

GLOBVAC – Research and Capacity Building for Global Health

Midterm External Review

Programme
Global Health and Vaccination Research – GLOBVAC



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The report can be ordered at:
www.forskningsradet.no/publikasjoner

or green number telefax: +47 800 83 001

Coverdesign: Design et cetera AS
Photo: Swimmer: Ablestock.com, mother and child: Chris Thomas
Printing: Allkopi
Number of copies: 1000

Oslo, November 2009

ISBN 978-82-12-02716-9 (printed version)
ISBN 978-82-12-02717-6 (pdf)

This midterm evaluation of the Programme for Global Health and Vaccination Research (GLOBVAC) was organised by the Research Council of Norway at the request of the Norwegian Agency for Development Cooperation – Norad. The evaluation was conducted by a panel of international experts. The draft of the Terms of Reference and the profile of the evaluation panel were approved by the Research Board of the Division for Strategic Priorities at the Research Council of Norway (DSS39/09) on 11 June 2009. The members of the evaluation panel were appointed and the final version of the Terms of Reference was approved by the Executive Director of the Division for Strategic Priorities. The panel members were:

- Paul-Henri Lambert (chair), Professor Emeritus, Department of Pathology, University of Geneva
- Zulfiqar Bhutta, Professor and Chair, Department of Paediatrics and Child Health, Aga Khan University
- Barry Bloom, Former Dean, Harvard School of Public Health
- Margaret Ann Liu, ProTherImmune & Foreign Adjunct Professor, Karolinska Institute

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1. Introduction

This is a report of the midterm evaluation of the Programme for Global Health and Vaccination Research (GLOBVAC), which was launched in 2006 and will extend to 2011. Because the GLOBVAC programme is a continuation and expansion of the Research Council's previous Programme for Global Health Research (GLOBHELs), some of the projects included under the current programme were initiated under the earlier one. The overall objective of the GLOBVAC programme is to strengthen and expand research that can contribute to sustainable improvements in health in low- and middle-income countries (LMIC). The secondary objectives are: i) to develop knowledge and tools to combat the major disease burden in these countries; ii) to develop and strengthen sustainable Norwegian public and private research groups and institutions; iii) to develop and strengthen international collaboration; and iv) to develop and strengthen partnerships with research groups and institutions in LMIC to ensure capacity building. This includes both vaccination for diseases that affect these countries and health research. The rationale for the midterm evaluation as described in the Terms of Reference (Appendix 1) is to assess whether the programme's strategy and approach should be modified during the remaining two years of the programme period and to make recommendations for the potential continuation of the programme in 2012 and beyond.

Funding for the GLOBVAC programme is provided by the Ministry of Foreign Affairs through the Norwegian Agency for Development Cooperation – Norad (NOK 57 million in 2009), the Ministry of Health and Care Services (NOK 4.3 million in 2009), and the Fund for Research and Innovation (NOK 4 million in 2009).

2. Summary

The GLOBVAC programme is an excellent initiative, and the overall allocation of funding has been good. While it is still too early to see the programme's impact on global health, the present situation indicates a successful trend and the activities and funding of the programme should certainly be maintained and extended. The GLOBVAC programme has been successful in attracting a broad range of applicants, including projects focused on diseases of global importance with partners in LMIC, as well as on some highly innovative topics. More projects are needed on health systems, implementation and operations research. As work in these areas will have cross-cutting benefits, an active effort should be made to support more projects of this type. Additional funding may be required, perhaps by setting aside a new pool of funds to ensure that these areas are given priority. A variety of additional recommendations have been made to ensure the sustainability and expansion of the global health efforts, which have already increased during the first phase of the programme. Specific attention must also be paid to supporting the promising human capacity being developed in global health both in Norway and in the partner LMIC. The programme should ensure that all collaborative projects with developing country partners incorporate human capacity development and enhancement components.

3. Background of the evaluation

The contract between Norad and the Research Council of Norway on funding for the GLOBVAC programme states that a midterm evaluation of the programme is to be conducted in 2009 (Section 6.2). Both sub-programmes (global health research and global vaccination research) are to be evaluated. The intended outcome of the evaluation and the areas to be addressed are discussed below. Notably, Section 3.4 of the contract states that the programme is expected to be extended beyond 2011, contingent on the outcome of this evaluation, as well as on Government priorities and approval by the Storting (Norwegian national assembly).

The purpose of this report is to make recommendations on the future of the programme. By necessity, the evaluation discusses and assesses the ongoing projects under the programme as well as the programme as a whole. It also assesses the overall programmatic balance and strategy, the overall quality of the research projects, the general budget allocations, the research gaps, and the competitiveness of the funded projects. However, the intention was not simply to conduct an assessment, but rather to address the scope, priorities, and strategies of the programme. The recommendations in this report are intended to serve as a guide for the planning and implementation of the second half of the current programme (2010-2011) and for the potential continuation and expansion of the programme beyond 2011.

The evaluation panel was comprised of four international experts from Europe, the USA and Asia representing a wide array of scientific and global health areas. As a group, the panel members fulfilled the following desired criteria:

1. Expertise in global health and global health research
2. Expertise in vaccination research, including epidemiology, biomedical science and the social sciences
3. Experience from large-scale research institutions and/or international organisations
4. No conflict of interest
5. A high standing in the scientific community

In addition to meeting these criteria, the panel members have extensive experience with similar evaluations of various activities ranging from institutional programmes to large, multinational global health programmes. At least one member participated in an evaluation of Nordic health research conducted at the request of the Nordic research councils.

Biographical sketches of the panel members are included in Appendix 2.

4. Brief description of the subject under evaluation

As the evaluation was to focus on the programme as a whole (rather than on simply assessing the progress of the individual projects) and include both the GLOBVAC and GLOBHELs programmes, the panel first assessed the individual projects on the basis of the following criteria:

- Relevance to the GLOBVAC programme's objectives
- Potential impact on global health
- Potential impact on capacity building in Norway
- Potential impact on capacity building in LMIC
- Leverage: Did the funding enable the grant recipients to obtain additional funding?
- Multidisciplinary nature of the projects
- Collaboration

Following discussions with the grant recipients, the panel then assessed the programme as a whole in terms of its relevance, priorities, global competitiveness, capacity building, and strategy. The panel was asked in particular to address the Indo-Norwegian collaboration, the European and Developing Country Clinical Trials Partnership (EDCTP), and the Norwegian Forum for Global Health Research. Drawing on its members' vast experience with research activities and programmes conducted by institutions, other governments, and multinational consortia, the panel assessed and made recommendations for the future stage(s) of the programme with a view to ensuring the greatest possible outcome for the investment.

5. Evaluation procedures

The panel was provided with the following key documents to aid in the evaluation of the programme and individual projects:

- Programme plan (Work programme, 2007)
- Project documents including:
 - summaries from site visits (2009);
 - progress reports (2006-2009);
 - project catalogue.
- Summaries based on the following Norwegian-language document:
 - agendas and minutes from programme board meetings (2006-2009)

and a number of additional documents, overviews and updates. A complete list of documents is provided in Appendix 3.

The evaluation was performed in several stages. Initially, the evaluation panel met with several members of the GLOBVAC programme board to gain a better understanding of the context, purpose and objectives of the programme. Projects were then assigned to primary panel members based to some extent on their area of expertise (for example, HIV and tuberculosis). Panel members worked in groups of two so that each subset of projects also underwent a secondary review by the partner panel member. The reviews consisted initially of reading the progress reports from 2008 and spring 2009, with an update provided at the meeting of 9 October. Certain projects had been completed, others were receiving funding for a second phase, and some had been launched so recently that there was little to report. Since the purpose of the evaluation was

not so much to assess the individual projects as to assess the overall programme, the fact that the projects were in different phases proved to be an advantage because it provided a cross-section of the progress made under the programme, thus highlighting its strengths as well as its challenges.

