators judged the overall capability of the research group to be *Satisfactory*

	Grade
Originality/novelty of past and ongoing research activity	1
The strategy and perspective of research	1
Multidisciplinarity and relevance for other research areas	0
The competence of research groups and their capability for development	1
National and international co-operation	1
Success in applying for funds and grants	0

The implementation opportunities for the research results and their importance for the Estonian society

In society today, the rapid development in information technology has made vision extremely important. Any reduction of vision will greatly influence the quality of life of an individual.

Recommendations

Considering the ageing population and the high and increasing prevalence of common ophthalmological problems such as cataract, glaucoma and diabetes retinopathy, there is an obvious need to increase the number of researchers in ophthalmology.

Neuro-ophthalmology is an important but neglected area, which should be considered when more financial resources are available.

1.9. Ear Clinic (*Head: prof. Mart Kull*)

Main research areas

- Acute Recurrent Tonsillitis
- Pharyngeal stenosis
- Laryngeal, tracheal, bronchial and esophageal stenoses
- Artificial lung ventilation method

General Comments

The head of the department, professor Mart Kull, is a very creative innovator and enthusiast who has invented equipment of important clinical relevance, including computerized endopharyngeal myotonometry, endoprosthesis for esophageal stenting and equipment for artificial lung ventilation. He has obtained a number of patents. Funding has essentially been obtained outside the university grants. Some of the achievements are not evident from the publications because of publication restrictions necessary to obtain a patent.

Functional obstruction of the pharynx can cause sleep apnoea and hypertension, and sleep apnoea is a recognized risk factor for ischaemic heart disease and stroke. Computerized endopharyngeal myometry, a unique method developed in cooperation with the Department of Physics at Tartu University, has been introduced as a diagnostic screening method. One thesis on computerized endopharyngeal myotometry was published in 2001 (M.Veldi), and one doctoral student is preparing a thesis on tonsillitis. Within the medical faculty, scientific contacts are established with the Departments of Psychiatry and Stomatology, and with the Institutes of Microbiology and General Pathology.

Evaluation of Research Activities

The team of evaluators judged the overall quality of the research to be *Excellent*

Evaluation of Overall Capability

The team of evaluators judged the overall capability to be *Excellent*

	Grade
Originality/novelty of past and ongoing research activity	2
The strategy and perspective of research	2
Multidisciplinarity and relevance for other research areas	1
The competence of research groups and their capability for development	2
National and international co-operation	1
Success in applying for funds and grants	2

The implementation opportunities for the research results and their importance for the Estonian society

The computerized endopharyngeal myotonometry, endoprosthesis for esophageal stenting and equipment for artificial lung ventilation developed in this clinic are not only likely to significantly improve the diagnosis and treatment of Estonian patients but also have a worldwide implementation.

Recommendations

We recommend that the university develops structure and services for similar activities as a future base for high technology industries and science parks, which have been established in cooperation with universities in many parts of the world including the nordic countries.

1.10. Department of Polyclinic and Family Medicine (Head: prof. Heidi-Ingrid Maaros)

Main research fields

- The clinical course of chronic gastritis and peptic ulcer, the connection of the dynamics of changes that take place in the gastric mucosa with *H. pylori* infection, gastric carcinoma, dyspepsia, drug sensitivity of bacteria and drugs used.
- Studies of doctor-patient relationship and satisfaction of patients and physicians: opinions about the system of family medicine, the recovery from a chronic disease, life quality, opinions of teenage patients about their health.
- The importance of family risk factors, phenogram and family anamnesis in diagnostics and patient counselling, family planning.

