Self-evaluation NIVEL 2010-2015

Bringing worlds together – High quality research with an impact upon society

http://www.nivel.nl
nivel@nivel.nl
Telefoon 030 2 729 700
Fax 030 2 729 729

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1 Executive Summary

NIVEL - the Netherlands Institute for Health Services Research – is an independent national research institute specialising in health services research (HSR). NIVEL's ambition is to bring different worlds together, combining high quality scientific research with a great degree of relevance to society. The information and insights of NIVEL's research can be used by policymakers and health care professionals in order to improve the quality of care for patients and the sustainability of the health care system. As such, NIVEL has strong links with universities, the Ministry of Health, and various stakeholders in the health care field.

This self-assessment report evaluates the period from 2010-2015. For its self-assessment, NIVEL follows the Standard Evaluation Protocol (SEP) of the Association of Universities in the Netherlands (VSNU), the Netherlands Organisation for Scientific Research (NWO), and the Royal Netherlands Academy of Arts and Sciences (KNAW). Therefore, the assessment focuses on the quality of NIVEL research, its relevance to society, the viability of NIVEL and its PhD programme and research integrity.

Overall, we conclude that NIVEL has achieved its 2010-2015 targets. NIVEL has a substantial scientific output and performs at, or above, the international average. NIVEL and its employees enjoy a secure place in the scientific community through collaborations with colleagues at most Dutch universities and through international collaborative networks on various HSR topics. The number of PhD theses successfully defended in 2010-2015 is greater than the previous review period. A grant from the Ministry of Education (MoE) supported the increase in PhD theses.

We also conclude that NIVEL's research has a great relevance to society. However, there are no generally accepted indicators to measure this relevance and the impact of health services research. Therefore, NIVEL developed a framework to provide a structure to the narratives which are aimed at achieving an impact upon society. This framework enables NIVEL to show its relevance on several aspects. Important conditions that secure the impact of NIVEL are the interaction between different stakeholders and researchers, its contribution to setting the research agenda, and its research infrastructure. In order to disseminate our results back to Dutch society, we use our publications, our website, presentations, invitational conferences and feedback reports. Citations in the media and government documents show that our research findings are widely used and that they contribute significantly to the quality of care and the quality of life for patients. Our narratives demonstrate how NIVEL supports discussion and learning in policy and health care practice and thus creates a demonstrable impact upon society through several health service research topics.

The health care system and the context of policies are constantly changing. NIVEL has a highly experienced and skilled team of researchers and this research supports employees, including a stable management and coordinators for the various areas of research. The research process is ISO certified and a policy on research integrity is implemented.

The future will bring new challenges. Therefore, NIVEL’s strategy will remain focused on the strong points raised in the SWOT analysis and will try to exploit them further. This will include making the best use of the following: our large research infrastructure; our unique combination of applicable research results and sound research methodology; our strong name as a reliable and independent research institute; and the well-developed and embedded certified quality system on which we build the research processes. The future strategy will also support diversification in the products for stakeholders which draw upon our knowledge and a prioritisation of initiatives for research which entail broad collaborations with science, policy, practice, industry and society.

2 About NIVEL: objectives and areas of research

Introduction

NIVEL's mission is to carry out research of a high quality which has a demonstrable impact upon society. For 30 years, NIVEL researchers have gathered, analysed and synthesised data and information to gain knowledge and insight about the quality and effectiveness of health care delivery and related social services, both in the Netherlands and in Europe. We believe that the knowledge we create through our research supports the continuous improvement of health and social care for patients and the sustainability of the health care system as a whole. The knowledge also adds to, or goes beyond, the state of the art of existing research. NIVEL's main focus is on health services research (HSR). HSR is a multidisciplinary field focusing on the delivery, quality, costs and access to care from the perspective of various stakeholders. Stakeholders are the national and local government, health care provider organisations, patient organisations, and health insurance companies. This differs from medical research which focusses on the development and evaluation of clinical treatments.

NIVEL is an independent research institute. It positions itself on the crossroads between the scientific community, the health care field (providers, insurance companies and patient organisations) and national or regional policymakers. We try to bear in mind our motto in our day-to-day work - bringing worlds together.

NIVEL is organised in twelve smaller research teams with experts in their specific field. The teams are clustered around three departments and linked through their research topics. Through interacting and collaborating the different research teams can answer more complex societal questions and challenges.

The health care system and context of policy is constantly changing. NIVEL, therefore, has to be a flexible organisation which anticipates new developments in health care. The flexibility of NIVEL is reflected in its multidisciplinary staff and the various research areas with smaller research teams. NIVEL's network comprises the health care and health policy sector and the national and international research community. External collaboration is one of the particular strengths of NIVEL, reflecting its national function and international orientation.

At the end of 2015, NIVEL had approximately 160 employees, of whom 100 were scientific staff, 40 performed functions related to research and 20 performed administrative functions. The funding of NIVEL is based on several funding streams. We receive a long-term grant from the Ministry of Health (MoH) for specific databases, panels and for monitoring research infrastructure, a temporary grant from the Ministry of Education (MoE) and external grants for scientific and societal projects. Because of its mission, scientific knowledge development is equally as important as societal relevance and impact. NIVEL's performance targets and indicators focus equally on both. This is different from most university departments, which put a stronger emphasis on scientific indicators and the numbers of PhD students.

The interplay between scientific research and the impact upon society

The continuous interaction between different stakeholders in the health care and the health services research sectors is the basis upon which the institute builds its excellent research and relevance towards society. The interaction between both sectors can be distinguished in different phases, for example, in defining problems, consultation, conducting the research (through co-creation in multiparty committees), and the implementation phase, that is the conclusion, dissemination, utilisation and investigating of effects (see Figure 2.1).

Figure 2.1 Interaction between societal stakeholders and researchers

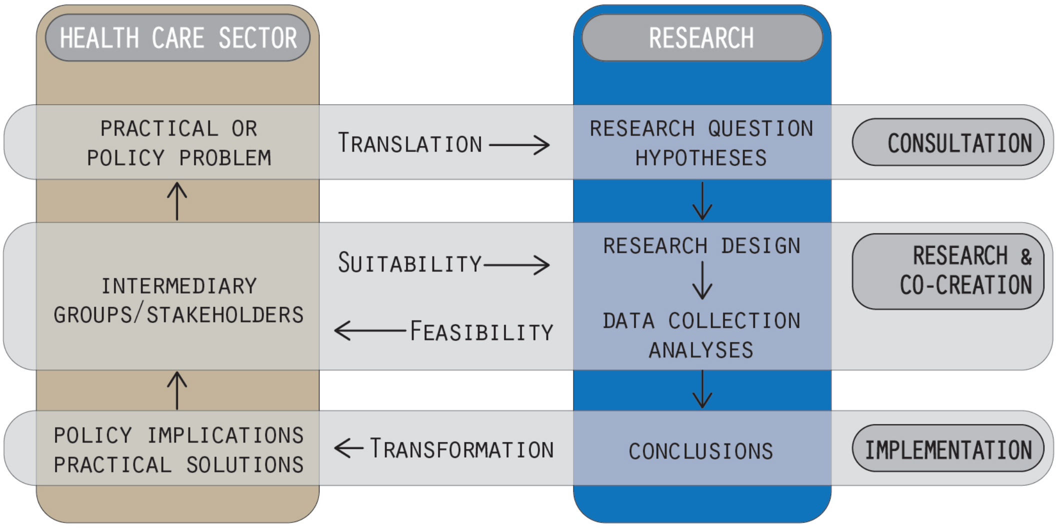


Figure 2.1 shows that conducting health services research is not a linear but a continuous process of development and interaction between both the societal and the research domains. Health services research is driven by policy issues and practical problems in the health care sector. New issues and problems need to be translated into research questions, and the research has to be sensitive to the problems of the health care sector. This translation is facilitated by researchers consulting with policymakers and other stakeholders in order to achieve the most valid study design (co-creation). Stakeholders determine whether the research design developed will give timely answers to their questions or problems (suitability). Researchers determine whether the stakeholders' needs are feasible. The research conclusions, its interpretation of results and its meaning for daily practice may then lead to a new policy or an adjustment of existing policy. New questions and or problems automatically arise after the implementation of the policy and these can then be translated into further research.

There are four aspects of the assessment of the relevance towards society which are particularly important in health services research. Firstly, the way in which research questions are formulated in relation to societal needs, and in interaction with societal stakeholders. Secondly, the interaction with stakeholders in the course of the research process. Then there is the manner in which research results are disseminated to stakeholders who are in a position to use them in decision-making. And, finally, the way stakeholders use or utilise the research results and their ultimate effects upon policy, health care and society.

This continuous process of development and interaction only works when its underlying research products are of the highest quality. Therefore, NIVEL's research has to be performed and assessed according to the prevailing scientific standards. High standards of scientific research is a relevant value in its own right, but academic reputation is also important because it fosters society's acceptance and use of the results of our research and this in turn affects the recruitment and retention of talented researchers. Because of the high scientific quality of NIVEL's research, policymakers can reliably base their decisions on our results. NIVEL's ability to integrate our health services research, with its relevance to society, from different perspectives makes it a unique partner in the policymaking process and a contributor to improving policy and practice in health care.

Box 2.1 Examples of research products in which NIVEL integrates scientific knowledge and practical experience

- Policy sensitive reviews: NIVEL has employees with expert knowledge of various topics. These employees have gained their knowledge from their commissioned research and scientific activities. This enables them to translate aggregated knowledge from the scientific domain into relevant knowledge for the societal domain (see appendix 15).
- Tools for practice: In conducting research, NIVEL translates scientific tools into tools which can be applied by stakeholders such as for human resources planning in health care or to measure patient experiences.
- Dissertations based on commissioned research: Commissioned research often leads to scientific articles based on these projects. The projects themselves were not intended as PhD projects, but gradually develop into a PhD thesis. In addition to this, NIVEL also has PhD projects comparable to those at universities. These are long-term research projects, usually funded by ZonMw, NWO or charity funds. These dissertations give NIVEL the opportunity to expand the scientific knowledge on certain topics.

Previous assessment of NIVEL in 2010

Overall, the previous review committee concluded that in the assessed period, 2004-2009, NIVEL performed "very good" to "excellent" with regard to the quality of research and the organisation of the institute. The committee supported NIVEL's analysis of its strengths, weaknesses, opportunities and threats. The committee understood that NIVEL's mission of scientific research and work which is relevant to society, is both a combined and entwined goal. The two goals are not just competing entities needing a balance in their time and resources, but, even more so, are mutually dependent perspectives on related activities. The committee strongly supported a continuation of the basic subsidy from the Ministry of Health and the research grant from the Ministry of Education.

The appendix on the strategic challenges in reaction to the Self-evaluation 2004-2009 gives an overview of the recommendations of the review committee, the strategic plans for these challenges, and on how these plans were realised (see appendix 1).

Outline of the Self-Evaluation report

We now present, below, our scientific results for the years 2010 -2015 in Chapter 3. Their relevance towards society and impact is presented in Chapter 4, followed by a description of the PhD programme and a focus on integrity in Chapter 5. The final chapter explains the viability of the institute with a thorough analysis of the strengths, weaknesses, opportunities and threats (SWOT), which will point to the strategic choices for the future. The chapters' references give an extensive number of appendices with more detailed information. This mark ↗ indicates that more information about this subject can be found on the website.

3 Research quality

Targets
- Performance at or above the international average.
- Embedded professorships for the best NIVEL researchers.
- International collaboration in projects, networks and publications.

Below are the results of NIVEL's scientific research, including scientific output, scientific quality, H-index and scientific collaboration. NIVEL invests in the scientific quality of its research by several means: An internal peer review as part of the quality assurance system (appendix 5); by facilitating continuous education; by encouraging researchers to attend international conferences; by participating in the wider scientific community; and by stimulating young researchers to work on a PhD thesis.

Broadly accepted indicators of the quality of scientific research have been developed over many years. Nevertheless, the validity of indicators based on bibliometric research undergoes continual debate. For reasons of comparability with research evaluations in the academic world, we concur with the current consensus on bibliometric indicators. Still, it is important to be aware that, in view of their coverage, these indicators are far from perfect for the field of health services research.

Scientific output

Given the research capacity of the institute, the scientific output is substantial (see Table 3.1). Most of the scientific output is published in international peer-reviewed journals with an impact factor (IF).

There are several reasons why NIVEL researchers publish in journals without an impact factor. Not all journals that are expected to become important in our field already have an impact factor at the time of publishing one of our articles. Secondly, some research areas, such as nursing and midwifery, are not very well covered by journals with an impact factor. To increase the dissemination of knowledge, NIVEL started to publish in open access journals at an early stage - in 2001. During the review period the share of open access publications, as part of the total number of scientific articles, has increased from approximately 30% to 45%.

Table 3.1 Main categories of scientific research output on an institutional level

	2010	2011	2012	2013	2014	2015
Scientific publications:						
Articles*	122	166	152	189	192	185
*- of which in journals with IF***	*92*	*123*	*110*	*155*	*157*	*156*
- of which in open access journals	*38*	*65*	*60*	*76*	*85*	*82*
Scientific books	1	2	1	3	0	0
Scientific book chapters	2	10	6	2	5	3
PhD theses						
- NIVEL PhD theses	7	2	4	6	3	10
- Other PhD theses***	2	2	0	4	0	2
Total scientific publications	*134*	*182*	*164*	*204*	*200*	*200*
Total scientific publications per FTE research staff	1,4	1,8	1,5	2,0	2,0	2,4

* Including letters, editorials etc.

** We counted all articles in journals with an impact factor instead of all articles with an ISI code. For this reason, the totals presented in this table may differ from the analysis of the CWTS.

*** These are PhD theses of non-NIVEL employees using NIVEL research data, supervised by NIVEL staff.

Awards

There were a considerable number of awards during the review period which demonstrates the quality of our research. One prestigious award is the Huibregtsenprize. In 2012, Prof. C. Wagner was one of seven nominees. This prize is intended for the best Dutch research which is scientifically innovative and is expected to have a valuable impact upon society. Four of our PhD researchers won an award for their dissertations and another two researchers won an award for an article which is part of their PhD-thesis, which reflects the quality of our PhD-trajectories (see appendix 13).

Scientific quality: impact factors and citations

The CWTS analysis of the scientific quality of our English language articles based in peer-reviewed journals shows that NIVEL performs above the international average. However, the performance during 2013-2014 seems to be lower than the periods before. We expect the performance of 2013-2014 to improve in the next report of the CWTS as the performance indicators of the most recent period tend to increase a year later. For example, the 2012-2013 mean field normalised citation score (MNCS) in the 2015 report was 1.16 and in the 2016 report 1.26 and the proportion of top 10% publications (PP top10%) was 0.14 in 2015 and 0.17 in 2016. The 2013-2014 drop of the MNCS has to be seen in the light of the limited coverage of the four-year citation window of the MNCS.

From an earlier in-depth analysis and in dialogue with the CWTS, we know that NIVEL articles need a longer period to get cited than other papers in the same fields (see appendix 9). Therefore, NIVEL could benefit from being included for a longer period. We do not know why the delay occurs. Below, we give the main indicators of the CWTS analysis (Table 3.2). Appendix 7 gives more detailed information.

Table 3.2 Bibliometric analysis of NIVEL publications 2009-2014 (source: CWTS report 04-04-2016)

Period	No. of publications (P)	Mean field normalised citation score (MNCS)	Mean normalised journal score (MNJS)	PP top 10%
2009-2010	197	1.35	1.20	0.14
2010-2011	214	1.28	1.18	0.14
2011-2012	235	1.22	1.18	0.16
2012-2013	271	1.26	1.20	0.17
2013-2014	334	1.11	1.05	0.13

According to the CWTS an increase of production of scientific research papers often coincides with a decline in impact. However, for NIVEL, the MNCS shows that the impact of our articles in peer-reviewed journals during the review period is at or above an international level.

Publishing in journals offering a higher impact usually increases visibility and, most likely, the impact created by citations. Based on the report of the review committee in 2010, we discussed with the scientific staff setting priorities based on determining which papers are worth investing in. Consequently, we introduced the rule that for a review of a paper by the internal peer review meeting (see appendix 5), the author has to specify in which journal – including its impact factor and quartile – he or she is planning to publish this paper. The objective of this rule is to encourage researchers to make a more conscious decision when they choose which journals to publish in. It is difficult to say if this objective had an effect, but researchers state that they are made more aware by the rule.

An analysis by subfields

The largest subfield in which NIVEL publishes is Public, Environmental and Occupational Health (see appendix 7). The impact of NIVEL publications in this field is above the international average. The impact of our publications in the subfield, Medicine, General and Internal is also above the international average and in the subfield, Health Care Sciences and Services the impact is equivalent to the international average. It is important to note that top journals in the subfield Health Care Sciences and Services are dominated by US-based journals, because health services research is more dependent upon the context than public health research. This makes it more difficult, and often less relevant, to publish in US-based journals, as the Dutch health care system is quite different from that in the US.
The subfield Primary Health Care has a lower impact than the international average. The low impact in this subfield is surprising given that NIVEL research has a strong orientation towards primary care. However, an in-depth analysis led us to conclude that we publish our high impact primary care publications in journals other than those covered by the subfield Primary Health Care (see appendix 9).