On 8 October, several project managers and other stakeholders met with the panel at the Research Council, first in a general session and then separately (for single or small clusters of projects, with one to three individuals per project) in short sessions of about 15 minutes each. The main purpose of these sessions was to hear the grant recipients' experiences, as well as their recommendations for the future. The sessions were not meant as a "site visit" to assess the achievements of the projects, but rather to provide the opportunity to obtain feedback from the grant recipients that would help the panel to assess the programme as a whole. The information in the progress reports about the results achieved by the projects was deemed sufficient and critical input from the grant recipients about the programme's future efforts was garnered. Due to the fact that not all grant recipients could be present, and especially because visiting only a selected number of the LMIC grant recipients would have been too random, this process ensured that input and recommendations were obtained without unduly biasing any assessment of project results in favour of or against the grant recipients who were present.

The panel members then met in private on 9 October with some Research Council staff in attendance to answer questions and provide information. Individual projects were presented and reviewed by the primary panel member to whom it had been assigned (see below for more details) with comments from the other members. Questions were addressed to the GLOBVAC Programme Coordinator Kårstein Måseide, who provided additional updated information. Updated progress reports were also provided at the close of the session on 8 October, to be reviewed by the panel members as part of the complete assessment of the projects and programme as a whole (see below).

Finally, the panel discussed the overall programme, focusing on an assessment of its successes, weaknesses, gaps, and future directions. Particular attention was paid to the specific issues highlighted in the Terms of Reference for the Midterm Evaluation. The panel agreed on preliminary recommendations to be incorporated into the preliminary draft report for further discussion.

6. Assessment of the various components

For each project reviewed, the panel member assigned to the primary evaluation provided an assessment and the secondary reviewer made additional comments, as did the other panel members when appropriate. The discussion focused on issues relevant to the overall portfolio, such as international competitiveness, adequacy of funding, priorities related to global health, importance to the portfolio, and ways in which the programme could promote progress and successful outcomes. Each panel member was asked to summarise by topic those projects that had been his/her primary assignment from a programmatic standpoint. That is, each panel member assessed the balance between the projects, their linkage with other international projects and partners, the range of the portfolio, and other issues of overall relevance for the scope of the projects. While some projects fell into clear-cut categories (such as HIV or tuberculosis vaccines), others were difficult to categorise. Thus, the intention was not to provide a project-by-project analysis, but rather a medium-distance assessment of the projects.

Recommendations applicable to the entire programme were also discussed by the panel. These were then written up in a draft report, which was circulated to the panel members prior to a teleconference held to discuss the draft report in detail.

The panel members also summarised their primary review projects, which had been assigned to a certain degree on the basis of their areas of expertise. The purpose was to evaluate the portfolio, including the balance between the projects, the extent of linkage with other international projects and partners, the leverage, and the overall competitiveness in an international arena. The projects were also assessed on an individual basis, but these evaluations are not included here since the purpose is mainly to evaluate the programme as a whole. The individual projects are therefore only discussed in this context.

7. Overall review of the GLOBVAC programme portfolio

The panel reviewed three major aspects of the programme: the overall relevance of the portfolio to the programme objectives, the overall quality of the project content, and the present perception of its potential impact. From the discussion with stakeholders and project managers, it appears that the focus on vaccines and vaccination research under the GLOBVAC programme was both challenging and stimulating. The main challenge was to elicit a significant number of proposals from a variety of Norwegian research groups and to ensure their international competitiveness. The resulting overall portfolio indicates that this aim was largely accomplished, and this is a remarkable achievement. The new initiative proved attractive to several research groups not previously involved in vaccine research. The overall quality of the projects was deemed good, but the panel has concerns about whether some projects have sufficient support or local expertise available to achieve their objectives. During the discussion, some scientists who were primarily involved in other global health areas, such as implementation, expressed mixed feelings about the selection of the priorities under the GLOBVAC programme, but this seems to be primarily a matter of internal policy which lies outside the panel's mandate. In the panel's view, the initial focus of the GLOBVAC programme resulted in significant funding of several important projects

and undoubtedly attracted the attention of major Norwegian research groups. At this early stage, it would be unfair to measure the global health impact of the GLOBVAC programme in terms of concrete achievements. However, many individual projects appear to be producing promising results. National collaborations have been established, albeit at a relatively modest level. International collaboration is an integral part of a few projects, but unfortunately this does not appear as a general rule, which is an issue that may require special attention. The limited nature of some projects reflects a lack of capacity, an insular profile, and other circumstances beyond the control of the researchers (such as the postponed launch of a vaccine that affected one project). The Indo-Norwegian and EDCTP components had promising beginnings, but both need to be expanded considerably. The overall scope of the GLOBVAC programme has also been reviewed in terms of the promotion of industrial development. It is clear that the GLOBVAC programme needs to ensure a smoother transition from research to product development, including the early clinical phase. However, the funding available for the GLOBVAC programme at this time does not allow for an expansion of activities to many larger clinical trials (phase IIb, phase III).

Public health-related research in LMIC is part of the GLOBVAC programme, but is not its main activity. Some public health researchers questioned whether more funding should be allocated to this area in the future. However, the panel believes it is essential to maintain and increase the present investment in vaccine-related research to ensure that the GLOBVAC programme produces the most beneficial results and has the greatest public health impact. A minimum extension of five years is needed to reap the benefits of this major investment. Therefore, although the panel recommends increased allocations for implementation research, this funding should not be taken from the present GLOBVAC budget.

As described below, the application assessment/selection process is a key factor in the programme's success. In this case, the process may have been occasionally hampered by time pressure for short-term calls. The panel fully understands the need to seek out project proposals on a broad range of topics in the initial phase, but some improvements may be needed in the future. The selection of projects should be more restrictive in the next phase of the GLOBVAC programme in order to capitalise on the most competitive and promising approaches. It would be a mistake for the GLOBVAC programme to exclude new, innovative projects. Such projects should have access to seed funds earmarked for this purpose. The programme should also be open to young researchers as well as to researchers from other areas who are willing to get involved in vaccine research.

8. Discussions, conclusions and recommendations

As specified in the Terms of Reference, the panel for the midterm evaluation was to evaluate the following aspects of the GLOBVAC programme:

- **Funding and resources**, to determine whether these were optimally employed to achieve the programme's objectives.
- **Strategic measures** used to achieve the objectives with a specific assessment of:
 - The Indo-Norwegian collaboration on human vaccination research;
 - The European and Developing Countries Clinical Trials Partnership (EDCTP);
 - The Norwegian Forum for Global Health Research.
- **Activities undertaken** by the programme with a specific evaluation of:
 - Funding of research projects;
 - Creating opportunities for interaction by organising conferences and meetings;
 - Functioning as an advisory body.
- **Relationship to other national stakeholders**, including:
 - Other funding sources for global health research (the Norwegian Programme for Development, Research and Education (NUFU), the government ministries, various embassies, other research programmes at the Research Council);
 - Other relevant research activities not funded by the programme.