Target-financed projects:

TARPO 0418. *TITLE: ELUCIDATION OF THE MECHANISMS OF PATHOGENESIS AND SEARCH FOR THE NEW TREATMENT POSSIBILITIES OF MAIN BACTERIAL INFECTIOUS DISEASES IN ESTONIA.* (Part of the project headed by the Department of Microbiology, Prof. M. Mikelsaar). Terms: 1998-2002. Financing organisation: The Estonian Ministry of Education. Financial support (1998-2002): 711800 EEK. Principal investigator: Heidi-Ingrid Maaros MD, PhD, D.Med.Sci., Professor of family medicine. The main practical researchers: Helgi Kolk, Krista Lõivukene, Marje Oona

TARPO 0821. *TITLE: FAMILIAL OCCURRENCE OF DISEASES AND RELATED RISK FACTORS, THE IMPORTANCE OF THE PHENOGRAM AND FAMILY HISTORY IN DIAGNOSTICS AND COUNSELLING OF PATIENTS: RANDOM SAMPLE STUDY OF FAMILY PHYSICIANS AND PATIENTS.* Terms: 2000-2004. Financing organisation: the Estonian Ministry of Education. Financial support (2001-2002): 480000 EEK. Principal investigator: Heidi-Ingrid Maaros MD, PhD, D.Med.Sci., Professor of family medicine. The main practical researchers: Ruth Kalda, Marje Oona, Heli Tähepõld, Anneli Rätsep, Heili Sarapuu, Pille Ööpik

General Comments

The speciality of Family Medicine was created in Estonia some 10 years ago, with strong input from the Department. The Department of Polyclinic and Family Medicine has continued to develop the speciality and to do teaching at various levels, from schoolteachers to postgraduates. At the same time the Department has made very substantial achievements in research. A lot of this activity can be attributed to the energy and vision of the Director, Professor Heidi-Ingrid Maaros. There have been 6 doctoral theses in the five-year period, and 35 CC articles.

The research areas of the Department can roughly be divided into two: 1. A long line of research into first atrophic gastritis and later *Helicobacter pylori* infection, which dates back into 30 years, with a strong collaboration with Finland, and, 2. Research

into family medicine and family practice itself. The belonging of the first in Family Medicine is not obvious, but, on the other hand, it is in this area that the Department has made its greatest international achievements. Continuing at the same level after the inevitable generation change will be a great challenge in the near future. The second line of research appears to be solidly in the hands of Docent Ruth Kalda. Of the planned 6 doctoral theses in the near future, 5 fall into this category.

Evaluation of Research Activities

The team of evaluators judged the overall quality of the research to be *Good*

Evaluation of Overall Capability

The team of evaluators judged the overall capability to be *Good*

	Grade
Originality/novelty of past and ongoing research activity	1
The strategy and perspective of research	1
Multidisciplinarity and relevance for other research areas	1
The competence of research groups and their capability for development	1
National and international co-operation	2
Success in applying for funds and grants	2

The implementation opportunities for the research results and their importance for the Estonian society

There is both need and opportunity to publish in Estonian language on subjects related to Family Medicine, and the Department has done quite well in this respect, with about 30 papers in Estonian.

Recommendations

Efforts should be made to keep, or save, the research activity on *H. pylori*, since Estonian population continues to have a high incidence of infection and, therefore, forms a population base for such studies. This will require intensified collaboration with microbiology, immunology, and genetics, because the area is becoming increasingly competitive. If the focus is to be maintained in the Department of Family Medicine, it is necessary that the research team acquire specialized knowledge in the collaborative areas. Otherwise it may be necessary to consider moving the focal point to another department. Most importantly, this tradition of research in Estonia should be maintained.

The number of new doctoral students has lately been approximately 2 per year. Given the small size of the Department, this is a remarkable number. Every effort should be made to maintain, or, rather, increase the number of doctoral students in the future, as the Department seems to offer an excellent environment for postgraduate studies.

2. National Institute for Health Development (*Director general: dr. Maarike Harro*)

2.1. Department of Epidemiology and Biostatistics (*Head: prof. Mati Rahu*)

The research objectives of the DEB are to:

1. monitor time and regional trends in cancer incidence, mortality, prevalence and survival in Estonia;
2. conduct and contribute to epidemiological studies of various diseases and other health-related events;
3. promote the founding of disease registries and conducting registry-based epidemiological studies;
4. provide *ad hoc* methodological consultation (study protocol writing, grant application, epidemiological study design, data analysis, article writing) outside the department.