NIVEL’s H-index

The H-index is commonly used to compare the scientific output from individuals, research groups, research lines and entire institutes. The H-index for NIVEL (including self-citations and calculated in Scopus on 21-3-2016) was 80/1929. This means that 80 NIVEL articles were cited at least 80 times. The figure for a comparable institute for mental health care, the Trimbos Institute, was 90/1196. NIVEL's H-index is, therefore, slightly lower, based on a much larger number of publications.

Scientific collaboration

NIVEL has strong links with the scientific community as a result of participation in the national research school CaRe (Netherlands School of Primary Care Research) and due to ties with universities through special chairs occupied by NIVEL staff (Table 3.3).

Table 3.3 Scientific collaboration 2010-2015

	2010	2011	2012	2013	2014	2015
Scientific collaboration:						
Scientific articles with international co-authors	15	27	16	43	41	55
Scientific articles with external Dutch co-authors	85	82	80	109	125	85
Memberships of the editorial board of scientific journals (national & international)	21	24	20	34	23	21
Reviews of research proposals, occasional	203	67	42	54	54	33
Article reviews (national & international)	121	204	150	155	149	132
Memberships of research schools	37	36	36	35	62	52
Professorships	10	10	11	10	10	10

NIVEL's scientific network also incorporates other national institutes. The collaboration with RIVM (National Institute for Public Health and the Environment) together with other alliances in collaborative centres is laid down in covenants. Examples are:

- Academic collaborative centre Supervision (Healthcare Inspectorate, iBMG, IQ-healthcare, EMGO+, and NIVEL);
- Academic collaborative centre Health insurers (Open University, VGZ, and NIVEL);
- Consortium for Technology – the Centre for Care Technology Research (Maastricht University/Maastricht UMC+, University of Twente, TNO, and NIVEL);
- Research center Safety 4 Patients (NIVEL, EMGO+);
- Interdepartmental collaboration of eight university departments of primary health care.

International projects are always network projects. Participation in four of these: the EUPHA (European Public Health Association); EACH (European Association for Communication in Healthcare); EFPC (European Forum for Primary Care); and PaSQ (European Union Network of Patient Safety and Quality of Care) provides access to broader European networks. Apart from these networks, NIVEL has, with HSR-Europe (see appendix 11), taken an initiative to form a network of researchers and policymakers in Europe who are active in the field of Health Services Research. NIVEL aims through this to gain more attention for health services research in EU-funded research programmes. The best proof of international collaboration can be found in the resulting publications (see Box 3.1).

Box 3.1 Internationally co-authored articles with the highest impact factor

Walshe, K., McKee, M., McCarthy, M., Groenewegen, P., Hansen, J., Figueras, J., Ricciardi, W. Health systems and policy research in Europe: Horizon 2020. Lancet: 2013, 382(9893), 668-669. Impact Factor: 45.217

Ginneken, E. van, Groenewegen, P.P., McKee, M. Personal healthcare budgets: what can England learn from the Netherlands? British Medical Journal: 2012, 344(e1383). Impact Factor: 17.445

Vliet, L.M. van, Wall, E. van der, Plum, N.M., Bensing, J.M. Explicit prognostic information and reassurance about non-abandonment when entering palliative breast cancer care: findings from a scripted video-vignette study. Journal of Clinical Oncology: 2013, 31(26), 3242-3249. Impact Factor: 18.443

NIVEL researchers also participate in scientific organisations, editorial boards of scientific journals and committees, such as the Health Council of the Netherlands, Royal Dutch Academy of Sciences and ZonMw (see CV's of our programme leaders and researchers). An important aspect of NIVEL's role in national as well as international scientific networks is reviewing research proposals and articles and membership of editorial boards. These activities can be seen as investments in the common good but also in national and international networks. These investments have been facilitated by the grant from the MoE for the period 2009-2014. The success of professorships in forging links with national and international academia is demonstrated by the examples of internationally co-authored articles (appendix 10) and defended PhD theses (appendix 12).

Conclusions

NIVEL has achieved the targets set out in this chapter. It enjoys a high output of scientific research products while its scientific quality is at or above the international average. NIVEL and its employees have strong links with in the scientific community through embedded professorships, collaborations with colleagues at most Dutch universities and through international collaborative networks on various HSR topics.

4 Relevance to society

Targets:
- NIVEL research supports discussion and learning in policy and health care practice.
- Interaction between different stakeholders in society and NIVEL researchers is visible and productive.
- Recommendations based on research are taken up by policymakers and health care professionals.

The current consensus in the research community suggests that the actual relevance and impact of research is best illustrated by narratives of how research is used by target groups. It is important to bear in mind the following when attempting an evaluation:

1. It usually takes time for the results of research to have an impact. Therefore, it is not useful to measure its impact just after a study is finished;
2. The use of results is not isolated from the rest of society. There are other factors in society that also have an impact and can interfere with that of the research results;
3. Effects can take many forms, which means that a limited set of indicators will not cover the impact of research upon society.

Health services research influences economic, organisational and societal aspects in the long run. Ultimately, health services research may have an effect on health care, in, for example, the quality of health care, the effectiveness and efficiency of interventions, the quality of life of patients and the general health of the population. However, associations and causality are hard to gauge with concrete measures.

NIVEL has defined/developed a framework in 2013 to support the visibility and evaluation of societal relevance and impact of research. The key to this framework is that we consider the relevance to society and impact to be rather a process than an outcome. We distinguish several phases in this process in which our work contributes to the attempts by various stakeholders in society to improve policy and practice in health care. The relevance to society is determined by the phases, ‘conditions for impact’ and ‘dissemination of research results’. Societal impact is determined by the phases ‘uptake and use’ and ‘effect’ of research. As the distance between the research and the particular phase increases, researchers have less influence upon the use or impact of their research findings.

Table 4.1 Framework to reveal the societal relevance and societal impact of research

	Societal relevance		Societal impact	
	Conditions for impact	**Dissemination**	**Uptake and utilisation**	**Effect**
Policy	E.g. topic on policy agenda and stakeholder involvement	E.g. recommendations for policy	E.g. use in policy documents or intended policy change	E.g. use of policy in everyday practice
Practice	E.g. initiative by the field itself	E.g. feedback reports	E.g. change in working methods	E.g. quality improvements, better access
Society at large	E.g. societal discussion on topic. Diversification Presentation of results	E.g. press releases	E.g. agenda setting by stakeholders	E.g. improved health literacy or trust in health

The conditions required for an impact

As impact is a continuous process, the dissemination of results does not automatically lead to the uptake and utilisation of results and to effects on health or health care. Usually, certain conditions must be fulfilled in order to have an impact. These necessary conditions may vary from one research topic to another. For instance the timing of disseminating the results plays an important role, as well as the context of the research and the tacit knowledge of the researcher.

The conditions required for an impact are built into the research process of NIVEL. Research questions, for example, are mostly formulated together with the most relevant stakeholders. In order to support the translation from policy issues in the health sector to research, NIVEL contributes to setting the research agenda, for example through the Health Services Research into European Policy and Practice project (HSREPP), the European Research Area Network on health systems (CSA/ERA-NET), the Dutch National Research Agenda and various academic collaborative centres. Then, in order to support the research and its findings, NIVEL establishes multiparty committees for externally-funded research, consults stakeholders for relevant research topics, and involves stakeholders in co-financing research projects. NIVEL's staff have a good track record on several research topics for translating research findings into clear results and explaining what these mean to stakeholders or society at large (see narratives).
We are continuously improving the technical possibilities of the research infrastructure in accordance with the needs of its users. Appendix 17 describes this infrastructure of our databases and panels. This offers our research infrastructure a solid basis for health services research, which makes NIVEL an attractive collaborating partner for both policymakers as well as other researchers. It offers NIVEL the opportunity to operate as a network organisation. Whenever possible, data sharing is built into collaborative projects, resulting in co-authored publications. As a result, this infrastructure is the source of many overview studies on the structure, organisation and functioning of the Dutch health care system from

the perspective of health care providers and their patients.

Societal collaboration

NIVEL is embedded in the field of policy by a large network, both on an individual and an organisational level (Table 4.2). NIVEL collaborates with policymakers at the MoH and, in academic collaborative centres, with health insurance companies, the Health Care Inspectorate, with patient associations, health care providers and professional associations. NIVEL invests in the relevance to society of its research through regular consultations with stakeholders. For specified activities within the MoH subsidy (see also chapter 6 and appendix 17), there are regular meetings between the MoH department concerned and the NIVEL project leader. At the general level of the MoH subsidy, the MoH account holder and the NIVEL director, contact each other on a regular basis to exchange information. These contacts are intensified during the review period resulting in a solid and productive relationship.

Table 4.2 Societal collaboration 2010-2015

	2010	2011	2012	2013	2014	2015
Societal collaboration:						
Committee memberships / External advisory groups	52	52	43	53	96	78
Board members	13	8	7	13	19	18
Formal requests for advice	3	1	13	6	8	6
Guest lectures / courses	4	13	21	14	11	9
Health Council activities	3	4	4	4	2	2
Organised Invitational Conferences	2	6	5	6	4	13

Dissemination

Our societal output consist of articles in professional journals, Dutch reports, book chapters and books for professionals and policymakers (Table 4.3). Publishing research results on the NIVEL website is the first step towards disseminating knowledge. To improve this dissemination, a new product called “Policy sensitive reviews” (appendix 15) has been developed by NIVEL. Publication is often accompanied by presentations and an invitational conference. The results of commissioned research projects are always published in a Dutch language report to make it more accessible for policymakers and health care professionals.

Table 4.3 The main categories of societal research output on an institutional level

	2010	2011	2012	2013	2014	2015
Societal publications:						
Articles	26	22	43	57	36	31
NIVEL reports	60	62	58	52	54	78
Professional books	2	4	1	1	1	0
Professional book chapters	13	12	19	5	3	0
Total societal publications	*101*	*100*	*121*	*115*	*94*	*109*
Total societal publications per FTE research staff	1,0	1,0	1,1	1,1	1,0	1,3

Website

All NIVEL research results, reports and publications can be downloaded from our website to make them more accessible. Our website is frequently visited (235,921 visitors in 2015). Most visitors are referred by Narcis.nl (the national portal for information about researchers and their work) or social media (LinkedIn, Facebook and Twitter). Table 4.4 shows the most frequently downloaded research publications during the review period.

Table 4.4 Top five downloaded research publications in the period 2012-2015*

(Translated) title of publication	Frequency of downloads
Factsheet: Opinions of nurses and caregivers about the complexity of care	1.225
Weekly NIVEL surveillance bulletin 2015 (week 2)**	938
Policy sensitive review: Primary care	896
Policy sensitive review: The care for people with a chronic disease	464
Policy sensitive review: Technology in care at home. Still a world to win!	469

* We have used google Since April 2012 to analyse our website visits and downloads.

** The weekly NIVEL surveillance bulletin is a well-read document with a mean of 246 downloads in 2015.

Presentations and Invitational conferences

During the review period, presentations were given to an audience of policymakers or other stakeholders in society at a rate of almost two every week (on average 90 times a year). These presentations were part of efforts at dissemination, but they also contributed to the other phases in the cycle of research policy and interaction presented in chapter 2. In a number of research projects, an invitational conference was part of the project (see Table 4.2). The aims of these conferences were to discuss the policy implications of research with stakeholders, to discuss best practices or to reach consensus on an issue. They are an important link between research, the health care field and policymakers.

Feedback reports

Data which are routinely recorded by health care providers are used for NIVEL research and are used for feedback reports to these providers (see appendix 20). Our health care benefits through such research and the feedback thus enabling NIVEL to contribute to improving policy and practice in health care. Ongoing research projects providing feedback reports, are: NIVEL Primary Care Database, the Dutch patient safety monitor, the Database communication and research projects on patient experiences (CQ-Index/PREM).

Uptake and use

When policymakers or others take up this dissemination of research they take the next step towards the impact of research on health policy and society. The way to create an impact on the general public is through the mass and social media. NIVEL invests in bringing research results to the attention of the media by publishing a press release on its website for each research project completed. Based on the press releases NIVEL sends a message on Twitter (over 7600 followers) and an email to all members of our email newsletter community (over 3000 members).

Newspaper coverage

A clipping service scans the Dutch newspapers for the name NIVEL, which provides a count of the number of times NIVEL or NIVEL research is mentioned in newspapers. The number of newspaper clippings containing the word NIVEL varies from 254 (in 2011) to 419 (in 2015). We benchmarked the number of newspaper clippings against other organisations by using an open access data base containing quality Dutch newspapers (see appendix 18). NIVEL's number of clippings is lower than the number of clippings of Trimbos, but higher than the number of Vilans. According to this benchmark, the number of times an institute is mentioned in a newspaper seems to decrease over the years. The way people inform themselves about news topics is changing due to, for example, the use of social media.

Social media

NIVEL has no dedicated policy to increase its impact upon social media. Nevertheless, NIVEL is often mentioned on Twitter, Facebook and websites (see Table 4.5). A quick scan using text mining shows that tweets on NIVEL are about our stakeholders (general practitioners, patients, hospitals, nurses, elderly), research topics (e-health, chronic diseases, self-management, dementia, disability, communication, influenza), and our research infrastructure (NIVEL Primary Care Database).

Table 4.5 Number of times NIVEL was mentioned on social media (source: www.clipit.nl)

Year	NIVEL website press releases	Social Media messages on Twitter and Facebook	Total Twitter (mean per press release)	Tweets by highly followed users* (% of total tweets)	Total Facebook (mean per press release)	Total websites (mean per press release)
2013	134	5379**	4279 (31.9)	1652 (39%)	1095 (8.2)	2331 (17.4)
2014	99	4501	4053 (40.9)	1133 (28%)	448 (4.5)	2885 (29.1)
2015	122	5915	5522 (45.3)	1765 (32%)	393 (3.2)	3499 (28.1)

* >1000 followers

** Since 2014 we have filtered our results for Spanish social media messages containing the word 'nivel' meaning level in Spanish. 2013 still contains these Spanish social media messages and therefore do not give a reliable impression of our impact on social media.

The CWTS conducted a benchmark analysis of the impact of our scientific articles on social media (see appendix 19). This analysis concludes that NIVEL performs relatively higher than the CWTS-benchmark. Our publications are more tweeted by Dutch users, which expresses the impact upon Dutch citizens.

Citations in government documents

The database 'Opmaat' contains government sources such as official letters and ministerial policy memos. The number of citations in government documents reflect how sensitive or relevant our research products are for policy. The number of times NIVEL was mentioned in government files has been benchmarked against other organisations (see appendix 18). This benchmark shows that NIVEL is mentioned relatively often in government sources (174 times in 2015), demonstrating the considerable impact of our research.

Effects

Our research findings are also used to improve everyday professional practice, for example with regard to professional standards and tools developed by NIVEL. The narratives show the interaction between science and society, and shows how NIVEL's research has an impact upon, and contributes to, improving policy and practice in health care. The focus of these narratives is on how NIVEL stands at the crossroads between several stakeholders and the health services research community.

The following narratives are described as an example (see appendix 21):

1 The NIVEL Primary Care Database contributes to the learning health care system: giving meaning to routinely collected data.
2 NIVEL's international research, the case of antimicrobial resistance.
3 Towards a person-centered approach to chronic care with the National Panel of people with Chronic illness or Disability.
4 Improving patient safety in hospitals – reducing potentially preventable adverse events (harm to patients) and patient death.
5 Patient participation – both in the consulting room and in research.
6 Providing relevant knowledge, and moderating between different stakeholders, the case of substitution.

Conclusions

NIVEL responds to, and invests in, the impact upon society of its research. NIVEL has developed a framework which distinguishes between relevance to, and impact upon, society in order to measure its performance. The results show our process of impact via a large variety of activities (collaboration, website visits, presentations, feedback reports, newspaper coverage, social media). The narratives are good examples of continuous interaction between research results and utilisation of these results by stakeholders.

5 PhD programme and integrity

NIVEL has two types of PhD theses, those based on projects where the intended output is a PhD thesis and, secondly, those based on research commissioned with the primary aim of producing reports oriented towards policy. The first type is comparable to PhD students at university. As such it is a long-term research project, usually funded by ZonMw, MoE, NWO or charity funds. During the review period 19 researchers (Table 5.1) were PhD students on projects intended to produce a dissertation, of whom nine successfully defended their dissertation by the end of 2015, with a mean duration of 59 months from the start to the defence. We expect a further seven to defend their dissertation in the near future. Three researchers discontinued writing their thesis based on this type of PhD.

For the second type, it is difficult to say how many researchers are actually working on a PhD thesis at any one time, because the projects in themselves were not intended as PhD projects. Instead, a PhD thesis gradually emerges. This type is more difficult than the first as the outcome is uncertain, and it takes longer in comparison with a PhD thesis based on a specific PhD proposal. At the same time, it enhances the scientific quality of this commissioned research and contributes to building the capacity of health services research. NIVEL stimulates these types of PhDs by giving people time off from other project duties in the final stages of writing their PhD thesis or by finding other funding to finalise the PhD thesis. During the review period twenty NIVEL researchers successfully defended their thesis, of whom seventeen received time off, funded by an MoE subsidy, in order to finalise their PhD thesis. From another six researchers who received time off we expect that they will defend their dissertation in the near future. One researcher who received time stopped working on the thesis. By the end of 2015, another 24 researchers were writing articles, based on commissioned research, which will ultimately constitute their PhD thesis.