The panel addresses each of these aspects below, providing both general comments and specific recommendations, which are expanded on. Some of the assessments and recommendations address issues which apply to more than one of the categories above (e.g. activities undertaken and funding), so it was not possible to place the comments into specific categories. However, all the aspects stated in the Terms of Reference were evaluated and are discussed here:

1. The GLOBVAC programme was successful in disseminating information about the programme and in attracting a broad range of applicants who were successful in applying for funding. While a large proportion of projects were appropriately focused on diseases such as tuberculosis, a particular burden for LMIC, the projects covered a wide array of diseases, technologies, and issues. Some of these were relatively unique, such as studies of the role of litigation in obtaining the right to health and the application of open source licensing to vaccine and medicine development. This indicates that the programme was successful in recruiting researchers from a broad range of disciplines and to turn their attention to global health and the programme's objectives.
2. Gaps in the programme's projects were evident, despite the encouraging fact that the scope of the programme extends beyond vaccine research, (which could be an issue given that the short name seems to restrict the programme). Examples of gaps include the dearth of projects in the areas of epidemiology, diagnostics, and biomarkers. It will be important to actively recruit relevant projects that incorporate subject areas in which Norway has expertise. However, the lack of malaria projects is not problematic because this is not an area of prominent research activity at Norwegian institutions.
3. Capacity building both in Norway and in LMIC is an important objective of the programme. One critical aspect is that policymakers and funding bodies need to recognise the time involved in producing outputs and outcomes (and the difference between these results). The need for sustainability must be emphasised, and specific aspects listed below must be addressed. The gender balance of researchers appears to be acceptable (see table in Appendix 4). Particular attention needs to be given to:

- a. Recruitment of new researchers within Norway.
 - b. Recruitment of new research groups by topic (e.g. epidemiology) and of groups whose expertise has relevance to global health, but whose activities may not have previously focused on relevant questions. For example, the researchers who initiated the litigation project may not have had prior involvement in global health issues.
 - c. Recruitment of researchers and strengthening of capabilities in LMIC. A critical aspect of this is selecting junior faculty who can be developed into the next generation of research leaders.
 - d. Allocation of grants that enable trainees to return to their own countries to establish themselves as independent researchers. This is key for capacity building and sustainability.
4. Several projects were clearly less competitive at an international scientific level, and in the opinion of the panel, this raises questions about the justification for their funding. It is understandable that to promote capacity building even in Norway, it may sometimes be appropriate to fund a project that is not on the cutting edge of research. However, this should be done only rarely and for a specific reason related to capacity building. The panel's concern about the number of funded projects that may not ultimately fulfil the stated objectives of the GLOBVAC programme gave rise to questions about the current application assessment process. Currently, an assessment of the scientific merit of each project is performed by individual international experts (peer review), while the programme board assesses both scientific merit (based on the referees' comments) and relevance. An alternative process being used more often at the Research Council is the use of referee panels to assess scientific merit. An advantage to this approach is that several experts have an in-depth discussion on a subgroup of projects and then rank proposals in light of the entire portfolio rather than assessing them on an individual basis. A potential disadvantage, however, is the loss of specific knowledge and expertise, especially when there are a small number of thematically heterogeneous applications. One apparent concern was that the timeframe for the assessment process was quite short due to the number of calls for proposals issued during the first half of the programme. It was not perceived to be difficult to obtain referees with the appropriate expertise as long as the time allotted to the calls and the assessments was adequate rather than rushed. It was felt that more weight should be given to the scientific merit of the projects in the assessment of proposals, in addition to the aspects above. Moreover, the current ad-hoc nature of the assessments means that the individual external reviewers do not see the range of proposals when making their recommendations. Thus, the panel strongly recommends that the process and timing of the calls be revised to ensure that referees with appropriate expertise are selected and that a group of experts, particularly including scientists from abroad, be assembled so that all the necessary expertise is represented on the assessment committee. This committee should assess all the proposals in order to provide an appropriate basis of comparison with regard to scientific merit. It is also recommended that future calls involve a two-phase process: first applicants submit a Letter of Intent (LOI) (e.g. maximum four pages) for preliminary assessment, and then selected applicants are requested to submit a complete project proposal.
5. Allocate seed funding for novel innovative projects and career development grants for promising Norwegian researchers in the various related fields which will be the source of the new generation of scientists and leaders in global health. As a corollary to this, two separate budgets may be needed to ensure that sufficient funding is available to invest at seed level in innovative projects (that might not have sufficient evidence of established infrastructure) and to support young, highly-promising future scientific leaders while

research projects of high scientific merit continue to receive adequate funding at the same time.

6. Encourage commitment on the part of the institutions to ensure that these groups/activities are continued beyond the duration of the research projects and the programme.
7. While there is a reasonable number of collaborative projects and LMIC involved as partners, an effort should be made to increase international collaboration, e.g. within Europe, rather than just cooperation within Norway and the Norway-LMIC collaborations. A significant effort is needed to reach out to experts, partners, and trainees outside of Norway.
8. Strategic collaborations under the programme include the Indo-Norwegian collaboration on human vaccination research, the EDCTP and the Norwegian Forum for Global Health Research.
 - a. Regarding the Indo-Norwegian collaboration, joint calls for proposals have resulted in three joint projects and three projects under contract negotiations. These projects utilise about 25 per cent of the project funding for vaccination research. Efforts are also currently underway to participate in a phase III trial of an oral rotavirus vaccine in India, following an invitation from other funders such as the Bill & Melinda Gates Foundation, PATH, and DBT. This project utilised funds at an early stage to develop a complete proposal for additional research components involving Norwegian participation as well as the collaboration, which is a useful model for future North-South collaboration. Challenges for the Indo-Norwegian collaboration included coordinating the timing of the decision-making and thus issues related to obtaining co-funding. This aspect of the programme has made substantial progress, both with regard to establishing the parameters for the collaboration and for the actual projects, although continued progress on coordinating the two countries' funding bodies, researchers and institutions and ensuring the sustainability of the collaboration will be crucial for success. Feedback from a senior staff member about the Indo-Norwegian research programme indicated the need for greater facilitation in identifying potential Norwegian partners for their Indian counterparts as well as greater definition of the respective roles and responsibilities of various partners in the programme.
 - b. The EDCTP: Initial efforts to participate in EDCTP funding and programmes were complicated by the need to coordinate co-funding with the applications submitted in response to the EDCTP calls. In 2007, this issue was dealt with by providing co-funding that was synchronised with the EDCTP calls. However, a remaining challenge is to ensure that the interests and expertise of Norwegian researchers correspond with the focus of activity under the EDCTP in order to compete for funding under the calls.
 - c. The Norwegian Forum for Global Health Research is well-positioned to advocate for the approach taken by the GLOBVAC programme and has resulted in the establishment of a website containing information about Norwegian global health research projects. The Forum has been represented at half a dozen international meetings on global health. The group's advocacy efforts are ongoing; however, the aim of establishing an international research school for global health has not been achieved due to a lack of funding. The Forum is a regular partner to the GLOBVAC programme in organising annual research conferences, and it plays a role in networking among researchers and advocating for increased funding for global health research. It is recommended that the collaboration between the GLOBVAC programme and the Forum be continued and expanded.

9. Other collaborative projects have been well-received by the partners, as shown by the feedback from a small number of participants who responded to a questionnaire. These responses have been compiled and are included in Appendix 5. Additional suggestions for work with LMIC partners include:
 - a. Holding workshops with outside experts in order to expand the collaborative network.
 - b. Establishing specific seed funds to prepare applications for international projects (in addition to the current fast-track process that provides up to NOK 200,000 to develop larger research proposals). A separate call for proposals could be issued for this purpose. The aim of this approach would be to bring together researchers from a variety of subject areas and countries to design an interdisciplinary, multi-institutional project in a more effective manner than the usual grant-writing process. For example, this could be done by first requiring applicants to submit a Letter of Intent (LOI) and then organising a small forum in which outside experts (potential partners) would be brought in to help the applicants to develop the complete project proposal. The use of LOIs would make this a more competitive process. Such an approach was tried in 2008, when an international symposium was organised in March, followed by a call for project establishment support in April, and a call for complete project proposals in September.
10. Metrics are needed to document how well the GLOBVAC programme has met its objectives. These should be determined ahead of time, and all grant recipients should have a clear understanding of them.
 - a. Publications: It is difficult to ascertain from the lists exactly which publications are attributable to funding under the GLOBVAC programme. In addition, the quality of some of the publications is difficult to measure. Researchers should be instructed to state clearly which publications are a result of the funding, and the reports should conform to a standard format with lists of peer-reviewed publications, chapters, reports, etc. A bibliometric analysis may need to be performed by the Research Council in order to document the quality of the publication output.
 - b. Biometric and professional data regarding the researchers should be compiled to give an indication of the profile of the researchers, such as how many new researchers or research groups have been recruited to global health projects, whether the gender balance among project managers and fellowship-holders is acceptable, and whether participants from LMIC are adequately represented.
 - c. The exact number of students and institutions involved should be given, and include some indication of their level of activity, such as percentage of time spent on the project. The current reports listed students without necessarily documenting what proportion of their effort or training was related to the project, and the numbers did not always seem plausible.
 - d. Documentation of the new collaborative projects that have been established both intra- and inter-country should be provided.
 - e. Other benchmarks should be agreed on, such as for education/training, policy impact, field activities, etc.
 - f. Timelines on Gantt charts for all the projects would be useful, with exact information about project modifications, deviations, delays, etc. clearly indicated.
11. There is a request to include implementation research as a priority in global health projects. Perhaps one way to accomplish this is to set aside separate funds for implementation research, which in the future will be separate concomitantly relative to the

two existing GLOBVAC sub-programmes. This may require new, supplementary allocations. It will also be important to maintain funding for the existing GLOBVAC programme, especially since needs may increase as the projects achieve success.