Major research projects

CANCER INCIDENCE AND CAUSE-SPECIFIC MORTALITY IN PHYSICIANS IN ESTONIA: A RETROSPECTIVE COHORT STUDY. PRINCIPAL INVESTIGATOR: Aleksei Baburin. Funding Agency: Estonian Ministry of Education. Funding Period: 1997–1998

CANCER RISK IN FURNITURE WORKERS IN ESTONIA: A RETROSPECTIVE COHORT STUDY. PRINCIPAL INVESTIGATOR: Mati Rahu. Funding Agency: Estonian Science Foundation; Estonian Ministry of Education. Funding Period: 1997–1998

OCCURRENCE OF HPV16 INFECTION IN ESTONIA. PRINCIPAL INVESTIGATOR: Mari Kibur (Nygård). Funding Agency: Estonian Ministry of Education; National Public Health Institute, Finland. Funding Period: 1997–1999

RADIATION-INDUCED MOLECULAR GENETIC CHANGES AMONG CHILDREN AND ADULTS IN ESTONIA. Principal Investigator: Mare Tekkel. Funding Agency: Estonian Ministry of Education. Funding Period: 1997–2002

General Comments

The Department is carrying out good quality epidemiological and monitoring studies that are of potentially great importance to the nation's health. The Team was impressed by the output of publications in CC journals (a total of 36 in the assessment period).

Evaluation of Research Activities

The team of evaluators judged the overall quality of the research to be *Good*

Evaluation of Overall Capability

The team of evaluators judged the overall capability to be *Good*

	Grade
Originality/novelty of past and ongoing research activity	1
The strategy and perspective of research	1
Multidisciplinarity and relevance for other research areas	1
The competence of research groups and their capability for development	1

National and international co-operation	2
Success in applying for funds and grants	1

The implementation opportunities for the research results and their importance for the Estonian society

The research of this department is of vital importance to Estonian society.

Recommendations

1. Additional funding should be given to the Department immediately so that the salaries of the junior research workers can be increased and the computer system for the Cancer Registry can be updated.
2. There is potential overlap between the work of this Department and that of the Division of Preventive Cardiology in the field of public health. Heart disease and cancer have many risk factors in common, for example smoking. Collaboration between the two departments should be encouraged. Consideration should be given to moving the Division of Preventive Cardiology to the National Institute of Health Development.
3. The work of the Department is hampered by the existing Personal Data Protection Law. It is important to lobby to change the law so that it is possible to use and combine data from different registries without having to seek informed consent from registrants.

2.2. Department of Pulmonology (Head: dr. Helle-Mai Loit, MD, PhD)

Main research fields

Epidemiology of chronic pulmonary diseases e.g. asthma, chronic bronchitis, emphysema pulmonum, COPD, respiratory symptoms, type-I-allergy, prevalence, incidence, risk factors, early detection, effects of indoor climate components, smoking habit and ETS.

Target-financed projects

Target-financed theme, reg. No 090823As99. "PREVALENCE OF CHRONIC OBSTRUCTIVE PULMONARY DISEASES, THEIR RISK FACTORS AND POSSIBILITIES FOR EARLY DETECTION (FINESS STUDY)". Researchers: Jaak Põlluste, MD, PhD, Lii Jannus-Pruljan, MD, Dr.MedSc, professor, Elvi Lillak, MD, PhD, Evi-Saidi Raukas, MD, PhD, Aet Raukas-Kivioja, MD, Mari Meren, MD, Ingrid Täht, MD. 01.01.1999. -31.12.2003. Finances EEK 1,305,000. Theme leader: Helle-Mai Loit.

General comments

The Department is conducting important collaborative studies on the epidemiology of chronic lung diseases. Output of CC publications (3 in total over the period of assessment) has been rather low but there are good reasons for this, including lack of statistical support.