Table 5.1 PhD rates (2010-2015)

Type of PhD	Number of PhD researchers	Successfully defended PhD theses	Number of researchers still working on PhD	Number of researchers stopped working on
Type 1: a long-term research project is the basis for a PhD project from the start.	19	9	7	3
Type 2: based on several commissioned research projects.	27	20	6	1
Total	*46*	*29*	*13*	*4*

Box 5.1 Some typical examples of PhD theses at NIVEL (both types)

Type 1: comparable to PhD students at university: a long-term research project is the basis for a PhD project from the start. Planned output: PhD thesis.

> Vliet, L.M. van. Balancing explicit with general information and realism with hope: communication at the transition to palliative breast cancer care. Utrecht: NIVEL, 2013, 296 p. Dissertation Utrecht University (type 1)

Type 2: based on several commissioned research projects. The projects in themselves were not intended as PhD projects, but gradually developed into a PhD thesis. Planned output: policy-oriented reports.

> Coppen, R. Organ donation, policy and legislation: with special reference to the Dutch organ donation act. Utrecht: NIVEL, 2010, 211 p. Dissertation Tilburg University

Overall, twenty-nine NIVEL PhD theses were successfully defended in 2010-2015, which amounts to an average of five dissertations per year (see also appendix 12). This improves upon the previous review period of 2003 to 2009, when 23 PhD theses (on average four per year) were defended by NIVEL researchers. Researchers working on a NIVEL PhD have at least two supervisors, of which at least one is a NIVEL professor.
All researchers working on a PhD become a member of the research school CaRe↗, which gives them access to its PhD training programme (see also ↗ and appendix 14). In addition, NIVEL stimulates and facilitates the continuous education of all its employees, including PhD students and supporting staff (see appendix 4). As a result PhDs also have access to the educational activities which are organised in-company or to other courses which can be followed elsewhere. Apart from formal courses, they also keep up-to-date by attending research conferences. The policy on attendance at international conferences is that attendees should have an abstract accepted for an oral or poster presentation. Attending international conferences encourages researchers to publish their results in international journals. On average, members of the research staff visit an international conference every two years.

NIVEL staff are also involved as advisors in PhD projects at other institutes (for 44 defended PhD theses in 2010-2015), and NIVEL attracts young researchers who defend their PhD thesis, written at another institution, while working at NIVEL (ten times in 2010-2015 – see appendix 12).

Assuring the quality of the research process and scientific integrity

The quality assurance of the research process at NIVEL is integrated into the quality system (see appendix 5). The development of the quality system started in 1997 and ISO certification was granted in 2000. The most recent re-certification was granted in 2014↗. The external auditors see NIVEL as a flexible organisation with a well-developed policy cycle. The quality system is regularly evaluated and updated based on external and internal audits. NIVEL is currently preparing to acquire the NEN7510 certificate for the management of information security for its Primary Care Database↗.

Policy on integrity: the basic principles

NIVEL has drawn up its own code for carrying out research with basic principles of conduct for its employees; the NIVEL Code for Research. This code is based on the code of the Association of universities in the Netherlands (VSNU) and adjusted to the activities of NIVEL. These principles include the competences, honesty and accuracy, reliability, verifiability, independence, impartiality, and responsibility of the employees of NIVEL. Furthermore, NIVEL has a procedure to report suspected violations of integrity by employees, has a dedicated committee on integrity, has a certified confidential counsellor and is an affiliate of the National Board for Research Integrity (LOWI). Small teams of researchers recently started playing the ‘Dilemma Game’, discussing dilemmas which could impede integrity.
It is essential to guarantee the integrity of employees by creating an environment in which people feel safe to report their weaknesses and doubts on the quality of their work. The employee questionnaire of 2016 shows that 88% of the respondents indicated that they feel safe to report their doubts about their work to their supervisor or colleagues. On the other hand 2-3% indicated that they do not feel safe to report their doubts to their supervisor or colleagues.

Conclusion

Despite the partially different situations for NIVEL PhD students (more short-term commissioned research instead of long term projects in universities), PhD students follow a tailored training programme and are a member of the broader research school CaRe. Type 2 PhD students have a more difficult position than type 1 PhD students.
Awareness of the importance of scientific integrity is well embedded in the quality system, the open organisational culture and the NIVEL Code for Research.

6 The viability of the institute, SWOT analysis and strategy for the future

NIVEL targets:

1. NIVEL conducts health services research and is even more responsive to the needs of science, policy and professional practice.
2. Keep scientific impact at or above the international average.
3. To increase the number of external collaborative projects and activities, including industry.
4. To use the NIVEL databases and panels better so as to be able to answer more complex questions facing society and attract more funding.
5. To increase the impact upon society through the use of knowledge and by having a demonstrable effect on policy and practice.
6. Strengthen development of researchers with a high potential and teamwork.

In this chapter we will describe how NIVEL is capable to achieve its targets and how we deal with external changes. NIVEL is an organisation led by professionals, which includes: a stable management; research coordinators of the various research areas programmes; senior researchers; and supporting staff with an excellent level of expertise. At the same time, all new researchers start with temporary contracts. This is intended to make NIVEL more flexible to changes in the project market.

NIVEL's staff represent several scientific disciplines. Some research projects are conducted in teams in which these disciplines work together. Others are carried out mainly by a junior researcher in collaboration with a senior researcher or programme coordinator. All the results of a project such as an article or report are reviewed and discussed finally in a broader group of researchers in the scientific meeting (WO) before submission or publication.

Management of NIVEL

During the evaluation period, Prof. Peter P. Groenewegen, PhD, was director of NIVEL. On 1 January 2016 he was succeeded by Prof. Cordula Wagner, PhD, former programme coordinator at NIVEL. The director is assisted in his or her daily management tasks by four Heads of Research Departments - reduced to three from 2016- and the Deputy Director of General Affairs (see appendix 2).

NIVEL has a Supervisory Board which consists of five members. Together they cover competencies in scientific research, finance, health care policy and legal areas. The Supervisory Board is the employer of the Director, advises on NIVEL's policy and research programme and approves both the annual financial documents and annual report.

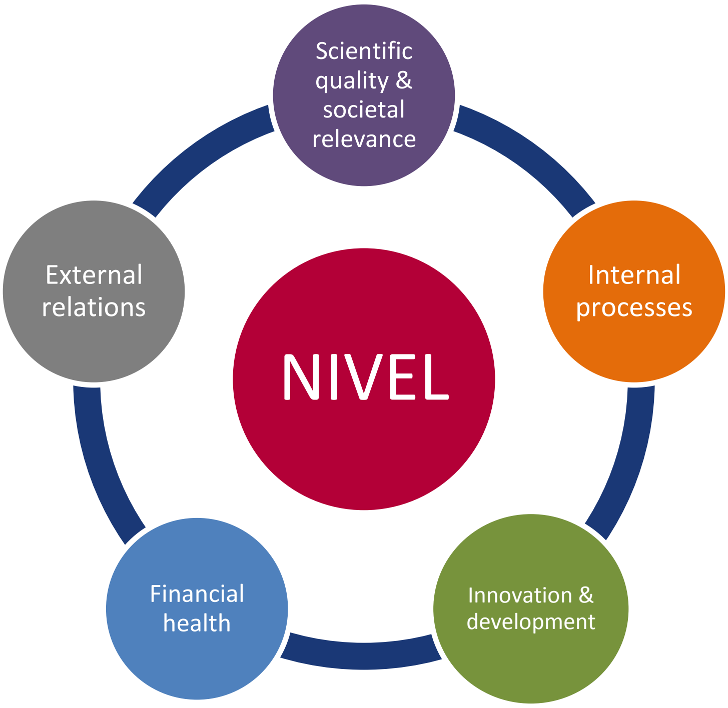
NIVEL's overall research programme consists of several more or less permanent research areas which are managed and developed by twelve programme coordinators (see appendix 3). They are responsible for the acquisition of new research projects in their research area.

They maintain their own societal and scientific network and they supervise research projects. The programme coordinators are academic leaders who are active as researchers as demonstrated by their publications. Four of them also hold a professorship at one of the Dutch universities, and one holds a second professorship at a Norwegian university.

In 2010 the review committee advised NIVEL to involve the programme coordinators more closely in the strategic management of the institute. Since 2010 project and management information has been improved, which encouraged discussions on strategic management during the staff meetings. Furthermore, once a year a Staff Day is held which focusses on selected strategic topics. This meeting is prepared by programme coordinators.

Twice a year the performance of the institute is evaluated in a regular meeting of the management and all programme coordinators. These meetings have contributed to developing a set of indicators to keep track of the scientific quality and the relevance to society, the financial situation of the institute, external relations, innovation and development, and internal processes (Figure 6.1). As far as possible, we follow agreed quality indicators. The evaluation of NIVEL's performance forms the basis for the yearly management letter. Below, we will describe the different performance fields. The fields of scientific quality and relevance to society, including external relations and collaborations have been described in Chapters 3 and 4.

Figure 6.1   Fields on which the performance of NIVEL is monitored



Internal processes: communication and collaboration

A large amount of 'tacit knowledge' is communicated in informal meetings between members of the organisation. In addition there are a number of formal communication structures. These include the monthly meetings of the research departments and the two-weekly review meeting evaluating the quality of articles, reports and proposals. Meanwhile, the Intranet combines access to official information and informal messages. The Intranet is used to update colleagues on relevant documents and information such as that concerning quality and human resource procedures. Weekly information from the management team meetings is communicated through intranet. A chronicle of important events, developments and projects is prepared for each meeting of the Supervisory Board and this is available to all employees.

Apart from collaboration within research projects and broader research areas, a number of regular committees exist within NIVEL. These are meant to monitor and improve the processes and outcomes of research. The composition is diverse, combining different areas of expertise. In 2015, the following committees existed:

- Quality Committee: focusing on evaluating and adjusting quality procedures;
- Communication Committee: advising on communication, in classic media such as newspapers, radio and television and on the internet, on our own website, and on social media;
- ICT Committee: focusing on ICT improvement, monitoring errors and looking at new developments.

HRM policy and recruitment

NIVEL's HRM (Human Resource Management) policy has clear and constant principles. Priority is given to the core activity of research. When budgetary priorities have to be set, for example in the case of budget cuts, we try to cut costs in overheads rather than in research. Because of the demographic profile of researchers, the organisation supports the combination of home and work through working part-time and being based in a location close to a railway station.

Secondly, NIVEL sees itself as an on-the-job educator of researchers, devoting considerable attention and funds to education and training (see appendix 4). As funding is mostly based on commissioned research, researchers start with temporary contracts. Their tenure depends on broad research experience, a large network in research and policy, being able to attract research grants, having a PhD, and publishing in international journals. Furthermore, the economic prospects for the institute must be sound. Forty-seven per cent of research staff hold a tenured position.

Thirdly, HRM is performed primarily by the programme coordinators as line managers. The personnel department is small and supportive. Finally, the division into research areas creates small teams of five to ten people, who can instantly react to calls for research proposals.

Major changes in the system of job evaluation for job classification and development have been implemented in 2012. This includes an update of job descriptions, improved evaluation forms, more attention for the professional development of employees, and the type of qualification. These changes have led to more focus on the competences of employees and the variety of competences which are represented in teams.

An employee questionnaire revealed that NIVEL employees are satisfied with the atmosphere at work, the variety of their activities and the appreciation of their work by their supervisor. But, the evaluation also shows that workload is high and needs serious attention.

Research support

NIVEL has three specialised support teams for data collection:

- The survey and panel research support team. This group coordinates and procures data collection through postal and internet surveys and data preparation.
- Research support based on electronic medical records (EMR). This group coordinates expertise on collecting data from EMRs of GPs, allied health professionals and psychologists. Moreover, providing feedback information to health care providers requires new and efficient technologies.
- Research support for health workforce data collection and dissemination. This groups collects data on human resources in health care and provides data for the general public about the availability of health care via the government-sponsored website KiesBeter.nl (until 2013) and later in collaboration with the National Association of General Practitioners (LHV) via the website kiesuwhuisarts.nl.

The implementation of these support teams started in 2010. This implementation has both managerial as well as technological consequences which are closely monitored by the management of NIVEL. The support teams are accountable through annual reports.
In addition to the three support teams, a small team provides statistical expertise and highly specialised statistical tools.

Innovation and development

NIVEL's core business is health services research. This has to be responsive to changes in policy and the health care environment. NIVEL's research programme is therefore changing continuously. Sometimes gradual change is not enough and new approaches and new research areas have to be developed. During the review period much emphasis was put on the positioning of NIVEL databases, panels and monitors as a strategic asset, and the development of a 'new product', the policy sensitive review for policy makers and health care professionals. Furthermore, innovation and development is part of every performance field (Figure 6.1).

Financial Health: sources of funding

Total funding can be divided into a Ministry of Health (MoH) subsidy, currently based on a six-year covenant, and project funding. An overview of the annual turnover is given in Table 6.1. For the period 2009-2012 (with extension to 2014), an extra grant of 1.5 million euros was provided by the Ministry of Education (MoE), specifically for improving the scientific quality of health services research.

Table 6.1 Funding of research in 2010-2015

	2010		2011		2012		2013		2014		2015	
	€	%	€	%	€	%	€	%	€	%	€	%
Funding:												
MoH subsidy	5.848.038	42%	6.064.420	37%	5.737.099	35%	5.092.754	32%	5.187.427	35%	5.835.458	48%
Scientific research grants*	2.370.991	17%	3.484.257	21%	3.868.611	24%	3.462.253	21%	3.278.138	24%	1.679.172	14%
Subsidies and contracts**	4.460.914	32%	4.970.673	30%	5.052.007	31%	5.600.156	35%	5.504.121	31%	3.863.341	32%
International	1.194.892	9%	1.779.823	11%	1.520.433	9%	1.973.817	12%	1.374.938	9%	863.880	7%
Total funding	**13.874.834**	**100%**	**16.299.174**	**100%**	**16.178.150**	**100%**	**16.128.980**	**100%**	**15.344.624**	**100%**	**12.241.851**	**100%**

* Research grants include NWO, charities, ZonMw and for 2010-2014 the MoE grant.

** This category contains all other temporary funding

During the years of the financial crisis NIVEL remained financially stable with a continuous portfolio of research projects. Although, in recent years, we have seen a decrease in research funding in the competitive projects market and scientific research grants. As a result NIVEL has become more dependent on the MoH subsidy. In this respect the ongoing negotiations about a new six-year period of collaboration within the knowledge infrastructure of the MoH is very important.

The MoH subsidy

NIVEL is a national research institute and partner in the knowledge infrastructure of the MoH. As such it occupies a unique position in the country's national knowledge infrastructure, distinct from universities, commercial research and consultancy organisations. It is also separate from other national institutes within the domain of the MoH. The largest part of NIVEL's MoH subsidy is earmarked for specified activities related to the national research infrastructure. This comprises databases, panels and monitors, the Center for Knowledge Exchange, and short-term policy questions to be defined by the MoH. Only part of the subsidy is earmarked for the development of the strategic knowledge base, which includes funds for matching EU-funded projects and scientific projects. The MoH subsidy for NIVEL has been reduced since 2012 by an increasing amount each year due to budget cuts. However, new activities were developed and have been added to the subsidy. The initial budget cuts were met by improving efficiency but later on it was necessary to stop activities. This occurred within the strategic knowledge base and the Center for Knowledge Exchange and resulted in reducing the number of staff.

Scientific research grants

For the scientific part of NIVEL's mission, the MoE grant and funds received in competition from charities and he Netherlands Organisation for Health Research and Development (ZonMw) are important. These grants are often intended to result in a PhD thesis.
The MoE grant provided funding for four types of activity. Firstly, there is fundamental research through new PhD projects. Then there is capacity building through additional funding for types of PhD based on commissioned projects. The third type of activity is to

improve the international visibility of health services research through short sabbaticals for writing articles for senior staff. Lastly, there are activities to strengthen NIVEL's academic position through special chairs, participation in the national and international scientific world and funding for conferences and courses. Ultimately, this is best seen as the equivalent of the direct funding of the universities. The MoE grant made a significant contribution to the scientific development and international visibility of Dutch health services research in general, and health services research of NIVEL in particular.

International

The share of international funding fluctuates. An advantage of international, in particular European Union research funding for projects is that these tend to cover longer periods of three to five years. A barrier for EU-funded research, however, is the requirement that we have to match the funding. Since 2015, the Dutch government provides some funds for matching EU-funded research. We have, in the past, invested time in becoming more closely involved in the European Commission's public health directorate general (DG) Santé. This has involved running the scientific secretariat of some of their programmes. Under our framework contract with DG Santé we have conducted five projects (PIL-S, ACTOR, PIL-SBOX, HEALIT4EU and Off Label). By the end of 2015, NIVEL was the principal executor of six EU-funded studies and a partner in another five studies (see appendix 16).