12. The panel recommends that adequate, full funding be awarded, when deemed necessary, to a smaller number of the most outstanding proposals rather than cutting the budgets of all of the projects. The intention is to ensure that projects which fall outside the purview of other funding agencies receive adequate support. The panel makes this recommendation with the understanding that one objective of the GLOBVAC programme is to leverage funding and that a number of the projects are receiving co-funding from other agencies such as the EDCTP.

13. It is worth considering whether the GLOBVAC programme should provide a set of common resources to facilitate the progress of the projects. One example of this is a Product Development Team (PDT) which could provide assistance to projects that progress from pre-clinical to early phase clinical trials. Since the research groups funded under the GLOBVAC programme do not always have the expertise needed to deal with regulatory agencies and the appropriate manufacturing and clinical trial issues, it may be an effective use of resources to establish a PDT which could advise all GLOBVAC projects which reach this stage.

9. Sammendrag (summary in Norwegian)

Om programmet

Denne rapporten gir en midtveiseevaluering av Program for global helse- og vaksinasjonsforskning (GLOBVAC). Programmet ble startet i 2006 og løper til og med 2011. GLOBVAC er en videreføring og utvidelse av Norges forskningsråds Program for global helseforskning (GLOBHEL). Noen av prosjektene som er inkludert i denne evalueringen, startet allerede under det tidligere programmet.

GLOBVACs overordnede målsetting er å styrke og utvide forskning som kan bidra til vedvarende forbedringer i helse i lav- og mellominntektsland (LMI). Delmål er i) å få fram kunnskap og etablere virkemidler for å bekjempe de viktigste sykdomsutfordringene i disse landene; ii) å utvikle og styrke bærekraftige norske offentlige og private forskningsgrupper og –institusjoner; iii) å utvikle og styrke internasjonalt samarbeid; og iv) å utvikle og styrke partnerskap med forskningsgrupper og –institusjoner i LMI for å sikre kapasitetsbygging. Programmet omfatter både vaksinasjonsforskning knyttet til sykdommer som rammer disse landene, og helseforskning.

Hensikten med midtveiseevalueringen er å påpeke behov for endringer i programmets strategi og tilnærminger i de to gjenværende årene av programperioden, og å gi anbefalinger i forhold til en mulig videreføring av programmet fra 2012 og framover.

GLOBVAC finansieres av:

- Utenriksdepartementet gjennom Direktoratet for utviklingssamarbeid – Norad (57 millioner kroner i 2009)
- Helse- og omsorgsdepartementet (4.3 millioner kroner i 2009), og
- Fondet for forskning og nyskaping (4 millioner kroner i 2009).

Hovedkonklusjoner fra evalueringen

GLOBVAC-programmet er et utmerket initiativ. Allokeringen av midler har generelt vært hensiktsmessig i forhold til programmets mål. Det er fortsatt for tidlig til å kunne fastslå effekten av programmet på globale helseproblemer, men situasjonen per i dag viser en positiv utvikling, og programmet og finansieringen av det bør absolutt videreføres og utvides.

GLOBVAC har lyktes i å trekke til seg søkergrupper med betydelig bredde. Bevilgning er gitt både til prosjekter knyttet til sykdommer av global betydning (gjennomført i samarbeid med partnere i LMI) og til enkelte prosjekter på svært innovative/nyskapende temaer.

Det er behov for å etablere flere prosjekter knyttet til helsesystem, implementering og operasjonell forskning. Slike prosjekter vil kunne skape betydelige merverdi på tvers av tematiske områder. For å kunne gi tilstrekkelig høy prioritering til prosjekter av denne typen, kan det være nødvendig med tilleggsfinansiering, eventuelt i form av nye bevilgninger i forhold til de som programmet rår over i dag.

Evalueringen gir i tillegg en rekke anbefalinger for å sikre videreføring og utvidelse av de globale helsesatsingene som allerede er blitt styrket gjennom den første fasen av programmet. Spesielt viktig er det å videreføre støtten til kompetansebygging både i Norge og i samarbeidslandene. Man bør sikre at alle samarbeidsprosjekter med partnere fra utviklingsland omfatter utvikling og styrking av menneskelige ressurser.

10. Assessment of the programme by the programme board

The primary objective of the GLOBVAC programme is to strengthen and expand Norwegian research that can contribute to sustainable improvements in health in low- and middle-income countries (LMIC). This has included activities and funding:

- to improve knowledge and provide tools to combat the disease burden, in particular of infectious diseases, in LMIC;
- to develop and strengthen sustainable Norwegian research groups and institutions within the field of global health and vaccination research;
- to expand and strengthen international collaboration involving Norwegian researchers and research groups, especially with research groups and institutions in LMIC;
- to ensure capacity building in LMIC based on Norwegian contributions.

Results

The GLOBVAC programme was launched in 2006. Initially, the programme board focused on various activities to stimulate capacity building and increase interest among Norwegian researchers to address problems within the field of global health and vaccination research, in particular the development of vaccines for use in LMIC. Calls for proposals have been issued frequently, resulting in the funding of a number of new research projects. Furthermore, the board has focused on close follow-up of the projects and on securing sustainable links between research communities in Norway and LMIC.

During the relatively short time of the programme's existence, the number of research proposals under the sub-programme on global vaccination research has more than doubled, while the number of proposals under the sub-programme for global health research has remained high. Thus, there seems to be a growing interest in global health and vaccination research, also among "new" research groups that previously have not been involved in this field. The programme also seems to have succeeded in engaging more young Norwegian researchers in global health and vaccination research problems, as many proposals are now being submitted with young researchers as principal investigators or as co-applicants. This increased interest in research funded under the GLOBVAC programme may be ascribed partly to a number of activities undertaken by the GLOBVAC staff and board, such as organising annual national conferences at the various Norwegian universities (Oslo, Bergen and Trondheim), providing information about the programme in brochures, newspapers etc. and arranging meetings with leaders of the Norwegian universities and university hospitals. One particularly important event was the GLOBVAC international symposium "Building partnerships in vaccination research" held in Oslo in March 2008, in which Prime Minister Jens Stoltenberg as well as numerous leading international scientists and representatives from international global health organisations such as WHO, GAVI, PATH and NIH participated. The symposium provided the Norwegian research community with information about the great international interest in global health and vaccination research as well as the objectives and activities of the GLOBVAC programme. It also served as an important meeting place for national and international networking in advance of subsequent calls for proposals.

So far, the calls for proposals issued by the GLOBVAC programme have not been restricted to special themes, diseases or vaccines, and project funding under both sub-programmes has been awarded on the basis of scientific merit and relevance. Most applications have been submitted by

universities, often in the form of large multicentre studies and predominantly in thematic areas where Norwegian research has traditionally been strong, such as respiratory infections (in particular tuberculosis), meningitis and health economy. Applications have also been submitted within the areas of sexually transmitted and diarrhoeal diseases, as well as on various translational research themes such as health systems etc.