Evaluation of Research Activities

The Evaluation Team judged the overall quality of the research to be *Satisfactory*

Evaluation of Overall Capability

The team of evaluators judged the overall capability of the research group to be *Satisfactory*

	Grade
Originality/novelty of past and ongoing research activity	1
The strategy and perspective of research	1
Multidisciplinarity and relevance for other research areas	1
The competence of research groups and their capability for development	1
National and international co-operation	1
Success in applying for funds and grants	1

The implementation opportunities for the research results and their importance for the Estonian society

It is important to learn more about the prevalence, trends and causes of chronic lung disease such as asthma. The work of this department has important implications for the health of the nation.

Recommendations

1. The Department urgently needs more statistical support. The lack of such support is delaying the analysis of data and publication of papers.
2. The Department is planning research and development of services in the important area of smoking cessation. Collaboration in this area with the Division of Preventive Cardiology should be encouraged.
3. Respiratory diseases appear to increase with the deterioration of both indoor and outdoor air. The traffic is getting more intensive in Estonia. The epidemiological studies of respiratory and even cardiovascular diseases would benefit from the follow-up analyses of small particles released, which so far have not been possible.
4. The introduction of information technologies to the offices of family doctors as well as in all other health care units would help greatly in collecting data on the occurrence of respiratory and other problems. As modern spirometers can be directly attached to computers, perhaps this technology should be considered and made available.

Part IV

Summary of evaluation

As pointed out in the Introduction, the self-assessment documents prepared by the Units were helpful, but the site visits provided a much better understanding of the ongoing research activities and resources. To the pleasant surprise of the Team, also new innovations were revealed upon site visits. It is recommended that future evaluations follow a similar format and include site visits.

The Team found that the spirit and motivation was high among many unit leaders, and particularly, among young researchers and doctoral students, indicating that those units are on good track. This is of great importance, as Estonian scientists will face more international competition in the very near future when they will be treated as equals in the European Union.

Signs of transition from the former Soviet to a new paradigm still exist. The Faculty has probably been right in filling open positions for professors cautiously, and only a sufficiently qualified candidate has been available. On the other hand, if a position of a Unit Head will remain open too, it may negatively effect the research work in the given Unit. Obviously, there is a need for new leaders to have experience and training abroad before assuming the positions.

The Team found that most of the Units had actually been capable of attracting research funding, and that the level had somewhat increased in the five-year period. However, the overall level of research funding, comprised mainly from target-oriented projects and small grants from Estonian Science Foundation, was modest at best.

The Team felt that the present system of doctoral studies, with the postgraduate students working full time on a small grant, was both rigid and sometimes prohibitive for attracting the best talent to academic career. The level of stipends appeared so inadequate that the matter should be given urgent consideration.

The Team was impressed by the amount and quality of new equipment and instruments in many of the Units, and felt that there was no longer any bottleneck in this area. Furthermore, the new Biomedikum complex has greatly improved the possibilities of collaboration between the basic sciences, public health and clinical sciences. Still, the interaction between the units could be improved further. The leadership of joint projects should be placed where the greatest expertise lies, be it a clinical or biomedical unit.

While the new Biomedikum is impressive, some of the clinics have outdated facilities. Plans to build a new facility or facilities should be realised and bring some isolated units nearer to each other and possibly under the same roof in Tartu. The same is true also with the National Institute for Health Development in Tallinn.

It seems that perhaps the evaluation should have been extended to cover also the Faculty of Physical Education or parts of it. The Team recognized that the roots of this Faculty are in the Medical Faculty with which the collaboration appears to be valuable. The teachers of physical education are key teachers of human biology and health subjects in schools.

Part V

General recommendations

As a general background for recommendations it might be mentioned that Estonia is joining the European Union in a few months time. The EU recommendation for

investment in research and development is 3 % of gross national product, and some EU countries will increase the level to 5% within this decade. Estonia is not anywhere near in this respect with its current spending of approximately 0.7% of GNP. This is naturally reflected at all levels of research, including clinical medicine, which is not even mentioned as a priority area (unlike biotechnology).