NIVEL is a WHO-collaborating centre for primary health care since 1987. In 2014, this status was confirmed in a re-certification procedure, extending the collaborative status for another four years.

The success rate of grant proposals

The success rate of grant proposals is an important indicator of the earning capacity of NIVEL. Results show that the success rate of research funding oriented towards policy is higher (58%, range 51%-65%) than that of scientific research funding (46%, range 34%-57%). At the same time scientific funding per project is greater.

SWOT analysis

The strengths, weaknesses, opportunities and threats, or SWOT, analysis is based on discussions in various meetings of NIVEL's scientific staff, groups of (junior) researchers and NIVEL's management team. We have grouped the issues arising into the four SWOT analysis dimensions.

Box 6.1 SWOT analysis NIVEL Spring 2016

Strengths: - Assets: Research infrastructure with monitors, databases and panels. - Uniqueness: We differentiate from universities through our high impact upon society. We differentiate from commercial consultants through the quality of our research. - Strong reputation as an independent research institute. - NIVEL is a stable institute: well developed quality system; clear lines of internal responsibility and accountability - Multidisciplinary staff. - Predictability for stakeholders (you know what you get).	***Weaknesses***: - Our knowledge and the opportunities to use our assets could be made more visible to stakeholders. - Sometimes too ambitious in researching questions from practice, which results in more expensive projects or project activities at our own costs/in our own time. - The discontinuity of junior staff: two-year temporary contracts obliged by law, therefore limited possibilities for junior and post-doctoral researchers to continue to the next level.
Opportunities: - A better understanding of how to use and combine large-scale databases. - Further integration of knowledge, current research themes and people. - Keeping applicable research for stakeholders simple and in line with trends and needs of these stakeholders (customised research). - Anticipate technological developments (research methods, interventions). - Branding our knowledge and expertise and exploring new funding opportunities in the market. - Better use of talent/creativity/innovative ideas of young researchers (research traineeships).	***Threats***: - The negative influence of labour legislation on talent development and capacity building (PhD students, post-doctoral researchers). - High workload of employees(more effort needed for writing proposals than in previous years). - Fewer possibilities for funding, more short projects and more competition. - More strict privacy regulations for data use and interpretation of those regulations by national authorities.

Future strategy and policy 2016-2021 based on the SWOT-analysis

NIVEL will remain focused on the strong points raised in the SWOT analysis and will try to exploit them further. This will include: Using our large research infrastructure; our unique combination of applicable research results and sound research methodology; our strong name as a reliable and independent research institute; and the well-developed and embedded certified quality system on which to build the research processes. The six main strategic elements to also reach our targets in the future are described below. The choice of these elements is based upon the opportunities identified through the SWOT analysis and the ambition to mitigate the weaknesses and threats.

Strategy to achieve targets:

1. Diversification of both, knowledge products related to specific target groups, and research strategies such as co-creation with patients; scenario analysis; risk modelling; longitudinal analysis with big data.
2. Keep strong links with the academic community in the Netherlands as well as internationally via professorships and the PhD programme.
3. Assign each NIVEL department an area to prioritise to target initiatives for research in broad collaborations with science, policy, practice, industry and society, for example in health literacy and participation; e-Health and governance; big data and primary care
4. Branding and marketing of NIVEL databases and panels to increase visibility and subsidies in order to explore and use the research infrastructure more extensively.
5. Develop and support the implementation of tools and instruments for various stakeholders based on scientific research to increase the impact upon society.
6. Develop teamwork in research projects and find a balance with more individual paths for researchers, for example junior researcher traineeship, PhD student, post-doctoral researcher, tenure to become a senior researcher with an own area of research.

Diversification of research strategies

We will use assets such as the large NIVEL databases, panels and monitors in order to develop and specialise in upcoming research strategies, such as co-creation, scenario analysis, risk modelling and longitudinal trend analysis. In our discussions with policy and professional stakeholders, we signal the need for information about the expected impact of policy decisions. Transitions are taking place within society and health care; from specialised to primary care, from centralised regulations to community-based regulations, and from professional care to more informal care. These transitions may have a huge impact upon the quality of care and the quality of life of patients and citizens. Monitoring these changes and their possible impact will be part of the core business of NIVEL.

Keep strong links with the academic research community

NIVEL has a strong reputation for combining excellent scientific research with a great degree of relevance and applicability in policy and health care practice. The quality of our scientific products is at, or above, the international average. In order to keep and expand our visibility in the scientific world, we will continue to support programme coordinators with special chairs at universities and junior researchers working on a PhD. We also support participation in international committees and the editorial boards of scientific journals and the collaboration with international scientific organisations such as EACH and EUPHA. We will expand these existing collaborations and start new collaborations and partnerships related to our priority areas.

Promoting priority areas

NIVEL’s focus, health services research (HSR), is a broad research field combining social sciences with biomedical sciences. Research questions come from different stakeholders and one question can often be answered in various ways depending on the perspective taken. This makes the research field interesting and challenging.
NIVEL will strengthen its focus on three specific priority areas: health literacy and participation; eHealth and governance; and big data and primary care. These priority areas

are expected to be very relevant to the Netherlands, and indeed, for Europe over the next five to ten years. They are already strongly developed in one of the three NIVEL departments but they could gain more visibility and strength through additional focus and funding.

The branding and marketing of NIVEL's research and information infrastructure

NIVEL distinguishes itself from other research organisations through several large-scale national databases, monitors and panels. This research infrastructure is used to answer complex questions facing society through a unique combination of specialised technical knowledge of the research infrastructure together with considerable knowledge of the research topics. In order to raise large research funds in the future, we will raise the visibility of the unique opportunities of NIVEL's research infrastructure and the opportunities offered by combining different databases. A tailored communication and marketing plan will highlight the opportunities offered by our unique research infrastructure.

The development of products for the different stakeholders in society

The main products of NIVEL research for the different stakeholders in society are reports, policy sensitive reviews, factsheets, infographics, presentations, and invitational conferences. These research products aim to disseminate research results, transferred into applicable information and recommendations for policy and professional practices. The discussions during invitational conferences stimulate and support professional organisations in their efforts to improve health care delivery for patients.

We now have to find additional ways to capitalise on our services to our stakeholders and to find a balance between the research budgets and the products we deliver for these budgets. One possibility for gaining some additional funding is the development of tools and instruments for health care organisations. These include such initiatives as: "dashboards" with quality indicators for general practitioners or hospitals; implementation guidelines for proficiency checks for the use of medical technology; measurement tools with automated feedback reports for patient safety culture; and self-assessment tools for manpower planning in long-term care institutions. All these activities strengthen the dissemination of, relevance to, and impact upon society of NIVEL research.

The development of teamwork in balance with talent management

To be able to answer the more complex questions facing society in the future, the general expectation is that research will be organised more often in multidisciplinary teams in larger communities. These may include public-private partnerships and centres of excellence around specific research topics. The challenge will be to move from a very individualistic way of exercising science to a more teamwork-based approach. This will make it necessary to find other ways of evaluation and other performance indicators.

It has become more difficult to offer (junior) researchers a contract for more than two years because of the changes in labour legislation and the increasing competition for research grants. This brings with it a number of limitations including less continuity in projects, less capacity building for post-doctoral researchers and fewer possibilities to complete the whole PhD trajectory at NIVEL. In these situations, we need to work more closely, together with other research institutes and in collaboration with universities. It will be a challenge to keep up the number of PhDs at NIVEL. For the future we will develop a two-year traineeship for junior researchers in order to select the most talented ones for a PhD trajectory and a tenure track for post-doctoral researchers to become a senior researcher with an own field of expertise.

Conclusions

The future will bring new challenges, but, NIVEL is a stable and well-organised research institute with a strong system for monitoring performance among five specific organisational areas. To achieve its mission, NIVEL has strong links with the academic world with professorships of tenured staff, and also in society with its close connection to the MoH and various other stakeholders in health care. We are positive that the future strategies will strengthen NIVEL's unique position and will help the organisation to adapt to changes in health care and society.

Appendices

Appendix 1 Summary of the midterm evaluation 2010-2012: Strategic challenges in reaction to the Self-evaluation 2004-2009 and the previous assessment

Challenge: Elucidate the focus of NIVEL

Ambition/target:
- NIVEL conducts health services research, in a broad sense, responsive to policy needs, but also with its own responsibility.

Response to the Self-evaluation and review committee:
- More strategic information is shared with programme coordinators;
- Topics on strategic issues are discussed during meetings with the programme coordinators and the management.

Response to the changing environment:
- An analysis on our competiveness takes place on a regular basis.

Changes in measures or additional measures:
- A new and more focussed research programme is being written, according to four perspectives;
- By discussing the focus of NIVEL on a regular basis with the programme coordinators we will elucidate the focus step by step;
- A discussion on the consequences of the structure of our research programme for the underlying matrix of the organisation will take place.

Challenge: The relationship with the environment - Protect the independence of our research while at same time being customer-oriented

Ambition/target:
- NIVEL is a network organisation;
- Publications are publicly available;
- Constant awareness of the societal relevance of our results.

Response to the Self-evaluation and review committee:
- Our (policy oriented) knowledge syntheses are successful;
- New strategic collaborations.

Consequences of the changing environment:
- The yearly consultation round has only partly been carried out;
- The number of presentations for policy makers and field organisations has decreased.

– box to be continued –

Changes in measures or additional measures:

- We will take up the yearly round of consultations;
- The number of presentations for policy makers and field organisations will be monitored;
- Internal workgroup ‘impact of our research’ has started and will develop a more systematic way of creating and measuring societal impact;
- For projects which we expect to use as showcases we will set up communication plans.
- Development of a new media strategy.

Challenge: The research - Increase scientific impact

Ambition/target:

- Scientific impact at or above world average;
- Scientific publications are mostly written in collaboration and published in peer reviewed journals with an impact factor;
- NIVEL has an international orientation.

Response to the Self-evaluation and review committee:

- Scientific output has again increased;
- A slight increase in scientific impact according to the analysis of CWTS, but recently tends to decrease again;
- All programme lines are embedded in international networks;
- Strategic alliances with national collaborative partners;
- NIVEL is principal investigator in forming the HSR-Europe network;
- Professorships covering the Dutch universities.

Response to the changing environment:

-

Changes in measures or additional measures:

- An in-depth-analysis of our publications which get cited most frequently.

Challenge: The assets - Increase the visibility of our databases and panels in policy documents

Ambition/target:

- Databases and panels connected to substantive research and constant innovation.

Response to the Self-evaluation and review committee:

- Development of the NIVEL Primary Care Database;
- Contribution of our databases and panels to policy-oriented reviews.

Response to the changing environment:

- Integration of the Dutch Consumer Panel with the NIVEL Primary Care Database;
- Panel of patients with cancer;
- Spin-off of the so-called EPD-scan.

– box to be continued –

Changes in measures or additional measures:
- Development of a plan for exploitation and embedding of the NIVEL Primary Care Database;
- More frequent presentations at the MoH and other stakeholders;
- A next step is to capitalize the unique data base infrastructure in further developing international scientific collaboration.

Challenge: Funding – Increase diversity of funders

Ambition/target:
- Not-for-profit organisation with financial continuity;
- Priority is given to the core activity of research.

Response to the Self-evaluation and review committee:
- Several long-term research projects have been awarded;
- Regular monitoring of (possibilities for) funding and diversity of funders.

Response to the changing environment:
- Despite cuts in funding, NIVEL is still financially healthy;
- Investment in new and innovative topics have been made;
- Participation in several strategic alliances;
- Aim at increasing success rate for funding from international funding agencies;
- Lobby for a national matching fund for international research;
- Deliberation with universities about sharing the bonus for thesis supervision.

Changes in measures or additional measures:
- Decisions on investments will be based on regular monitoring of clearly formulated expectations;
- Staying alert on promising research topics by actively carrying out the yearly consultation round and consulting the Societal Advisory Board;
- Explore the possibilities to keep the overhead costs at the same or even a lower level.

Challenge: Management and personnel –Maintain NIVEL as a professional project organisation where people are happy to work

Ambition/target:
- Continuous education and career development;
- ‘Up or out’ policy.

Response to the Self-evaluation and review committee:
- Discussion on an organisational model which combines broad expertise with specialisation;
- From continuous education and in career development of specific groups to continuous education and in career development of all employees at NIVEL.

– box to be continued –

Response to the changing environment:

- Observation of increased pressure on (groups of) employees;
- The discussion on an organisational model which combines broad expertise with specialisation has been temporarily replaced by a discussion on the embedding of the NIVEL Primary Care Database.

Changes in measures or additional measures:

- Regarding the increased pressure on employees, the results of the evaluation of human research management in 2013 will be discussed within the research departments, programme lines, and as part of the personnel evaluations. When necessary, customized measures will be taken;
- Attention will be paid to the balance between work and the home situation as part of internal courses for both employees as well as supervisors;
- In general, communication on changes at NIVEL will have the attention of the management, and in particular changes in work processes of research support employees.

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Appendix 2 The management of NIVEL

During the evaluation period, the director of NIVEL was Professor Peter P. Groenewegen, PhD, former head of one of the research departments. On 1 January 2016, he was succeeded by Professor Cordula Wagner, PhD, former programme coordinator at NIVEL. Prior to 2016 the director was assisted in his daily management tasks by four heads of research departments, and the Deputy Director of General Affairs. Each of the heads of the research departments was primarily responsible for a specific management area. These were:

- Prof. Roland Friele, PhD (Deputy Director of Research): publicity, Centre for Knowledge Exchange (CKE).
- Prof. Jany Rademakers, PhD: quality assurance and continuous education.
- Prof. Dinny de Bakker, PhD: information systems and research-related ICT.
- Prof. François Schellevis, PhD, MD: international relations and international research activities.

Mrs Machteld Roos, MSc (Deputy Director of General Affairs) is primarily responsible for finances, human resources, housing and equipment and ICT.

Information is shared at the weekly meetings of the management team. All formal decisions, including those concerning the acquisition of new projects, have to be agreed at these meetings.

Since 2016, NIVEL has had three research departments. The responsibility for the international aspects of research now lies with the director.

The Supervisory Board

Since June 2009, NIVEL has had a Supervisory Board. This consists of five members who supervise management at arm’s length. Together they cover competencies in scientific research, finance, health care policy and legal areas. The powers of the Supervisory Board include: the employment of the Director, advising on NIVEL’s policy, approving annual financial documents and the annual report, advising on the research programme and on the connection between research, policy and the health care field.

By the end of this evaluation period (2015), the members of the Supervisory Board were:

- Prof. E.C. Klasen, PhD: Chairman.
- W. Geerlings, MD.
- Prof. J. Gussekloo, PhD.
- G.J.A. Hamilton, LLM.
- Prof. A.G. van der Lippe, Phd.

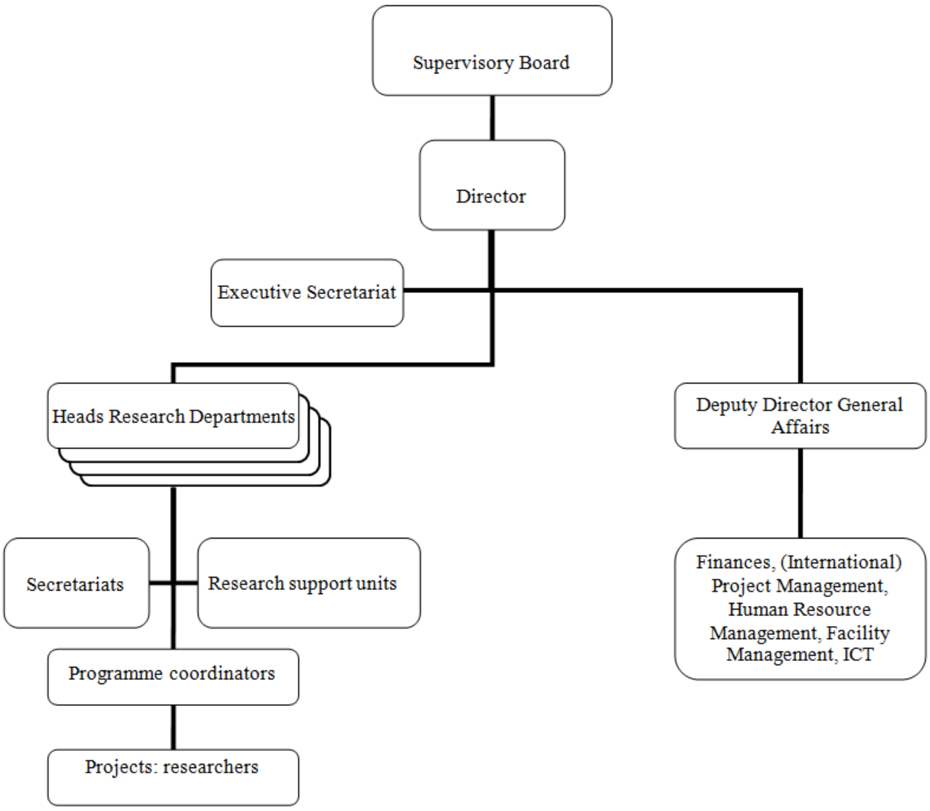
The management of research projects

The chart (see below) shows the internal organisation of NIVEL. NIVEL’s research programme consists of several, more or less constant, programme lines which are managed and developed by twelve coordinators. These are responsible for the acquisition of new research projects in their programme line. They maintain their own societal and scientific network and they supervise research projects. The programme coordinators are academic leaders who remain active as researchers, as witnessed by their publications. Nearly half of them also have an academic position. By the end of this evaluation period (2015), the programme coordinators were, in alphabetic order:

- R.S. (Ronald) Batenburg, PhD, Professions in health care and manpower planning.
- H.R. (Hennie) Boeije, PhD, Care demand of the chronically ill and disabled.
- L. (Liset) van Dijk, PhD, Pharmaceutical care.
- Prof. A.M. (Sandra) van Dulmen, PhD, Communication in health care.
- Prof. A.L. (Anneke) Francke, PhD, Nursing care.
- Prof. R.D. (Roland) Friele, PhD, Evaluation of health law.
- J.D. (Judith) de Jong, PhD, Health care system and governance.
- J.C. (Joke) Korevaar, PhD, General practice care.
- A.M.C. (Anne Marie) Plass, PhD, Patient centred care.
- T.M. (Tim) Schoenmakers, PhD, Local organisation of care services.
- R.A. (Robert) Verheij, PhD, NIVEL Primary Care Database.
- Prof. C. (Cordula) Wagner, PhD, Organisation and quality of health care.