Due to the relatively short follow-up time for most of the projects funded under the GLOBVAC programme, it is still too early to evaluate their results with regard to e.g. establishment of sustainable research communities, important results/technologies/products, publications, master's and doctoral degrees completed, and the acquisition of additional support from other funding bodies. However, site visits undertaken by the GLOBVAC staff and programme board members during the spring of 2009 showed that several projects have made substantial progress, whereas some projects have achieved less success, often due to long delays. Problems that several projects had in common were the slow initiation of research activities in field areas, difficulties in securing "full" funding, and maternal or paternal leaves taken by participating doctoral and post-doctoral research fellows. As a result, several projects have applied for extensions of the project period, which have been approved by the programme board in most instances.

A special model to develop and support sustainable collaborations with researchers in LMIC is the Indo-Norwegian collaboration on human vaccination research. Annual joint calls for proposals have been issued by the GLOBVAC programme in collaboration with the Department of Biotechnology (DBT), Ministry of Science and Technology, India, to which Indian and Norwegian research groups submit their joint proposals. Successful proposals must be approved by the GLOBVAC programme as well as by DBT, both of which provide funding to the projects. Although this collaboration has attracted substantial interest from Norwegian researchers, it has been hampered by delays in approvals from the Indian side.

To further support collaboration between India and Norway within the vaccination field, the programme board has recently set aside funding for participation in a phase III trial and associated studies of a new, locally produced rotavirus vaccine in India. This will provide Norwegian researchers with unique opportunities to follow and participate in different aspects of an international vaccine trial, as well as to conduct studies directly related to the trial.

Summary

The major midterm accomplishments under the GLOBVAC programme may be summarised as follows:

General

An understanding of the importance of global health and vaccination research has been considerably strengthened in Norway, especially among researchers and politicians, and research activities in the field have become more visible.

Projects

The project portfolio has increased substantially, in particular vaccine-related projects, and researchers from new research groups and areas have shown increased interest in the field and received funding from the programme. However, most projects are in such an early phase that their results cannot yet be evaluated.

Capacity building in Norway

The programme has been instrumental in increasing the number of research projects in the field of global health and vaccination research in Norway, often in the form of larger project

constellations with participation from a variety of institutions and research backgrounds. Most of the larger projects have also incorporated young researchers and doctoral and post-doctoral research fellows, which hopefully will secure sustainability of the project activities/areas.

International collaboration

Several of the projects are a part of large international consortia involving international researchers from the North as well as the South. Considerable funding from the GLOBVAC programme has been allocated to collaborative projects between Norway and India. The board would still welcome more international collaboration.

Partnerships with researchers in LMIC

Most of the projects funded have partners in LMIC, mostly in Africa and Asia but also in Latin America. The partnership usually involves fieldwork by Norwegian researchers in LMIC, but in many instances researchers and students from LMIC also work in Norway; several students from LMIC are also attending master's or doctoral programmes in Norway on projects funded by the GLOBVAC programme.

Aims for the future

It is hoped that the GLOBVAC programme has stimulated increased interest in global health and vaccination research in Norway which will result in sustainable, internationally strong research projects that can compete successfully and receive continued support from national as well as international funding sources. It is also hoped that the GLOBVAC programme has inspired young researchers in Norway to devote their research interests to global health and vaccination-related problems now and in the future.

Appendix 1: Terms of Reference

A1.1. Background

The Programme for Global Health and Vaccination Research

The Programme for Global Health and Vaccination Research (GLOBVAC) was launched in 2006 as a continuation and expansion of the previous Programme for Global Health Research at the Research Council of Norway (RCN). The overall objective of the GLOBVAC programme is to strengthen and expand research that can contribute to sustainable improvements in health in low- and middle-income countries. The GLOBVAC programme consists of two sub-programmes on global health research and global vaccination research, respectively, and the current programme period is 2006-2011. The programme receives funding from the following sources (figures for 2009): the Ministry of Foreign Affairs via the Norwegian Agency for Development Cooperation – Norad (NOK 57 million), the Ministry of Health and Care Services (NOK 4.3 million) and the Fund for Research and Innovation (NOK 4 million).

The evaluation

The contract between Norad and the RCN on funding of the GLOBVAC programme for the period 2008-2011 states that the RCN shall conduct a mid-term evaluation of the programme in 2009 (Section 6.2). The evaluation is to cover both sub-programmes, and is to assess results in terms of factors such as relevance, multidisciplinary approach, thematic priorities and the application of research findings. The evaluation should also provide recommendations on how to structure and implement a potential extension of the programme. Section 3.4 of the contract states that the programme period is expected to be extended beyond 2011, contingent on the results of the mid-term evaluation in 2009, Government priorities, and approval by the Storting (Norwegian national assembly).

A1.2. Scope, aim and objective

The evaluation is to cover both sub-programmes for the period 2006-2009 (as well as its precursor, the Programme for Global Health Research – GLOBHELs, when appropriate) and should assess:

- The overall objective of the programme
- Secondary programme objectives
- Programme design and organisation
- Instruments and activities
- The programme in relation to international needs and initiatives

The overall aim of the evaluation is to obtain knowledge and experience from the first phase of the programme (2006-2009) to provide a basis for recommendations for strategies and priorities for the second phase of the programme (2010-2011), as well as for potential extensions and/or expansions of the programme in future (2012 and beyond).

- **The objective** is to assess the following aspects of the programme:
- **Funding and resources**, and whether these have been optimally utilised to achieve the programme objectives.
- **Strategic measures** implemented by the programme to achieve the programme objectives, in particular:
 - The Indo-Norwegian collaboration on human vaccination research;
 - The European and Developing Countries Clinical Trials Partnership (EDCTP);
 - The Norwegian Forum for Global Health Research.
- **Activities undertaken** by the programme to achieve the programme objectives, in particular:
 - Funding of research projects;
 - Creating meeting places through organising conferences and meetings;
 - Acting as an advisory body
- Relationship to other national actors, including:
 - Other funding sources for global health research (the Norwegian Programme for Development, Research and Education (NUFU), the government ministries, various embassies, other research programmes at the RCN);
 - Other relevant research activities not funded by the programme.

A1.3. Expected outcomes

The evaluation is expected to:

1. Indicate results from the first phase of the programme (2006-2009), with special focus on the composition of the project portfolio as well as on project relevance, multidisciplinary approach, thematic priorities and the application of research findings. The assessment should be on overall quality of the research projects and research groups with a focus on capacity building, rather than on research findings from individual projects;
2. Identify areas of particular strength and weakness, as well as research gaps;
3. Evaluate the perception of the programme among stakeholders/users of the programme, e.g. scientists and policy makers;
4. Provide recommendations for the second phase of the programme (2010-2011);
5. Provide recommendations for a potential expansion and/or extension of the programme (2012 and beyond).

The evaluation is expected to address specific issues related to the strategic initiatives under the programme:

1. Indo-Norwegian collaboration: continuation, expansion, model for collaboration;
2. The European and Developing Clinical Trials Partnership: continuation, expansion, co-funding, benefit to Norwegian institutions;
3. The Norwegian Forum for Global Health Research: importance as a lobbyist and for network-building, relationship to the programme.

A1.4. The evaluation panel

The evaluation is to be conducted by a panel made up of three or four international experts. Panel members must include both genders and there must be at least one representative from a low- or middle-income country. The members of the panel should as a forum have:

1. General competence in global health and global health research, evaluations and writing of reports;
2. Competence in vaccination research, including epidemiology, biomedical science and the social sciences;
3. Experience from large-scale research institutions and/or international organisations;
4. No conflict of interest (i.e. no ties to the Research Council of Norway or projects funded by the programme);
5. A high standing in the scientific community.

A certain degree of insight into Norwegian and/or Nordic health research would be beneficial, but this is not required.

The panel is responsible for writing the evaluation report and may engage a secretary in connection with these efforts.

A1.5. Implementation of the evaluation

Organisation

The evaluation panel is requested to submit an inception report to the reference group for feedback regarding subsequent steps of the evaluation process.