The EU membership may actually increase competition and increase the challenge for Estonian medical research. As of now, many departments had participated in some EU funded projects, which had increased the international collaboration and been helpful in many ways. However, these were sometimes projects with specific funding for Eastern Europe, the co-ordination of the projects was elsewhere, and the level funding of the Estonian component was not very high. The challenge for the near future will be to focus on some areas where Estonian investigators could reach a level of expertise and excellence required for co-ordination of EU projects. From the Estonian side, this will require networking and combining the best available resources in some key areas.

Apart from the general level of funding, some guidance on focusing the existing resources might be mentioned. The Team felt that the present stipend for full-time postgraduate students was insufficient and in need of urgent revision. Moreover, particularly for clinical research, the system for Ph.D. studies appeared much too rigid. Alternative tracks for clinicians to conduct Ph.D. studies within the University but on part-time basis should be considered.

The present system seemed to acquire approximately 20 new postgraduate students annually for PhD studies within the Medical Faculty. To the Team this number appears low. The Faculty should give consideration to the target, which might be set at about 30% of the number new medical students. Estonia needs capable doctors also outside universities, hospitals and other public activities i.e. in industries, consultation and business, and literacy in different areas needs doctoral level experts.

The number of post-doctoral positions will need also to be considered, to broaden the base for guidance of Ph.D. studies. As a new, and qualified, generation of people is completing their Ph.D. studies, they in turn will need to be given a chance of guiding the next postdoctoral students. However, a requirement in between should be a period of postgraduate training abroad. Furthermore, consideration should be given to means of attracting current Estonian research workers to return home.

The Team felt that the current policy of the Medical Faculty not filling the vacant positions of professors too quickly has been justified. However, at present 20 out of 45 professorships in the Medical Faculty of the University of Tartu are open and more vacancies are expected due to retirement. This is a very high number, reflecting among other things the fact that the inflow of capable young people has been slow.

Some of the research areas will need to be prioritised in allocation of resources and attention. The Team was particularly concerned about such an interdisciplinary area as biostatistics, which was represented apparently by only one person in the Faculty and probably in the whole country. The new rehabilitation paradigm needs more resources to be invested both in education and research as well as health care.

The National Institute for Health Development will urgently need strengthening in the biostatistics area. Other areas that are either lacking or weak include nutrition, ergonomics, occupational health and behavioural science (including health psychology).

At the National Institute for Health Development it has not been possible to formally train Ph.D. students. While there have been ways around this rule, the position of such postgraduates should be formalised. Ideally, joint programmes for postgraduate studies between the Institute and the University of Tartu could increase collaboration between the institutions from its present level.

Estonia should also become competitive in attracting research workers and team leaders from other countries, and repatriating Estonians. To promote repatriation special grant programs are needed. As, for example, Hungary has successfully used the network of Hungarian scientists overseas, this model might be considered to generate a corresponding Estonian International Academy.

The Team noted that it would be important to ensure the information technologies will soon be developed so that all health care units have an access to the same system of information technology. This would greatly enhance possibilities of doing research in public health and, among other things make the genome project Estonia successful in public health research and health promotion activities.

The Team also paid attention to the fact that health administration was represented only at the level of deputy minister of health, and even this position had only recently been established. This is a step in right direction, but certainly research in health would benefit from the presence of a full minister.

The European Union has so far paid less attention to the problems of small nations. This may offer Estonia a special possibility - having perhaps the best infrastructure and high percentage of population with tertiary education - to develop new strategies in health research in small countries.

VI. Acknowledgements

We acknowledge the kind hospitality of the institutions we visited and the pleasant discussions we had on all occasions. We also acknowledge the highly professional and efficient administrative support of the staff of the Estonian Higher Education Accreditation Centre.

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