All programme lines are embedded in the international research network.

Organisational chart of NIVEL



The management and programme coordinators meet five times a year, preceding the meetings of the Supervisory Board. These staff meetings discuss periodic evaluations, the general state of affairs, quality management and strategies for the future. These meetings are prepared by the management team and chaired by the director.

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Appendix 3 Staff and composition

The current numbers of researchers and support staff are expressed in full-time equivalents (FTEs). This is a measure of the size of NIVEL over the years and places output in perspective, for example in terms of the numbers of publications. Because of the large share of commissioned research at NIVEL, most researchers enter as temporary staff. Tenured staff include all those with a permanent contract. They all hold a PhD and comprise mainly senior researchers, programme coordinators and scientific management. Support staff consists of two subgroups: research support staff (including NIVEL's Centre for Knowledge Exchange [CKE]), and other support staff, such as financial and personnel departments.

Table 1 Research staff in full-time equivalents between 2010 and 2015

	2010	2011	2012	2013	2014	2015
Tenured staff	34.2	38.0	39.6	34,53	38,94	38,5
Non-tenured staff	64.6	64.5	67.1	67,83	59,94	43,8
*Of which PhD students**	*9.3*	*12.8*	*11.9*	*13,05*	*8,78*	*3,78*
Total research staff	**98.8**	**102.5**	**106.65**	**102,36**	**98,88**	**82,3**
Research support staff	32.8	35.7	36.9	40,3	37,8	31,7
Other support staff	19.3	19.6	19.1	19,2	18,4	18,5
Total staff	**150.0**	**157.9**	**162.7**	**162,4**	**155,7**	**132,5**
Share of scientific staff	65.9%	64.9%	65.6%	63%	64%	62%

* We count those working on a project that was intended from the start as a PhD project as PhD students.

The staff numbers fluctuate over the years. In the period 2010-2012 total numbers increased. After 2012 they decreased. The 2015 level was the same level as before 2009.

NIVEL is a multidisciplinary research institute. This is mirrored in the background of the researchers. Many researchers are trained in two disciplines, for instance, a profession, such as medicine, nursing or physiotherapy, and another discipline, such as psychology, sociology or health sciences. More than half of the researchers hold a PhD degree.

PhD students at NIVEL

The scientific aspirations of NIVEL are reflected in, among other things, PhD dissertations. Twenty-nine dissertations were defended in 2010-2015, averaging five dissertations per year. By comparison, during the period 2004 to 2009, 23 dissertations by NIVEL researchers were defended (3.8 per year on average).

Table 2 Educational background, and share of PhDs, among NIVEL researchers (% of scientific staff)

Educational background	2010	2011	2012	2013	2014	2015
Medicine	7%	7%	7%	3%	3%	3%
Nursing	2%	2%	4%	3%	5%	2%
Allied health prof.	12%	9%	10%	9%	6%	6%
Health Sciences	18%	17%	14%	19%	16%	19%
Psychology	25%	23%	32%	27%	28%	26%
Social Science	28%	34%	30%	28%	28%	30%
Other	32%	30%	24%	29%	33%	35%
No. holding a PhD	53	60	58	58	59	65
%. holding a PhD	49%	51%	49%	52%	54%	64%

Researchers who complete their dissertation at NIVEL can follow one of two paths. Some work on commissioned research and base their PhD on scientific articles arising from these projects. The projects in themselves were not intended as PhD projects, but gradually a PhD thesis emerges. NIVEL stimulates this type of PhDs by allowing people time off from other project duties in the final stage or by finding other funding to finalise the PhD thesis. This second type of PhDs is comparable to PhD students at universities: a long-term research project, usually funded by ZonMw, NWO or charity funds, is the basis for a PhD project from the start. In the period 2009-2012, seven of such PhD trajectories were started and financed as part of a Ministry of Education (MoE) grant for the scientific activities of NIVEL. This facility has led to an increase in the number of the full-time equivalents for PhD students. The budget of the MoE grant was available until the end of 2014 and thus this resource is no longer available for PhD students.

NIVEL's staff members are also involved as supervisors, or co-supervisors in PhD projects at other institutes. In the period 2010-2015, 44 of these external dissertations were defended (seventeen in 2004-2009). Finally, NIVEL attracts young researchers who defend their PhD thesis, mainly written at another institute, while working at NIVEL (10 in 2010-2015, 18 in 2004-2009).

Scientific versus societal research staff

NIVEL has a mission to perform high quality scientific research which has a significant impact upon society. Therefore, we also present the *estimated* breakdown in FTEs for scientific research, as well as research products investigating societal issues and orientated towards policy. We adapted the categories of time allocation, as used in university settings, to NIVEL's specific situation. In line with NIVEL's mission, we distinguish, apart from administration, scientific research input and societal research input. The allocation of inputs to each of these categories (see table 3) is broadly based on our experience with the actual use of time.

*Table 3 Estimated breakdown of working time in 2009-2014**

	Scientific research	Societal research	Administration
Tenured staff	30%	40%	30%
Non-tenured staff	25%	65%	10%
PhD students	65%	25%	10%

* Until 2009, the percentage of scientific research for tenured staff was 20%, and the percentage of policy oriented research was 50%. The time available time for scientific as well as societal research is slightly higher since 2009 because of the MoE grant. From 2015 on, we returned to the breakdown used before 2009.

Using these fixed percentages and the total numbers of FTEs (table 1) for each of the three categories, we have estimated the scientific input and the input for societal research (table 4).

Table 4 Scientific input and input for societal research, in full-time equivalents, 2010-2015

	2010	2011	2012	2013	2014	2015
Input for scientific research						
Tenured staff	10.3	11.4	11.9	10.4	11.7	7.7
Non-tenured staff	13.8	12.9	13.8	13.7	12.8	10.8
PhD students	6.0	8.3	7.7	8.5	5.7	0.5
Subtotal scientific input	30.1	32.6	33.4	32.6	30.2	19.0
Input for societal research						
Tenured staff	13.7	15.2	15.8	13.8	15.6	19.3
Non-tenured staff	35.9	33.6	35.9	35.6	33.3	28.0
PhD students	2.3	3.2	3.0	3.3	2.2	0.2
Subtotal societal input	52.0	52.0	54.7	52.7	51.1	47,5

Recruitment

On average, vacancies are filled within six weeks. Nearly one fifth of the job opportunities in 2010-2015 were filled with an internal candidate (nearly one third in 2004-2009), providing extended contracts for researchers who were assessed positively. Nearly one third of the vacancies were filled by an external candidate who reacted to the vacancy on our website, one fifth were filled by a candidate from our network, and 10% were filled with a candidate who saw the vacancy on Academic Transfer.

The efforts of human resource management towards unsolicited applications have been reduced, as, in recent years, unsolicited applicants were employed only occasionally.

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Appendix 4 The training and employment of the next generation of researchers

Introductory period

New employees are introduced to the institute by their direct supervisor. In addition, there is an introduction about NIVEL's human resource management (HRM) policy, daily procedures and quality system and procedures which include, in particular, the use of a logbook in research projects, data management and integrity. The director provides information on NIVEL's history and mission and has an individual interview with all new employees. Since 2004, we have monitored how these meetings were rated by new employees. The average assessment was generally high - approximately eight on a ten-point scale. Therefore, we decided instead to ask new employees for feedback at the end of each session and to stop monitoring the introduction by a survey.

Personnel evaluation

Personnel evaluations constitute the most explicit opportunity to discuss employees' career and training prospects. Based on the quality procedures, an employee should have an evaluation at least once a year, of which a record is kept in personnel files. In 2007, it was decided that the number of personnel evaluations was too low and should be increased. In 2015, the number of evaluations recorded significantly increased. Only 14% out of 174 of the evaluations planned for that year did not take place and were held over to 2016. This improvement resulted in greater attention to the quality of these evaluations. New evaluation forms were introduced as part of the implementation of the changes in the system for job classification and development. These forms provide space for input from both the supervisor and the employee. Furthermore, these forms pay more attention to making agreements on professional development.

Continuous education

NIVEL both stimulates and facilitates the continuous education of all its employees, including PhD students and supporting staff. It is important for both the individual and the institute that employees keep their knowledge and skills up to date. Some educational activities are organised within NIVEL; other courses can be followed elsewhere, for example at the research school (CaRe) in which NIVEL participates.

Table 1 Courses followed by NIVEL researchers (numbers of participants)

	2010	2011	2012	2013	2014	2015
Academic writing in English / presenting skills in English	12	17	27	27	24	8
Statistics and methodology courses	33	64	60	25	33	9
Other research skills	17	12	17	13	17	4
General computer skills	10	12	12	13	5	4
Other (including management courses)	70	70	44	46	47	26

* Course attendance may vary between years as some of the in-house courses are offered once every two years.

Apart from formal courses, researchers also keep up to date by attending conferences. The policy on attendance at international conferences is that attendees have an abstract accepted for an oral or poster presentation. Attending international conferences encourages researchers to publish their results in international journals. The number of conferences attended varies between the years. On average, approximately 150 conferences, invitational conferences and other meetings are attended yearly. Given that there were more than 110 research staff in this period, this amounts to some 1.4 conferences per year per researcher. A little less than one third of these conferences are international. Expenditure on continuous education and conference attendance is around 0.5 per cent of total NIVEL turnover. This figure does not include the important educational effect of the internal peer review meetings and internal courses. There are no comparable figures for other institutes with which to compare this.

Table 2 Conferences attended by NIVEL researchers

	2010	2011	2012	2013	2014	2015
International	49	53	46	38	45	50
National	62	58	61	54	66	78
Expert meetings	30	32	32	25	33	55
Other meetings	6	8	2	2	8	9

Table 3 Annual costs of continuous education and conference attendance

	2010	2011	2012	2013	2014	2015
Costs in euros	68.966	95.741	110.941	104.901	95.333	75.676
Share personnel costs*	1,05%	1,39%	1,52%	1,44%	1,31%	1,04%
Share of total turnover	0,50%	0,59%	0,69%	0,65%	0,59%	0,47%

* This includes both direct personnel costs (wages) and indirect costs, including social expenses.

The number of people who attended an international conference over a period of years is quite stable. However, the number of internal courses has increased over a period of years. Nowadays, NIVEL organises several statistical and health services research courses each year. This seems to be an explanation for the lower level of expenses for continuous education.

Short-term research / writing leave

NIVEL's ambition to connect relevance to society with scientific quality can put pressure on researchers. Research orientated towards policy is usually commissioned research with strict deadlines. Research projects differ greatly in length, but there is a tendency towards shorter projects. In view of the strict deadlines, a first priority is usually to finish the report in time. This is to the advantage of research products looking at society and can be to the detriment of the scientific research. To reduce some of the pressure related to NIVEL's mission, NIVEL introduced the option of short-term leave of absence in 2000, for the purpose of working on a scientific article. From 2010 to 2015, 41 researchers availed themselves of this opportunity - an average of 6.8 per year (6.7 per year from 2004-2009). From 2009 to 2014 the MoE project grant facilitated senior researchers and programme coordinators in taking a onemonth writing leave each year. Of the 41 writing leaves, 25 have been financed by the MoE project grant.

Mobility of researchers

One of the positive side effects of the on-the-job training function of NIVEL is that researchers who leave NIVEL usually find other employment easily. As this employment is mainly in the health care sector, be it research or policy, those who leave NIVEL become part of the wider network of the institute. Thirty researchers left NIVEL in 2015. Of the 20 whose employment after leaving NIVEL is known about, four went to a university position, five to a research position elsewhere and another 11 to a policy position. We have no information on the subsequent career of the remaining ten. Periodically a researcher comes back, after a period of personal and professional development outside NIVEL.

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Appendix 5 Quality assurance

Research processes can be divided into several stages. Procedures and work instructions are followed for each stage to guarantee the quality of our research and to prevent violations of its integrity.

Peer review of research proposals and publications

The main aspect of NIVEL's quality assurance consists of peer review meetings. All research products including proposals, reports, articles and books are peer reviewed. The peer review meetings focus on scientific quality. They are obligatory for all researchers and are conducted on the basis of rotating participation. Currently the meetings are held twice weekly in order to have frequent opportunities to bring in work for review and workable amounts of products to discuss. The current organisation of the peer review meetings resulted from an internal audit of the meetings.
All research proposals are also evaluated by the management team with a focus on feasibility, the proposed budget, planning, staffing, potential risks, as well as strategic considerations. The management team also monitors data protection rules, ethical review and the formalisation of collaborative relations.

Staffing of projects and continuous education

Hiring and selecting personnel is an important aspect of the composition of research teams. Therefore, rules for hiring and selecting personnel are laid down in the NIVEL quality manual. The quality and integrity of research processes is assured within a hierarchical order. This means that programme coordinators are responsible for the projects which are under their supervision and have regular meetings with the researcher or researchers conducting the project. The heads of the research departments are in turn responsible for the programme coordinators. To get acquainted with the NIVEL quality system, new personnel are provided with introductory meetings and undergo training in quality issues each year.
NIVEL assesses and monitors conference attendance and the need for continuous education every year. Based on the results, a yearly plan is drawn up for education and competence development.

Project implementation and data management

Transparency and accountability through research logs

Some research projects are conducted in teams, in which disciplines work together, others are done mainly by a researcher in collaboration with a senior researcher or programme coordinator. To guarantee the continuity of research projects, it is important that research activities are transferable between employees. As part of our quality system, regular project meetings take place between those working on the same project and the programme coordinator or senior researcher. In addition, researchers have to keep an electronic logbook of their project in order to support that the research can be reproduced and knowledge can be transferred.

Data collection and protection

NIVEL uses several methods to collect data. Instructions are included in the NIVEL quality manual for each of these methods. These instructions aim to guarantee the integrity of the data and the privacy of participants involved in the study. First and foremost, research should not be performed by only one researcher. Most research projects are supervised by at least a programme coordinator. It is our ambition to conduct research increasingly in teams.

Most of the data collection related to our databases, panels and monitors is performed by the research support teams. Survey research data is collected by the survey and panel research support team. Extractions from medical records are performed by the electronic health records (EHR)) support team. Data on manpower in health care is collected by the support team for human resource registries.

Besides the activities of the research support teams, researchers themselves collect data, performing interviews, video observations and systematic reviews. The integrity of interviews is, in the case of key figures, guaranteed by the interviewee's approval of the final interview report. NIVEL employs a video administrator to monitor the storage and use of the videos. Video observations take place using an observation protocol. Systematic reviews are usually performed by two independent researchers who assess the relevant abstracts.

Data processing and analysis

Data analysis usually takes place in close collaboration between the researcher or researchers and the programme coordinator. A weakness in this is the variety in the ways supervisors conceive their role. Choices which are made during the analysis are recorded in the obligatory research logs. These logs have to enable the analysis to be replicated if necessary. Both the logs as well as the data files are stored on a central server for active projects. Again, however, different employees may adhere to these principles in different ways. This is, therefore, audited regularly.

To guarantee the quality of research analysis, NIVEL offers several internal courses on statistics and other research skills. Furthermore, following a pilot in 2012, we now replicate four scientific articles and two reports each year as an internal audit to guarantee the quality of statistical analysis. An analysis in which information is fed back to respondents, and the publication of the results traced back to individual organisations, are always performed independently by two researchers.

A large number of projects are conducted in collaboration with external parties. The advantage of such collaborations is that several researchers are involved in the research analysis. A disadvantage is that NIVEL has less control over the activities of external researchers. There can be a problem of control over the data collected by partners in international projects. Because of this, we are developing and applying methods for signalling irregularities in datasets.