The evaluation is to consist of a strategic analysis of the programme's objectives, secondary objectives and achievements in the different fields and disciplines encompassed by global health and vaccination research. This should include a systematic analysis of the programme and its projects based on information about the projects obtained from written documentation, interviews etc.

The panel must address specific questions related to the objectives of the programme, and the relevance of and contributions from individual projects towards these objectives:

- Is the programme contributing to strengthening and expanding research that can contribute to sustainable improvements in health in low- and middle-income countries?
- What is the potential impact of the programme on global health? Is the programme generating important knowledge about and tools for combating disease in low- and middle-income countries?
- What is the potential impact of the programme on research capacity building in Norway? Are the investment in global health and vaccination research resulting in increased research capacity in Norway?
- What is the potential impact of the programme on research capacity building in low- and middle-income countries? Are the investment in global health and vaccination research resulting in increased research capacity in low- and middle-income countries?
- Is the programme leading to increased international collaboration?
- Is funding from the programme contributing to securing additional funding from other sources?
- Is the programme contributing to multidisciplinary projects?

Particular attention should be paid to whether the programme has facilitated recruitment of new researchers and research groups to the field of global health and vaccination research in Norway, and served to promote institutional commitments that will ensure the continuation of these groups/activities beyond the duration of the research projects and the programme. Furthermore, the panel is to assess whether there is adequate gender balance among project managers and fellowship-holders, as well as adequate representation of people from low- and middle-income countries.

Methodology

The evaluation panel will utilise programme and project documents, interviews and/or questionnaires, and meetings/site visits.

The following documentation will be made available by the programme secretariat:

- Programme plan (Work programme, 2007)
- Project documents, including:
 - summaries from site visits (2009)
 - progress reports (2006-2009)
 - project catalogue
- Summaries based on the following Norwegian-language documents:
 - agendas and minutes from programme board meetings (2006-2009)

Other documentation will be made available by the secretariat upon the request of the evaluation panel.

A1.6. Report – target groups and presentation

A report of the evaluation process must be drawn up (printed and electronic versions), written in a style appropriate to the target groups listed below. The report should include the assessment by the evaluation panel as well as the programme board's own assessment/additional comments. The tentative structure of the report is as follows:

1. Introduction
2. Table of contents
3. Summary
4. Background for the evaluation
5. Brief description of the subject under evaluation
6. The evaluation work
7. Assessment of the various components
8. Discussion, conclusions, recommendations
9. Summary in Norwegian
10. Own evaluation/remarks by the programme board
11. Appendices

Relevant target groups:

1. Existing and potential funders of the programme (e.g. Norad, the Ministry of Foreign Affairs, the Ministry of Health and Care Services, the Office of the Prime Minister, the Norwegian Directorate of Health, the Ministry of Research and Education)
2. The RCN, including the Research Board of the Division for Strategic Priorities as well as other divisions and programmes at the RCN
3. Researchers and the wider research community
4. The media
5. The public at large

The report will be discussed by the evaluation panel and the GLOBVAC programme board at the meeting of the GLOBVAC programme board on 30 November 2009 and presented publicly on 1 December 2009 at the 4th Conference on Global Health and Vaccination Research in Oslo, 30 November-2 December 2009.

A1.7. Use of results – follow-up

The evaluation is designed to:

1. Provide guidance for designation of strategic priorities for the programme;
2. Provide support for a potential extension and/or expansion of the programme;
3. Serve as a reference document against which future assessments can be compared in order to assess the progress of the programme. The next assessment is tentatively planned for 2011.

A1.8. Reference to other evaluations

The following recent evaluations may be of relevance to the evaluation efforts:

1. Evaluation of clinical, epidemiological, public health, health-related and psychological research in Norway (2004)
2. Evaluation of Norwegian Development Research (2007)
3. International Evaluation of Research in Biology and Relevant Areas of Biochemistry at Norwegian Universities, Colleges and Research Institutes (2000)

Appendix 2: Biographical sketches of panel members

Paul-Henri Lambert (Chair)

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Paul Henri Lambert, MD, is a native of Belgium where he was boarded in Internal Medicine (University of Liege). In 1966, he joined Frank Dixon at Scripps Clinic and Research Foundation, La Jolla, California, for immunopathology training. In 1970, he moved to the University of Geneva Medical School as head of a research unit. In 1974, he became a professor in the Department of Medicine and became affiliated with the Department of Pathology in 1984. From 1975 until 1987, he led the Immunology Research and Training Programme of the World Health Organization (WHO) and the WHO-associated research laboratories at the Universities of Geneva and Lausanne. During this period of his academic career, his research activities led him to decipher immunological mechanisms involved in autoimmune and immune complex-mediated diseases and in the pathogenesis of malaria. He then became involved in the development of new strategies to optimise vaccine immunogenicity. In 1987, he was appointed as chief of Microbiology and Immunology at the World Health Organization and in 1994 as chief of Vaccine Research and Development, WHO Global Programme for Vaccines and Immunisation. He then became deeply involved in the coordination of research aimed at the development of vaccines against diseases of major importance in developing countries.

As a retired professor, Paul-Henri Lambert is now associated with the Centre of Vaccinology in the Department of Pathology and Immunology at the University of Geneva. He is particularly interested in vaccination strategies and risk evaluation. He chairs the Steering Committees of the European Consortium for the development of new tuberculosis vaccines (TBVAC) and of the Tuberculosis Vaccine Initiative (TBVI). He is directing the International Advanced Course of Vaccinology (ADVAC) organised under the auspices of the Fondation Mérieux and University of Geneva. He chaired the WHO Global Advisory Committee for Vaccine Safety until December 2008. He now chairs the vaccine committee of the International Association for Biologicals (IANS).

Paul-Henri Lambert is author or co-author of 428 publications, member of several international scientific boards, foreign member of the Royal Academy of Medicine in Belgium and Fellow of the American Association for the Advancement of Science.

Zulfiqar A. Bhutta

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Dr Zulfiqar A. Bhutta is Husein Laljee Dewraj Professor and Head of the newly created Division of Maternal and Child Health, Aga Khan University Medical Center, Karachi, Pakistan. He also holds adjunct professorships in International Health & Family and Community Medicine at the departments of International Health at the Boston University and Tufts University (Boston) respectively. He was designated a Distinguished National Professor of the Government of Pakistan in 2007.

Professor Bhutta was educated at the University of Peshawar (MBBS) and has a doctorate from the Karolinska Institute, Sweden. He is a Fellow of the Royal College of Physicians (Edinburgh), the Royal College of Paediatrics and Child Health (London) and the Pakistan Academy of Sciences. He has been associated with the Aga Khan University since 1986 and heads a large research team working on issues of maternal, newborn and child survival and nutrition globally and regionally. Dr Bhutta has served as a member of the Global Advisory Committee for Health Research for the World Health Organization, the Board of Child & Health and Nutrition Initiative of Global Forum for Health Research, and the steering committees of the International Zinc and Vitamin A Nutrition Consultative Groups. He is an executive committee member of the International Paediatric Association and on the Board of the Global Partnership for Maternal, Newborn and Child Health (PMNCH). Dr Bhutta is currently the Chair of the Health Sciences Group of the Biotechnology Commission of Pakistan, a member of the WHO Strategic Advisory Committee for Vaccines, the Advisory Committee for Health Research of WHO EMRO, and its apex Regional Consultative Committee. He is also the Chairman of the National Research Ethics Committee of the Government of Pakistan. He is the President of the Commonwealth Association of Paediatric Gastroenterology and Nutrition (CAPGAN).

Dr. Bhutta is on several international editorial advisory boards including the Lancet, BMJ, PLoS Medicine and PLoS ONE and has published three books, 45 book chapters, and over 280 indexed publications to date. He has won several awards, including the Tamgha-i-Imtiaz (Medal of Excellence) by the President of Pakistan for contributions towards education and research (2000), the President of Pakistan Gold Medal for contributions to Child Health in Pakistan (2004) and the Outstanding Paediatrician of Asia award by the Asia Pacific Pediatric Association (2006). He is also the first recipient of the Aga Khan University Distinguished Faculty Award for Research (2005). Dr Bhutta has recently been awarded the inaugural award (2009) by the Program for Global Pediatric Research for outstanding contributions to Global Child Health and Research .

Barry Bloom

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A leading scientist in the areas of infectious diseases, vaccines, and global health and former consultant to the White House, Dr. Barry Bloom continues to pursue an active interest in bench science as the principal investigator of a laboratory researching the immune response to tuberculosis, a disease that claims more than two million lives each year.

He has been extensively involved with the World Health Organization (WHO) for more than 40 years. He is currently Chair of the Technical and Research Advisory Committee to the Global Programme on Malaria at WHO and has been a member of the WHO Advisory Committee on Health Research and chaired the WHO Committees on Leprosy Research and Tuberculosis Research, and the Scientific and Technical Advisory Committee of the UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases. Dr. Bloom serves on the editorial board of the Bulletin of the World Health Organization.

Dr. Bloom currently serves on the Wellcome Trust Pathogens, Immunology and Population Health Strategy Committee. He is on the Scientific Advisory Board of the Earth Institute at Columbia University and the Advisory Council of the Paul G. Rogers Society for Global Health Research.

His past service includes membership on the Ellison Medical Foundation Scientific Advisory Board, National Advisory Council of the National Institute for Allergy and Infectious Diseases, the Scientific Advisory Board of the National Center for Infectious Diseases of the Centers for Disease Control and Prevention, and the National Advisory Board of the Fogarty International Center at the National Institutes of Health, as well as the Governing Board of the Institutes of Medicine.

Dr. Bloom was the founding chair of the board of trustees for the International Vaccine Institute in South Korea, which is devoted to promoting vaccine development for children in the developing world. He has chaired the Vaccine Advisory Committee of UNAIDS, where he played a critical role in the debate surrounding the ethics of AIDS vaccine trials. He was also a member of the US AIDS Research Committee.

Dr. Bloom came to HSPH to serve as Dean of the Faculty in 1998. He stepped down December 31, 2008 and is currently a Harvard University Distinguished Service Professor at HSPH. In his capacity as Dean, he served as Secretary Treasurer for the Association of Schools of Public Health (ASPH). Prior to that he served as chairman of the Department of Microbiology and Immunology at the Albert Einstein College of Medicine from 1978 to 1990, the year in which he became an

Investigator of the Howard Hughes Medical Institute, where he also served on the National Advisory Board. In 1978, he was a consultant to the White House on international health policy.

Dr. Bloom holds a bachelor's degree in biology and an honorary D.Sc. from Amherst College and a Ph.D. in immunology from Rockefeller University.

He is a past president of the American Association of Immunologists and the Federation of American Societies for Experimental Biology. He received the first Bristol-Myers Squibb Award for Distinguished Research in Infectious Diseases, shared the Novartis Award in Immunology in 1998, and was the recipient of the Robert Koch Gold Medal for lifetime research in infectious diseases in 1999.

Dr. Bloom is a member of the National Academy of Sciences, Institutes of Medicine, the American Association for the Advancement of Science, and the American Philosophical Society.

Margaret Ann Liu

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Margaret A. Liu obtained her BA in Chemistry, Summa Cum Laude, from Colorado College; a Diplôme d'enseignement, à l'unanimité (judges' unanimous decision) in piano from the Ecole Normale de Musique de Paris; and an MD from Harvard Medical School. She completed an Internship and Residency in Internal Medicine and a Fellowship in Endocrinology at Massachusetts General Hospital. She received Board Certification in Internal Medicine and in Endocrinology and Metabolism. Dr Liu was a Visiting Scientist at the Massachusetts Institute of Technology, Instructor at Harvard Medical School, and the recipient of an NIH Physician Scientist Award. She served as Senior Director at Merck Research Laboratories, Vice President of Vaccines Research and Gene Therapy at Chiron Corporation, Vice-Chairman of Transgène, and Senior Advisor in Vaccinology at the Bill and Melinda Gates Foundation.

Dr Liu currently consults in the fields of vaccine and immunotherapy for companies and non-governmental organisations, and is a Foreign Adjunct Professor at the Karolinska Institute in Stockholm. She is Vice-Chairman of the Board of Trustees of the International Vaccine Institute in Seoul (having been the chairman of the Scientific Advisory Group of IVI, 2000-06), a member of the Board of Directors of the Keystone Symposia and a Trustee of the San Francisco Conservatory of Music. She is also a member of: the European Malaria Vaccine Development Agency, the HIV Enterprise Immunogens and Antigen Processing Working Group, the SAB of the Jenner Vaccine Institute (Oxford, UK), and the Advisory Board for the Elizabeth Glazer Pediatric AIDS Foundation Scholars Award. She is also a faculty member of Europrise, a scientific advisor for AVAC (the AIDS Vaccine Advocacy Coalition), and was formerly a director of Sangamo Biosciences as well as a consultant to the US National Academy of Science Institute of Medicine's committee reviewing the US National Vaccine Plan (having declined an invitation to membership of the committee). In addition, she served as a member of: the NIH NIAID Council (an appointment made by the US Secretary of Health and Human Services), the NIH NIAID AIDS Vaccine Research Subcommittee, the Advisory Board of the AVIP (European AIDS Vaccine Integrated Program), a panel that evaluated clinical research in Sweden and Finland for the Swedish Research Council and the Academy of Finland, the Advisory Council of the American Society of Gene Therapy, the ASGT Board of Directors, the External Scientific Advisory Committee of the Children's Hospital Oakland Research Institute, the Institute of Medicine's committee that reviewed the Department of Defense Malaria Vaccine, the European Developing Countries Clinical Trials Partnership (EDCTP) Board (based in The Hague), the WHO IVR VAC (WHO's Initiative for Vaccine Research, Vaccine Advisory Committee), and the GAVI R&D Task Force during its tenure. She is a founding editor or on the editorial board or editorial advisory board of various scientific journals. Dr Liu has been elected a member of the American Society for Clinical Investigation and a Fellow of the Molecular Medicine Society, and received an honorary Doctorate of Science from Colorado College in 2002. She is an inventor, with six issued patents.

Having organised a number of international meetings, she was the lead organiser, with co-organisers Sir Gus Nossal and Professor Paul-Henri Lambert, for the meeting “Challenges of Global Pediatric Vaccine Development” held in Cape Town, South Africa, a Keystone Symposia meeting co-sponsored by the Bill & Melinda Gates Foundation and the Foundation for NIH, Grand Challenges in Global Health. She advises various international vaccine research programmes, including groups participating in the Grand Challenges for Global Health. Professor Dr Her Royal Highness Princess Chulabhorn of Thailand invited Dr Liu to join her in leading the Special Opening Segment of the First Joint Meeting of Ministers of Environment and Health from the ASEAN countries in August 2007.

Dr Liu was named one of “The 50 Most Important Women Scientists” by Discover magazine in November 2002. Her pioneering work in the area of DNA vaccines has led to her receipt of honorary lectureships, including the Rose Lectureship at Columbia University College of Physicians and Surgeons (1993), the Inaugural Saul Krugman Memorial Lecture at New York University (1996), the M. R. Hilleman Lecture at Children’s Hospital of Pennsylvania (1997), the Walter F. Enz Memorial Lecture Series at the University of Kansas (1999), the Oon International Fellowship in Preventive Medicine at Cambridge University, England (2000), and the Karolinska Research Lecture series at the invitation of the Nobel Committee (Sept. 2001).