Data archiving and finishing a research project

After a research project is published, the relevant files are archived on a central server for closed projects. An internal audit in 2015 concluded that roughly 43% of the research project is not adequately archived on the central server. This does not mean that the data are not available as all data are stored on the server for ongoing projects, but rather that they are not stored according to our procedures for completed projects. Since 2012, in order to guarantee that all projects are uniformly archived, one employee is appointed to check and support data archiving. NIVEL has clear procedures for archiving quantitative data. In 2015 an internal working group advised on archiving qualitative data in order to enable secondary analysis of such research material.

From 2013, the monitoring of these policy measures on data management has been part of the yearly evaluation cycle.

External collaboration

We have procedures which cover the formalising of relations in collaborative projects, the evaluation of cooperation and the peer review of cooperative products. Many research projects require external collaboration. The guiding principle is that there should be a clear delineation of tasks in advance. One of the issues that have to be dealt with is the quality control of joint products. The International Organization for Standardization (ISO) certification implies that NIVEL is responsible for the quality of its work, and for any part of the work carried out by others. The products of the external partners in a collaborative project have to be reviewed within the NIVEL peer review meeting.

The evaluation and implementation of research results

NIVEL has instructions for disseminating results and arranging conferences. Special control protocols have been devised to control the feedback of information, and the disclosure of performance information to the wider public as mistakes in this type of reporting may have serious consequences.

Each publication is discussed in the internal peer review meetings. Such peer review meetings aim to guarantee the quality of our products.

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Appendix 6 Points of attention for NIVEL regarding integrity and data management

Results discussion 2012: Points of attention for NIVEL regarding integrity and data management

- *Environmental*
  - Does NIVEL demand activities from its employees which they actually cannot fulfill?
  - Is there an environment in which people can and dare to admit that they cannot fulfill these demands?
  - Activities which result in severe pressure on working time are, by definition, a risk
- *Data processing and analysing*
  - Publications in which hypotheses are not confirmed need attention and are just as important as publications in which hypotheses are confirmed
  - Analyses of the robustness of results need attention. Sensitivity analyses have to be performed more often
  - Analysing data should be a team effort
- *Data archiving*
  - Complying with our quality procedures for data archiving needs more attention
  - How can we make sure that digital research files are always archived?
  - Data management should be a part of our self-evaluation

Bibliometric performance report of NIVEL 2016

Results of the standardized output and impact analysis

Jeroen van Honk
CWTS, Leiden University
2016/04/04

Main conclusions and discussion

The main findings of the bibliometric performance of NIVEL until 2016 are as follows. Since 2001, NIVEL has set an upward trend in output (if we discard 2006 which occurs to be a remarkably productive year). From 2013 onwards we counted over 175 publications in WoS per year for NIVEL.

Such an increase of production often co-occurs with a drop of impact. In the case of NIVEL, the drop is minor but visible. Particularly in 2005-2006 we observed a severe drop of impact at the same time as the output increased, albeit temporarily. After 2007, the output increased at the same pace as before 2006, while the impact started to rise. In 2010 the impact reached its top and decreases somewhat since (though it rises temporarily again around 2012). This may be caused by the slow 'uptake' of the research at NIVEL as was observed in a dedicated study in 2014 by CWTS. NIVEL papers appeared to be cited slightly later than other papers in the same fields. This also suggests that it is too early to interpret the sharper decline in impact over the last year.

The slightly decreasing scientific impact coincides with a similar decrease of MNJS, indicating the impact of journals NIVEL gets its research published in. Choosing higher impact journals usually increases visibility and most likely impact.

Overall, despite a drop in both MNCS and MNJS over the last year, NIVEL retains a scientific impact around and just above world average, in almost all fields and for all types of collaboration.

Results

Table 1: Overview of NIVEL performance (output and impact, overall and trend)

Period	P	MNCS	MNJS	PP(top10%)
2001-2014	*1319*	*1,14*	*1,13*	*0,12*
2001-2002	93	1,34	1,23	0,14
2002-2003	89	1,25	1,28	0,12
2003-2004	111	0,87	1,05	0,07
2004-2005	135	1,04	1,13	0,1
2005-2006	188	1,05	1,16	0,11
2006-2007	204	0,9	1,04	0,07
2007-2008	161	1	1,08	0,07
2008-2009	177	1,21	1,14	0,11
2009-2010	197	1,35	1,2	0,14
2010-2011	214	1,28	1,18	0,14
2011-2012	235	1,22	1,18	0,16
2012-2013	271	1,26	1,2	0,17
2013-2014	334	1,11	1,05	0,13

Figure 1: Trend of NIVEL performance (Output (P) and impact (MNCS) of publications published 2001-2014

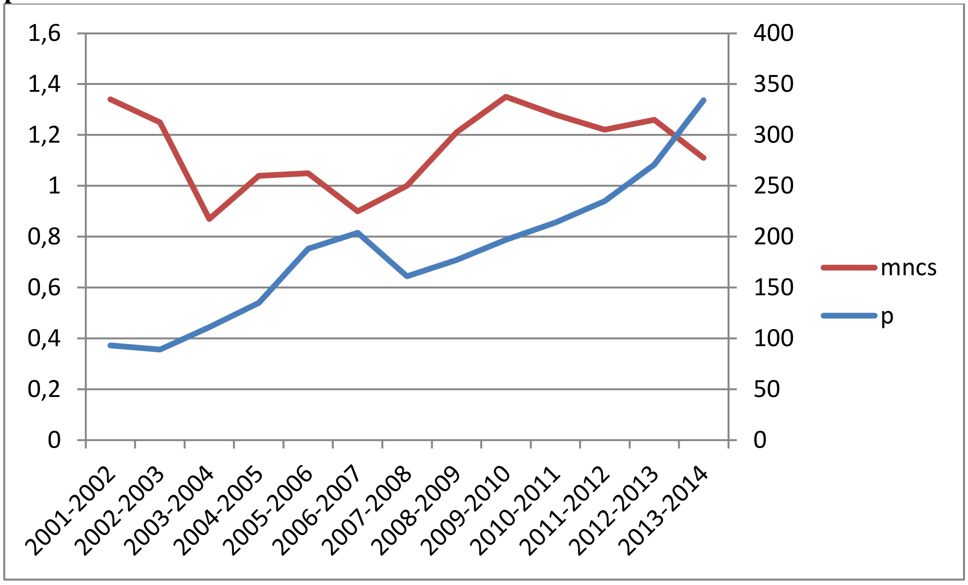

Figure 2: Research Profile of NIVEL (output and impact 2001-2014)

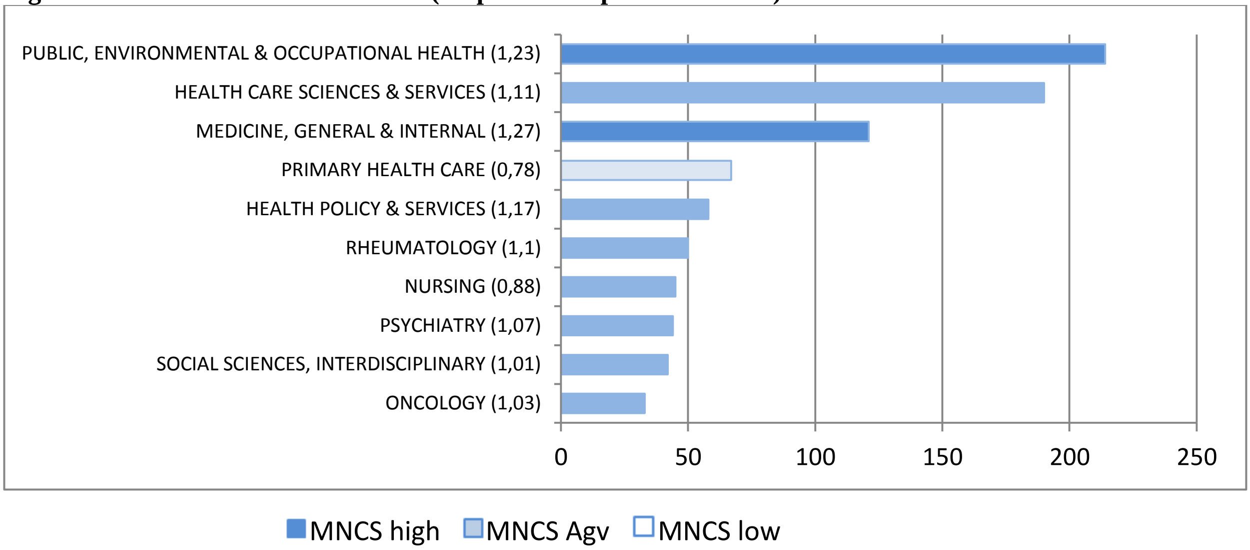

Figure 2 shows the output (x-axis) and impact (between brackets) of NIVEL publications in subfields of ISI Web of Science. The largest subfield is Public, Environmental and Occupational Health. The impact of NIVEL publications for this field is above world average. The impact of our publications in the subfield Medicine, General and Internal is also above world average and in the subfield Health Care Sciences and Services the impact is at world average. The subfield Primary Health Care has a lower impact than world average.

Figure 3: Collaboration profile of NIVEL (output and impact 2001-2014)

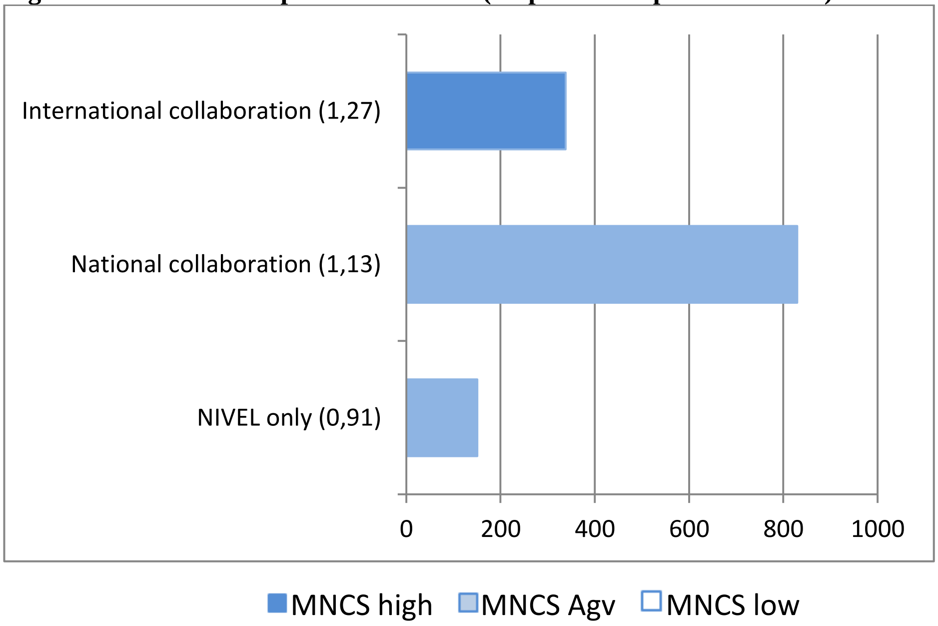

Figure 3 shows the collaboration profile of NIVEL in publications. The impact of NIVEL publications written together with international authors is above world average. The impact of NIVEL publication written with national authors or with only NIVEL authors is at world level.

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CWTS methodology (from CWTS report 2015/05/13 by Ed Noyons)

Data collection

The data in this project were collected by NIVEL. NIVEL provided WOSIDs registered in their own information system. The WOSIDs were checked with an address collection of data by CWTS. The final set of WOSIDs were matched with the CWTS bibliometric database and input to the analysis.

Methodology

In the study we included a standardized CWTS impact analysis. The impact analysis involves a sophisticated citation analysis. The new Mean Normalized Citation Score (MNCS) is a recently developed normalized way of measuring citations, explained below.

New MNCS

The impact of the output is measured by numbers of citations received. The citation impact is normalized to an appropriate benchmark, the Mean Normalized Citation Score, MNCS. As citing behavior differs from field to field and sub-field to sub-field, CWTS improved normalization. The environment of each publications is defined by a classification of individual publication in Web of Science. This publication level classification contains around 4000 research areas. These areas are based on citation relations. Publications citing each other are likely to be clustered. Hence, this structure is determined by researchers themselves (by their citing behavior), rather than by rigid field definitions. This way of normalization is used in the Leiden Ranking 2015 (launched 20 May 2015) and is closest to the earlier developed, but problematic, source normalization.

Finally, it should be noted that the period in which we calculate citations is max 4 years since publication. Self citations are excluded.

The PP top 10% measures the proportion of an oeuvre belonging to the most highly cited papers (i.e., and MNCS above 2.5) which is normally around 0.1.

A value above 0.1 indicates a relatively high proportion of highly cited papers. Other than the MNCS, this indicator is less sensitive for outliers (extremely highly cited papers) but often correlates strongly with MNCS.

The MNJS indicator represents the impact of the journals chosen in the three output sets. The MNJS is the same indicator as the MNCS but then calculated for all publications in the journals used.

Appendix 9 Two in-depth analyses of the CWTS method

1 An in-depth analysis of the four-year citation window (spring 2014)

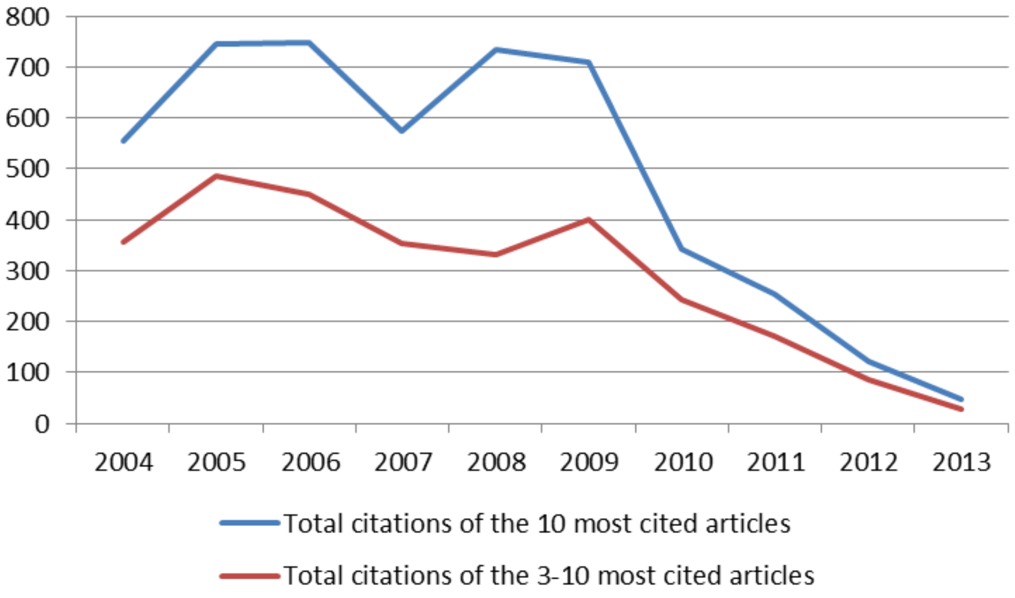
During the review period, CWTS improved its sophisticated citation analysis. The impact is now measured by the numbers of citations received, normalised to an appropriate benchmark, the Mean Normalized Citation Score (MNCS). As citing behaviour differs from field to field - and subfield to subfield - CWTS uses citing behaviour for clustering research fields, rather than rigid field definitions. CWTS calculates its indicators by using citations made no more than four years since publication - that is assuming that a publication reaches its maximum number of relevant citations in its first four years.

NIVEL assumes that in our field of research it takes more time to receive a citation. This assumption is confirmed by an in-depth analysis of the number of citations of the ten most cited articles from one year. We also analysed the best three to ten articles per year in order to correct for articles with an exceptionally high number of citations.

Figure 1 shows that only after five years, that is publications from 2009 and before, do the number of citations reveal a stable pattern. In our experience research that is not included in PubMed, such as in a social science journals, may need even more time before they receive a citation. Based on this in-depth analysis, we concluded that it takes longer for our publications to get cited than the four-year citation window normally used.

This in-depth analysis is discussed with CWTS and they confirmed that their database seems to show the same pattern for NIVEL publications.

Figure 1 Number of citations of the top ten most cited articles per year



Source: Scopus 5 February 2014

2 In-depth analysis of the subfield of Primary Health Care (spring 2014)

We made a selection using the Scopus database of all publications that is journal articles in the period from 2001 to 2013 with the affiliation "LEVEL". This database contains 1,577 items. Firstly, we analysed in which journals NIVEL published in the subfield Primary Health Care.

Table 1 shows that the publications in the first quartile are, on average, cited slightly more often. However, Table 2 shows that NIVEL published a relatively large number of its publications in the third quartile. Forty per cent were published in BMC Family Practice. We found out that many journals covered by the subfield Primary Health Care are also covered by the subfield, Medicine, General and Internal. However, in the subfield of Medicine, General and Internal, NIVEL's impact is above the international average (1.27), according CWTS. This finding is remarkable given the overlap of journals and the fact that many of NIVEL publications are published in those journals.

In order to explain the differences, we analysed whether publications in journals, which are covered by the subfield Medicine, General & Internal but not covered by subfield Primary Health Care, are cited more often than publications in journals which are covered by both subfields (see table 1).

The analysis confirms the assumption that NIVEL publications in journals, which are covered by the subfield Medicine, General and Internal, but not covered by subfield Primary Health Care, are cited more often than publications in journals covered by both subfields. This finding, however, mainly depends on a limited number of publications in three journals, The Lancet, The Journal of the American Medical Association (JAMA) and the British Medical Journal (BMJ). If we neglect these publications, which are almost all published before 2006, then the average number of citations for subfield Medicine, General and Internal is 10.7 and is approximately equal to the number of citations of subfield Primary Health Care. Apparently, we publish our high impact primary care publications in other journals than the journals covered by Primary Health Care.

Table 1 Citation analyses between subfields

	Primary Health Care			**Medicine, General & Internal**			**Medicine, General & Internal without journals which are also covered by Primary Health Care**		
	Publications	*Citations*	*Mean nr. citations*	*Publications*	*Citations*	*Mean nr. citations*	*Publications*	*Citations*	*Mean nr. citations*
Total	137	1490	10,9	198	3382	17,1	76	1894	24,9
1st quartile	39	493	12.6	52	1956	37,6	39	1855	47.6

Table 2 Number of publications in subfield and quartiles

	Primary Health Care	Medicine, General & Internal
1st quartile	39	47
2nd quartile	29	132
3rd quartile	56	13
4th quartile	13	1

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Appendix 10 Examples of international co-authored publications

Walshe, K., McKee, M., McCarthy, M., Groenewegen, P., Hansen, J., Figueras, J., Ricciardi, W. Health systems and policy research in Europe: Horizon 2020. Lancet: 2013, 382(9893), 668-669
Impact Factor: 45.217

Ginneken, E. van, Groenewegen, P.P., McKee, M. Personal healthcare budgets: what can England learn from the Netherlands? British Medical Journal: 2012, 344(e1383)
Impact Factor: 17.445

Vliet, L.M. van, Wall, E. van der, Plum, N.M., Bensing, J.M. Explicit prognostic information and reassurance about nonabandonment when entering palliative breast cancer care: findings from a scripted video-vignette study. Journal of Clinical Oncology: 2013, 31(26), 3242-3249
Impact Factor: 18.443

Muth, C., Akker, M. van den, Blom, J.W., Mallen, C.D., Ronchon, J., Schellevis, F.G., Becker, A., Beyer, M., Gensichen, J., Kirchner, H., Perera, R., Prados-Torres, A., Scherer, M., Thiem, U., Bussche, H. van den, Glasziou, P.P. The Ariadne principles: how to handle multimorbidity in primary care consultations. BMC Medicine: 2014, 12(223)
Impact Factor: 7.356

Stiefel, F., Barth, J., Bensing, J., Fallowfield, L., Jost, L., Razavi, D., Kiss, A. Communication skills training in oncology: a position paper based on a consensus meeting among European experts in 2009. Annals of Oncology: 2010, 21(2), 204-207
Impact Factor: 7.040

Albada A., Dulmen S. van, Ausems M.G.E.M., Bensing J.M. A pre-visit website with question prompt sheet for counselees facilitates tailored communication in the first consultation for breast cancer genetic counseling: findings from an RCT. Genetics in Medicine 2012; 14: 535-542
Impact Factor: 7.329

Son, G.E. van, Hoek, H.W., Hoeken, D. van, Schellevis, F.G., Furth, E.F. van. Eating disorders in the general practice: A case–control study on the utilization of primary care. Annals of Family Medicine: 2012, 20(5), 410-413
Impact Factor: 5.434

Schäfer, W.L.A., Boerma, W.G.W., Murante, A.M., Sixma, H.J.M., Schellevis, F.G., Groenewegen, P.P. Assessing the potential for improvement of primary care in 34 countries: a cross-sectional survey. Bulletin of the World Health Organization: 2015, 93(1), 161-168
Impact Factor: 5.089

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Appendix 11 International networks in HSR-Europe

NIVEL is coordinator of a European network of over 500 researchers and other stakeholders involved in health services research. The network, Health Services Research (HSR) Europe, started in 2009 as a two year running Support Action to the European Commission's Seventh Framework Programme Pillar 3 (Optimising the delivery of health care). During the project an inventory of past and current research in principal areas of HSR was made and then compared to current and future priorities for health services research. This was carried out, in particular, during a special working conference in April 2010 in the Netherlands. The resulting selection of key priorities was then used to provide guidance and inspiration for research exercises at a national level among European countries. Several of the topics identified were used in setting up the EC Seventh Framework Programme in 2012. The network has remained active after the project funding ended in order to continue in its mission of evaluating and improving the contribution of HSR to evidence-informed health care policy. Follow-up activities have included annual workshops at conferences of the World Health Organization (WHO), the European Public Health Association (EUPHA) and the European Health Management Association (EHMA). In addition, the network has organised all day meetings prior to the European Public Health Conferences in collaboration with the EUPHA Section on Health Services Research. Events so far included: In 2012, a preconference on strengthening the contribution of internationally comparative HSR to policy making; in 2014 on the preparation of a joint European research programme, a so-called ERA-NET; and in 2015 on evidence-informed policy making in health services and systems research, the latter organised in collaboration with, among others, the WHO Regional Office for Europe. These have led to better networking with other main European actors and so a further preconference meeting is currently being prepared for 2016. This will also be held in collaboration with WHO/Europe, as well as with the Consumers, Health, Agriculture and Food Executive Agency (CHAFEA) and the European Observatory on Health Systems and Policies. This will focus on evidence-informed policy making (EIP) in areas of particular relevance both from an international and a NIVEL perspective such as integrated care, cancer research and Anti-Microbial Resistance (AMR). Policy briefs and/or articles, such as in Eurohealth or The Lancet*, based on each of these preconference meetings have raised the profile of this work. Currently, a new policy brief is being prepared on defining and measuring the societal impact of HSR. The network also invests in capacity building, among others by providing preconference training sessions for PhD students both during the European Public Health (EPH) Conferences in 2013 and 2016. In addition small-scale HSR Spring meetings are held annually at NIVEL offices in order to provide an event at a low cost where researchers from the wider HSR community can present and discuss research papers in relatively small settings, for example with no more than 40 participants. The activities of the network show that relatively targeted and low cost activities can have a considerable effect. They can all contribute to improving both the scientific quality of European HSR as well as its contribution to evidence-informed decision making both in Europe and at national level. More information about the network is available at www.healthservicesresearch.eu.

* Walshe K, M McKee, M McCarthy, P Groenewegen, J Hansen, J Figueras, W Ricciardi (2013) 'Health systems and policy research in Europe: Horizon 2020'. March 18, The Lancet.

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Appendix 12 PhD-theses 2010-2015

Type 1: comparable to PhD-students at university: a long-term research project, usually funded by ZonMw, NWO or charity funds, is the basis for a PhD- project from the start. Planned output: PhD-thesis

Type 2: based on commissioned research and PhD on scientific articles based on these projects. The projects in themselves were not intended as PhD-projects, but gradually a PhD-thesis emerges. Planned output: policy-oriented report(s).

Dissertations at NIVEL

- Berg, M.J. van den. Workload in general practice. Utrecht: NIVEL, 2010, 209 p. Dissertation Tilburg University (type 2)
- Prins, M.A. Mental health care from the patient's perspective: a study of patients with anxiety and depression in general practice. Utrecht: NIVEL, 2010, 217 p. Dissertation Utrecht University (type 2)
- Damman, O.C. Public reporting about healthcare users's experiences: the Consumer Quality Index. Utrecht: NIVEL, 2010, 213 p. Dissertation Tilburg University (type 2)
- Meerhoff, T. Respiratory syncytial virus: improving surveillance and diagnostics in Europe. Utrecht: NIVEL, 2010, 159 p. Dissertation VU University (type 2)
- Pisters, M.F. Exercise therapy in patients with osteoarthritis: long-term effectiveness and the role of exercise adherence. Utrecht: NIVEL, 2010, 206 p. Dissertation VU University (type 2)
- Coppen, R. Organ donation, policy and legislation: with special reference to the Dutch organ donation act. Utrecht: NIVEL, 2010, 211 p. Dissertation Tilburg University (type 2)
- Vos, L. Towards process-oriented care delivery in hospitals. Utrecht: NIVEL, 2010, 191 p. Dissertation Maastricht University (type 2)
- Zuidgeest, M. Measuring and improving the quality of care from the healthcare user perspective: the Consumer Quality Index. Utrecht: NIVEL, 2011, 192 p. Dissertation Tilburg University (type 2)
- Albada, A. Preparing for breast cancer genetic counselling: web-based education for counselees. Utrecht: NIVEL, 2011, 289 p. Dissertation Utrecht University (type 1)
- Jansen, D.L. Living with chronic kidney disease: the role of illness perceptions, treatment perceptions and social support. Utrecht: NIVEL, 2012, 228 p. Dissertation Utrecht University (type 2)
- Dijk, C.E. van. Changing the GP payment system: do financial incentives matter? Utrecht: NIVEL, 2012, 207 p. Dissertation Tilburg University (type 2)
- Kringos, D.S. The strength of primary care in Europe. Utrecht: NIVEL, 2012, 314 p. Dissertation Utrecht University (type 2)
- Lamkaddem, M. Explaining health and healthcare utilisation of ethnic minorities in the Netherlands: a longitudinal perspective. Utrecht: NIVEL, 2013, 168 p. Dissertation University of Amsterdam (type 2)

- Vliet, L.M. van. Balancing explicit with general information and realism with hope: communication at the transition to palliative breast cancer care. Utrecht: NIVEL, 2013, 296 p. Dissertation Utrecht University (type 1)
- Vervloet, M. Have you taken your medication yet? The effectiveness of electronic reminders. Utrecht: NIVEL, 2013, 222 p. Dissertation Tilburg University (type 2)
- Beek, A.P.A. van. Social networks of nursing staff and organizational performance: a study in long-term care facilities. Utrecht: NIVEL, 2013, 191 p. Dissertation Utrecht University (type 2)
- Noordman, J. Lifestyle counseling by physicians and practice nurses in primary care: an analysis of daily practice. Utrecht: NIVEL, 2013, 283 p. Dissertation Radboud University(type 2)
- Claessen, S.J.J. New developments in palliative care: quality indicators and the palliative care continuum. Utrecht: NIVEL, 2013, 188 p. Dissertation VU University (type 2)
- Bossen, D. Join2move: a web-based physical activity intervention for patients with knee and hip osteoarthritis. Utrecht: NIVEL, 2014, 219 p. Dissertation Tilburg University (type 1)
- Kroezen, M. Nurse prescribing: a study on task substitution and professional jurisdictions. Utrecht: NIVEL, 2014, 331 p. Dissertation VU University (type 1)
- Butalid, L. Changes in doctor-patient communication in general practice. Utrecht: NIVEL, 2014, 211 p. Dissertation Utrecht University (type 1)
- Tol, J. Dietetics and weight management in primary health care = Diëtetiek en gewichtsmanagement in de eerstelijnsgezondheidszorg. Utrecht: NIVEL, 2015, 271 p. Dissertation Tilburg University (type 2)
- Schoten, S.M. van. Hospital quality systems: unraveling working mechanisms. Utrecht: NIVEL, 2015, 210 p. Dissertation VU University (type 1)
- Bijnen, E.M.E. van. Antibiotic treatment and commensal Staphylococcus Aureus Resistance in primary care in Europe. A nine-country study. Utrecht: NIVEL, 2015, 184 p. Dissertation VU University (type 1)
- Victoor, A. (How) do patients choose a healthcare provider? = (Hoe) kiezen patiënten een zorgaanbieder? Utrecht: NIVEL, 2015, 228 p. Dissertation Tilburg University (type 1)
- Boerleider, A.W. Non-western women in maternity care in the Netherlands: exploring 'inadequate' use of prenatal care and the experiences of care professionals. Amsterdam: Universiteit van Amsterdam, 2015, 205 p. Dissertation University of Amsterdam (type 1)
- Dungen, C. van den. Explaining variations in morbidity estimates: data from general practice registration networks. Tilburg: Tilburg University, 2015, 133 p. Dissertation Tilburg University (type 2)
- Heide, I. van der. Health literacy: an asset for public health. Amsterdam: Vrije Universiteit Amsterdam, 2015, 234 p. Dissertation VU University (type 2)
- Krol, M.W. Numbers telling the tale? On the validity of patient experience surveys and the usability of their results. Utrecht: NIVEL, 2015, 207 p. Dissertation Tilburg University (type 2)

Dissertations of (current) NIVEL-employees at other institutions

- Hopman, E.P.C. Group members reflecting on intergroup relations. Amsterdam: Vrije Universiteit, 2010, 117 p. Dissertation VU University.
- Hek, K. Anxiety disorders and depression in older adults. Rotterdam: Erasmus Universiteit Rotterdam, 2013, 204 p. Dissertation Erasmus University Rotterdam.
- Raijmakers, N.J.H. End of life care and decision making: opinions and experiences of the general public, bereaved relatives, and professionals. Rotterdam: Erasmus Universiteit Rotterdam, 2013, 175 p. Dissertation Erasmus University Rotterdam.
- Heins, M.J. The process of change in cognitive behaviour therapy for chronic fatigue syndrome. Nijmegen: Radboud Universiteit, 2013, 146 p. Dissertation Radboud University.
- Vergouw, D. Methodological issues of clinical prediction models for shoulder pain in general practice. Amsterdam: Vrije Universiteit, 2013, 177 p. Dissertation VU University.
- Beurs, D.P. de. Improving care for suicidal patients by implementing guideline recommendations: on the effect of an e-learning supported train-the-trainer program, and the assessment of suicide ideation. Amsterdam: Vrije Universiteit Amsterdam, 2015, 255 p. Dissertation VU University.
- Zwikker, H.E. All about beliefs: exploring and intervening about medication to improve adherence in patients with rheumatoid arthritis. Utrecht: NIVEL, 2015, 298 p. Dissertation Radboud University.
- Bomhoff, M.. Long-lived sociality: a cultural analysis of middle-class older persons' social lives in Kerala, India. Leiden : Universiteit Leiden, 2011. 243 p. Dissertation Leiden University.
- Booij, J.C. Function and pathology of the human retinal pigment epithelium. Amsterdam : Universiteit van Amsterdam, 2010. 239 p. Dissertation University of Amsterdam.
- Ursum, J. Early Arthritis: serology and sequelae. Amsterdam : Vrije Universiteit, 2011. 144 p. Dissertation VU University.

Dissertations of PhD-students at other institutions with a NIVEL (co-)promotor

- Bosch, W.F. van den. De HSMR beproefd: aard en invloed van meetfouten bij het bepalen van het gestandaardiseerde ziekenhuissterftecijfer. Amsterdam: Vrije Universiteit, 2011, 176 p. Dissertation VU University.
- Gageldonk-Lafeber, A.B. van. Enhancing surveillance for control of respiratory infections in the Netherlands. Amsterdam : Vrije Universiteit, 2011. 193 p. Dissertation VU University.
- Graaff, F.M. de. Partners in palliative care? Perspectives of Turkish and Moroccan immigrants and Dutch professionals. Amsterdam: Universiteit van Amsterdam, 2012, 217 p. Dissertation University of Amsterdam.
- Krul, M.. Musculoskeletal Problems in Children in General Practice. Rotterdam: Erasmus Universiteit Rotterdam, 2011. 159 p. Dissertation Erasmus University Rotterdam.
- Maarsingh, O.R.. Dizziness in older patients in general practice: a diagnostic challenge. Amsterdam : Vrije Universiteit, 2010. 229 p. Dissertation VU University.