Appendix 3: List of documents provided to the panel

Background documents

- Norwegian Development Research – An evaluation, 2007, Research Council of Norway
- Research in Biology and relevant areas of Biochemistry in Norwegian Universities, Colleges and Research institutes – Report of the Principal Evaluation Committee, 2000, Research Council of Norway
- Global health research in Norway – an overview and evaluation (English summary of the report “Global helseforskning i Norge – oversikt og vurdering”), 2008, Norwegian Directorate of Health
- Medical and Health-related Research – The Research Council of Norway’s policy for 2007-2012, 2007, Research Council of Norway
- Evaluation of clinical, epidemiological, public health, health-related and psychological research in Norway, 2004, Research Council of Norway
 - Clinical research – Clinical medicine, clinical odontology, clinical pharmacology, Panel 1
 - Public health and health services research – Public health, epidemiology, relevant psychology, behavioural research, health services research, ethics and other health-related research, Panel 2
 - Psychology and psychiatry – Clinical psychology, basic psychology, psychiatry, Panel 3
 - Structural issues arising from the panel evaluations. Joint Committee Report

GLOBVAC programme publications

- Global Health Research – Report from a planning committee commissioned by the Research Council of Norway, 2004, Research Council of Norway
- Programme plan (Work programme) – Research for sustainable improvements in health in low- and middle-income countries, Programme for Global Health and Vaccination Research (GLOBVAC), 2007, Research Council of Norway.
- Engaging in global health research – Programme for Global Health and Vaccination Research (GLOBVAC), 2008, Research Council of Norway
- GLOBVAC call text – global health research, 2007, Research Council of Norway
- GLOBVAC call text – vaccination research, general part, 2008, Research Council of Norway
- GLOBVAC call text – vaccination research, Indo-Norwegian part, 2008, Research Council of Norway
- Terms of Reference for the midterm evaluation of the GLOBVAC programme, 2009

GLOBVAC programme project documents

- GLOBVAC project progress reports, October 2008
- GLOBVAC additional progress reports, March 2009
- GLOBVAC project progress reports with supplementary project status reports, October 2009
- GLOBVAC summary report from project site visits, May-June 2009

Additional documents, overviews and updates provided to the panel

- GLOBVAC economy and result indicators, 2009, Research Council of Norway
- GLOBVAC key indicators, 2009, Research Council of Norway
- GLOBVAC list of rejected applications, 2009, Research Council of Norway
- GLOBVAC long term budget, 2009, Research Council of Norway
- GLOBVAC midterm evaluation time schedule, 2009, Research Council of Norway
- GLOBVAC programme board meetings – agenda items and resolutions (English translation), 2009, The Research Council of Norway
- GLOBVAC programme presentation, 2009, Research Council of Norway
- GLOBVAC project categorisation and labelling, 2009, Research Council of Norway
- GLOBVAC project categorisation and labelling sorted for panel members, 2009, Research Council of Norway
- GLOBVAC project evaluation matrix for evaluation panel, 2009, Research Council of Norway
- GLOBVAC project overview, 2009, Research Council of Norway
- GLOBVAC project overview distributed among panel members, 2009, Research Council of Norway
- GLOBVAC project partners for questionnaire, 2009, Research Council of Norway
- GLOBVAC project positions, fellowships and gender, 2009, Research Council of Norway
- GLOBVAC strategic collaborations, 2009, Research Council of Norway
- Norwegian engagement in global health research, 2009, Paul Fife, Norad
- RCN health research priorities, 2009, Mari Nes, Research Council of Norway

Appendix 4: Positions and fellowships by gender and country and per project

Table 1: Gender distribution for doctoral (PhD) and post-doctoral research fellows and project managers per project, and country of affiliation and country of work for PhD fellows per project.

Project no.	Gender distribution						Country of affiliation, PhDs						Country of work, PhDs										
	PhDs		Post docs		Proj. managers		Norway	India	South Africa	Ethiopia	Uzbekistan	Vietnam	Unknown	Norway	Ethiopia	Malawi	Mali	India	Tanzania	Mozambique	Uzbekistan	Tajikistan	Unknown
	Female	Male	Female	Not reg.	Male	Not reg.																	
164049	1	1			1		2																
164050	1				1		1																
164053					1																		
171822	3	1			1		4																
172206	1				1		1																
172226	2				1		2																
172269	1				1		1																
172292	1				3		1																
172321	2	1			2		3																
172400	1				1		1																
179187							1																
179342					2																		2
179350							2																
179351	5	18			1		17	1	2	2	1						7	6	3	2	1	2	1
179355					1																		
179357	1				1		1																
179379	1				1					1											1		
179389	1	1			1		2																
183596	1				1		1																
183600					1																		
183650					1																		
183668	1						1																
183683		1			1		1																
183694					1																		
183722							1																
185441					1																		
185745	1				1		1																
185777																							
185783					1																		
185784					1																		
185862					1																		
185872							5																
192465	1				1		1																
192468					2																		
192477					1																		
192480					1		1																
192510					1																		
192514					1																		
192518	1				1																		2
192529					2																		
192534					1																		
192536																							
192538																							
Subtotal	20	29	3	11	8	11	41	1	2	2	1	1	4	31	6	3	2	1	2	1	1	1	4
Total		52			30		43			52													

Appendix 5: Questionnaire responses from project partners

1. *What are your general views on this initiative?*

The initiative has been considered to be “important” and “relevant” for immunisation in general as well as for particular projects. The programme is trying to improve key challenges such as capacity, networking, and collaborative research.

2. *Do you think that the specific project in which you have been involved is relevant to public health priorities?*

All the respondents felt that their specific projects are relevant to public health priorities. They cited specific examples related to systems development and capacity building, integration of systems, and improving data analysis and usage. This is considered important both in order to generate quality data that can be utilised in making decisions and for the actual generation of entities to be utilised, such as vaccines.

3. *Do you foresee a significant impact on human resources (training) in collaborating countries (LMIC)?*

The programme is perceived to have a significant impact on the research capacity of collaborating countries through the various networks that have been established, the training programmes, and the many in-country health professionals being trained as part of certain projects. Modern techniques and data management for an international project are believed to be key for training the next generation of researchers in developing countries to conduct independent, high-calibre research in the future.

4. *Is there a proper balance between investments made in Norway and outside Norway?*

While not all respondents felt qualified to answer this, at least a couple of them believed that the balance was appropriate. It was pointed out that investments in Norway still benefited those in developing countries. An example of this was the trainees who are brought to Norway for their training, but then return to their native country. Alternatively, Norwegian trainees participate in projects carried out in the developing countries.

5. *How do you evaluate the potential impact of the GLOBVAC programme on public health in LMIC?*

The impact is believed to be wide-ranging, as the programme provides better quality data and improves information systems which make this data available for decision-making. This in turn has an impact on immunisation coverage, thus reducing vaccine-preventable diseases as well as infant and child mortality rates in LMIC. Other projects may have an impact by developing vaccines that will be utilised in LMIC.

6. *What do you suggest for the future? A change in profile? New objectives? Fewer (better funded) or a larger number of projects?*


Suggestions for the programme in the future included addressing the issue of sustainability of these projects and improvements, better coordination between international agencies participating in immunisation programmes and the research efforts, and continued capacity building at the district and site (facility) levels.

7. *What do you think of the operating mechanisms? Is the GLOBVAC programme properly managed? Which improvements would you suggest?*

The GLOBVAC projects have been delayed at times due to recruitment of project staff and the need to establish infrastructure. It would be beneficial to clarify and broadly disseminate the guidelines for project management. It was found that having a project manager was useful for coordinating projects.

8. *Do you think that the quality criteria set out by the Research Council of Norway have been met?*

The respondents felt that the criteria set out by the RCN have been met.



The report can be ordered at:
www.forskningsradet.no/publikasjoner

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Published by:
© The Research Council of Norway
Global Health and Vaccination Research
– GLOBVAC

Coverdesign: Design et cetera AS
Photo: Swimmer: Ablestock.com, mother
and child: Chris Thomas
Printing: Allkopi

Oslo, November 2009

ISBN 978-82-12-02716-9 (printed version)
ISBN 978-82-12-02717-6 (pdf)