- Mohnen, S.M.. Neighborhood context and health: how neighborhood social capital affects individual health. Utrecht : Universiteit Utrecht, 2012, 156 p. Dissertation Utrecht University.
- Plomp, M.G.A., Maturing Interorganisational Information Systems, Utrecht : Universiteit Utrecht, 2012. 181 p. Dissertation Utrecht University.
- Ravesteijn, J.P.P.. Factors and competences for Business Process Management Systems Implementation. Utrecht : Universiteit Utrecht, 2011. 170 p. Dissertation Utrecht University.
- Rijnders, M.. Interventions in midwife led care in the Netherlands to achieve optimal birth outcomes: effects and women’s experiences. Amsterdam: Universiteit van Amsterdam, 2011. 235 p. Dissertation University of Amsterdam.
- Twisk, M. Current value of preimplantation genetic screening. Amsterdam: Universiteit van Amsterdam, 2011. 131 p. Dissertation University of Amsterdam.
- Uijen, J.H.J.M. Respiratory diseases in children. Studies in general practice. Rotterdam: Erasmus Universiteit Rotterdam, 2011. 153 p. Dissertation Erasmus Universiteit Rotterdam.
- Wetering, R. van der. A Strategic PACS Maturity Approach. Utrecht : Universiteit Utrecht, 2011. 196 p. Dissertation Utrecht University.
- Zwaan, L. Diagnostic reasoning and diagnostic error in medicine. Amsterdam : Vrije Universiteit, 2012. 192 p. Dissertation VU University.
- Baliatsas, C. Non-specific physical symptoms in relation to actual and perceived exposure to electromagnetic fields (EMF): a multidisciplinary approach. Utrecht: Universiteit Utrecht, 2015, 191 p. Dissertation Utrecht University.
- Casas Ruiz, L. Microbial exposures, cleaning products and child health. Barcelona: Universitat Pompeu Fabra, 2013. Dissertation Universitat Pompeu Fabra.
- Rodriguez Gonzalez, E. Influencia de la exposición ocupacional en la enfermedad pulmonar obstructuva crónica. Barcelona : Vall D’Hebron Institut de Recerca, 2014. Dissertation Vall D’Hebron Institut de Recerca.
- Korte-Verhoef, R de. Reasons and avoidability of hospitalisations at the end of life. Perspectives of GPs, nurses and family carers. Amsterdam: Vrije Universiteit, 2014, 179 p. Dissertation VU University.
- Roo, M. de. Quality indicators for palliative care from an international perspective. Amsterdam: Vrije Universiteit, 2015, 242 p. Dissertation VU University.
- Plas, A. van der. Case management in primary palliative care. Amsterdam: Vrije Universiteit, 2015, 180 p. Dissertation VU University.
- Vos, H. Risk factors in women's health in different stages of life. Nijmegen: Radboud Universiteit Nijmegen, 2014, 156 p. Dissertation Radboud University.
- Pereboom, M. The role of clients, midwives and health policy in preventing infectious diseases during pregnancy. Amsterdam: Vrije Universiteit, 2014, 168 p. Dissertation VU University.
- Kastelein, M. Traumatic and Non-traumatic Knee Complaints in General Practice. Rotterdam, Erasmus Universiteit, 2013, 166 p. Dissertation Erasmus University Rotterdam.
- Feijen- de Jong, E. On the use and determinants of prenatal healthcare services. Groningen: Rijksuniversiteit Groningen, 2013, 157 p. Dissertation University of Groningen.

- Buul, L.W. van. How to Impact antibiotic prescribing? A contribution to antibiotic stewardship in long-term care. Amsterdam: Vrije Universiteit, 2013, 165 p. Dissertation VU University.
- Haarmann, A. A Whiff of Grassroots Democracy and Better Quality of Care? Evolution and Everyday Practice of Collective Patient Involvement in Four Countries. Bremen: BIGSSS, 2013. Dissertation Bremen International Graduate School of Social Sciences.
- Waal, B. de. User participation in Business Process Management implementation. Utrecht: Universiteit van Utrecht, 2013, 274 p. Dissertation Utrecht University.
- Silvius, G. Business and IT alignment in context. Utrecht: Universiteit van Utrecht, 2013, 190 p. Dissertation Utrecht University.
- Kasteleyn, M. Tailored support for type 2 diabetes patients after an acute coronary event - The Diacourse-ACE study. Universiteit van Utrecht, 2015, 179 p. Dissertation Utrecht University
- Essers, G. Clarifying the role of context in doctor-patient communication. Radboud Universiteit Nijmegen, 2014, 152 p. Dissertation Radboud University.
- Martin, L. Counseling for prenatal anomaly screening, Amsterdam: Vrije Universiteit, 2015, 220 p. Dissertation VU University.
- Eertwegh, V. van den. Unravelling postgraduate communication learning: from transfer to transformational learning. Maastricht: Universiteit Maastricht 2015. Dissertation Maastricht University.
- Kooy, M. Supporting patients : pharmacy based interventions to improve medication adherence. Utrecht: Universiteit Utrecht, 2015, 239 p. Dissertation Utrecht University.
- Monteiro, S.P. Driving-impairing medicines and traffic safety. Patients' perspectives. Groningen, Rijksuniversiteit Groningen 2014, 219 p. Dissertation University of Groningen.
- Hoebert, J. Cross-Country Variation in Medicines Use. A Pharmaceutical System Perspective. Utrecht: Universiteit Utrecht, 2013, 217 p. Dissertation Utrecht University.
- Linn, A.J. The value of tailored communication in promoting medication intake behavior. Amsterdam: Universiteit van Amsterdam 2013, 247 p. Dissertation University of Amsterdam.
- Uijen, A.A. Continuity of care. Perspective of the patient with a chronic illness. Nijmegen: Radboud Universiteit Nijmegen, 2012, 296 p. Dissertation Radboud University.
- Moll, E. Metformin in Polycystic Ovary Syndrome. Amsterdam: Universiteit van Amsterdam, 2013, 148 p. Dissertation University of Amsterdam.
- Dros, J. Dizziness in older patients in general practice: away from diagnostic nihilism. Universiteit van Amsterdam, 2013, 237 p. Dissertation University of Amsterdam.
- Heijer, C. den, Prevalence and resistance of the commensal flora in non-hospitalized patients. Maastricht: Universiteit Maastricht, 2013, 154 p. Dissertation Maastricht University.
- Verbeek-van Noord, I. Patient Safety in the Emergency Department: exploring and applying principles from high risk industries. Amsterdam: Vrije Universiteit, 2014, 203 p. Dissertation VU University.
- Verbakel, N. Patient safety culture in primary care. Utrecht: Universiteit Utrecht, 2015, 175 p. Dissertation Utrecht University.
- Rosse, F. van. Ethnic Inequalities in Patient Safety in Dutch Hospital Care. Universiteit van Amsterdam, 2015, 190 p. Dissertation University of Amsterdam.

- Barlow, M.A. The Role and Efficacy of Native Paraprofessional Home Visitors in Reducing Behavioral Health Disparities in Indigenous Populations. Universiteit van Amsterdam, 2015, 250 p. Dissertation University of Amsterdam.
- Franssen, M.T.M. Efficiency of parental chromosome analysis in couples with recurrent miscarriage. Universiteit van Amsterdam, 2010, 128 p. Dissertation University of Amsterdam.

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Appendix 13 Awards 2010-2015

- In 2010 dr. P. Mistiaen won the Anna Reynvaan Scientific Prize 2010 (Anna Reynvaan wetenschapsprijs 2010) for his scientific article on research on Australian medical sheepskin for the prevention of pressure ulcers;
- In 2010 prof.dr. S. van Dulmen won third prize in the communication award of Medisch Contact (the official journal of the Dutch Medical Association) for the VOICE project which supports communication between health care professionals and patients with cancer;
- In 2011 the European Forum for Primary Care was nominated for the European Health Award 2011;
- In 2011 dr. mr. R. Coppen received the Public Health Prize (Volksgezondheidsprijs 2010) from the Society for Public Health and Science (VVW) for his PhD thesis on Organ Donation, policy and legislation;
- In 2011 the project “Real Time Medication Monitoring in patients with type 2 diabetes” (a collaboration of NIVEL with Mediq Pharmacies & Evalan BV) was nominated for best project in Pharmaceutical Care by the Royal Dutch Pharmacists Association;
- In 2012 M. Sep, supervised at NIVEL, received the Peter G. Swanborn prize (Peter G. Swanbornprijs) for her bachelor’s degree thesis on the power of empathy;
- In 2012 dr. M. Dückers won the IQ award 2012 for best scientific article in the field of quality and safety in health care;
- In 2012 dr. M. Zeegers won the Reizenstein award with a publication on a national study using medical records to study patient safety in Dutch hospitals;
- In 2012 prof. dr. C. Wagner was one of the seven nominees for the Huibregtsenprize 2012 (Huibregtsenprijs 2012). This prize is intended for the best Dutch scientific innovative research expected to generate valuable social impact;
- In 2012 dr. A. Albada won the first prize of the communication award of Medisch Contact (the official journal of the Dutch Medical Association) for the website ‘E-info geneca’ for breast cancer genetic research;
- In 2012 dr. Liset van Dijk was appointed one of “2011 Best Reviewers” by the journal Pharmacoepidemiology and Drug Safety;
- In 2013 dr. D. Kringos received honorable mention from the Society for Public Health and Science (VVW) regarding the Public Health Prize (Volksgezondheidsprijs 2012) for her PhD thesis on the strength of primary care in Europe;
- In 2013 dr. C.E. van Dijk won the Care dissertation award for her dissertation ‘Changing the GP payment system: do financial incentives matter?’;
- In 2014 project eLabEL of CCTR (Centre for Care Technology Research), in which NIVEL participates, received the High Potential for Primary Care Transformation award;
- In 2014 dr. L.M. van Vliet won the Care dissertation award for her dissertation ‘Balancing explicit with general information and realism with hope: communication at the transition to palliative breast cancer care’;
- In 2014 dr. M. Bomhoff, drs. N. Paus and prof.dr. R.D. Friele won the NSV-VBO Policy Award for their project ‘Nothing to complain about. Research into expressions of discontent in care and nursing homes’;

- In 2014 drs. I. van Bruinessen won the third prize for the communication award of Medisch Contact (the official journal of the Dutch Medical Association) for the website ‘PatientTIME’ which helps patients with lymphoma to prepare for their consultations;
- In 2014 Best Poster Award for PhD-student drs. Joëlle Hoebert of dr. Liset van Dijk for a study on the influence of cultural context on medicine uptake. EuroDurg conference, Groningen, August 27-29.
- In 2015 drs. N. Bekkema won at the 5th Amsterdam Symposium on Palliative Care, the Palliative Care-Impact Award 2015 for the workbook 'What do I want? When I do not get better ….'.
- In 2015 prof.dr. Cordula Wagner has been awarded with the NVZ Medal from the Dutch Hospital Association. She was honoured for her pioneering role in the field of patient safety in hospitals.

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Application for Re-accreditation 2013-2018

Researchschool CaRe
The Netherlands School of Primary Care Research

The Netherlands School of Primary Care Research
Secretariat CaRe:
CAPHRI School of Public Health and Primary Care
Faculty of Health, Medicine and Life Sciences
Maastricht University Medical Centre+
Universiteitssingel 40, 6229 ER Maastricht
P.O. Box 6200 MD Maastricht, The Netherlands
Telephone: + 31 43 3882446
Facsimile: + 31 43 3884225
Website: www.researchschoolcare.nl

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Appendices:

Appendix 1a – 1d : Reports of International Peer Review

1a Report of the External Review Committee on the 2004 – 2009 evaluation of CAPHRI (www.caphri.nl/en/about-caphri/facts-and-figures.aspx)

1b Report of the External Evaluation Committee of the EMGO Institute for Health and Care Research (2004-2009) (http://www.emgo.nl/about-emgo/reports/)

1c Assessment Report for the research of NIVEL 2004-2009 (http://www.nivel.nl/sites/default/files/bestanden/Assessment%20Report%20NIVEL%202010%20def.pdf)

1d Research Assessment 2011, Nijmegen Centre for Evidence Based Practice (NCEBP) (http://www.umcn.nl/RESEARCH/RESEARCHINSTITUTES/NCEBP/Pages/Researchthemes.aspx)

Appendix 2: **List of publications**

Appendix 3a–3b : **Formal Basis**
'Gemeenschappelijke Regeling Hernieuwd'.

Year of submission: 2012

Year/years in which the previous accreditation(s) was/were awarded: 1995, 2000 and 2006

Name of research school (Dutch):
De Nederlandse onderzoeksschool voor eerstelijns gezondheidszorg.

Name of research school (English):
The Netherlands School of Primary Care Research (CaRe)

Acronym/abbreviation: CaRe

Contact details of research school
Contact person: prof. dr Guy Widdershoven
Address, postal code and place: EMGO Institute for Health and Care Research
VU University Medical Centre
Van der Boechorststraat 7
1080 BT Amsterdam
Telephone number: +31-20-4448266 (secr)
E-mail address: g.widdershoven@vumc.nl
Website: http://www.researchschoolcare.nl/

University acting as secretary:
Contact person: Ms. Merle Achten, MA
Address, postal code and place: Maastricht University
Postbus 616
6200 MD Maastricht
Telephone number: +31-43-3882064
E-mail address: merle.achten@maastrichtuniversity.nl

Institutes and/or faculties participating in the research school

1. CAPHRI School for Primary Care and Public Health
2. EMGO Institute for Health and Care Research
3. NIVEL: Netherlands Institute for Health Services Research
4. NCEBP: Nijmegen Centre for Evidence Based Practice

Institutions with which the research school has a formal partnership
- none -

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1. Mission

The mission of The Netherlands School of Primary Care Research concerns: *contributing to better health and health care through high quality training of young researchers and multidisciplinary cooperation between excellent research institutes in the field of primary health care, transmural care, public and occupational health and health policy, focused on the development and implementation of new scientific knowledge in these fields.*

This mission is shared by the four participating research institutes of CaRe, i.e. CAPHRI (Care And Public Health Research Institute) of Maastricht University, NCEBP (Centre for Evidence Based Practice) of the Radboud University Nijmegen Medical Centre, EMGO$^+$ (Institute for Health and Care Research) of the VU University Medical Center in Amsterdam and NIVEL (Netherlands Institute for Health Services Research) in Utrecht.

The objectives of CaRe are to establish and guarantee a high quality PhD training programme for researchers, and to foster the development of new scientific knowledge in primary care, transmural care, public and occupational health and health policy.

In the next 5 years of its functioning, building on the firm basis provided by its mission and performance in the previous period, it is the ambition of CaRe to further develop its work according to its mission statement, taking into account a rapidly changing health care situation, due to demographic developments, societal changes, advancing technology and an increase in chronic diseases and multimorbidity. High quality health care should conform to requirements regarding effectiveness (evidence-based), efficiency, patient centredness, safety, timeliness and equity. The combination of expertise, available at the CaRe partners, and the accessibility to valuable international networks, provides the right basis for realising the mission statement.
The research training of CaRe aims to educate not only junior researchers seeking for a full-time research career, but also those who want to combine research with a health care

career. It is the ambition and expectation of the school that the latter category will positively influence the evidence based level of the practice of primary care, transmural care, public and occupational health and health policy.

2. Research context

2a Research programme and scientific output

CaRe research is situated in the context of primary care, transmural care, public and occupational health and health policy, which is strongly developed in the Netherlands. CaRe is an internationally leading research school and has contributed to the further development of Evidence Based Medicine in these areas. CaRe responds to changes in society, leading to the need for new research and interventions. Chronic and disabling diseases are increasing, and co-morbidity as well as complicated treatment and care are becoming more prevalent. In addition, the roles of patients and doctors are changing, leading to new ways of decision making and information exchange. In order to perform scientific research in this context special methodologies and measurement instruments are developed.

Since the previous reaccreditation, several new developments should be mentioned. In line with international developments, more emphasis has been put on patient empowerment and shared decision making. In the area of care, new models are developed, tested and implemented, such as the chronic care model. E-health is an important new area of research. Another important development was the initiation of Academic Collaborative Centres in the area of primary care and public health, in which structural partnerships between research centres and healthcare providers are created. Their main purpose is to improve cooperation and knowledge transfer between practitioners, policy-makers and researchers, ultimately leading to the improvement of the population's health. Several of the Academic Collaborative Centres are financed by ZonMw. (www.academischewerkplaatslimburg.nl; www.academischewerkplaatsamphi.nl; www.sgvumc.nl; www.vumc.nl/afdelingen/awjgz). Evaluations of interventions in primary care, transmural care, public and occupational health and health policy now regularly include economic assessments of new interventions. In relation to methodology, more emphasis is put on mixed methods, combining quantitative and qualitative elements.

In past evaluations, the quality of the research school CaRe has been considered 'excellent' (5). In particular, the PhD education is considered to be of very high quality.

Each of the CaRe partners has recently been evaluated by independent international external review committees (ERCs), according to the SEP-protocol. CAPHRI, EMGO$^+$ and NCEBP were overall rated 'excellent', receiving a 5 on a scale of 1-5. They were evaluated in December 2010, November 2010 and November 2011 respectively. NIVEL's research was evaluated in 2010 and was rated 'very good' (4) to 'excellent' (5). The productivity of all CaRe partners is impressive according to the review committees: 'CAPHRI's scientific output had steadily grown and the number of articles in top ranked journals such as Nature, Science, New England Journal of Medicine and the Lancet is an astonishing achievement considering the research topics of CAPHRI'. In the case of EMGO$^+$: 'The review committee was very impressed by both the quality and quantity of the research output of EMGO$^+$'. NCEBP: 'the quality and productivity of the research of the NCEBP show impressive achievements', and NIVEL: 'the productivity of NIVEL is impressive, both in scientific as in societal impact'.

2b Cohesion and cooperation between CaRe partners

Over the past years, each of the CaRe partners has grown. Consequently, much attention was paid to internal cohesion and cooperation within the individual institutes. At the same time, cohesion and cooperation on the level of the research school CaRe was continued and extended through joint strategic action, joint research projects and links between research programs in the participating institutes. Several professors have double appointments. This leads to research cooperation on a daily basis between research groups. Examples of such cooperation are research in quality of care (CAPHRI and NCEBP), team composition and skill-mix in primary care (NIVEL and CAPHRI), communication (NIVEL and NCEBP), *'LINH-*

het Landelijk Informatie Netwerk Huisartsenzorg' - a national information network primary care (NIVEL and NCEBP) and patient safety (NIVEL and EMGO$^+$).

There are several joint PhD-projects. An example is the PhD project on trends in morbidity and use of care in general practice (NIVEL and NCEBP). Another example is a joint PhD-project of NCEBP and CAPHRI, entitled ' Diabscreen, the effectivity of screening high risk patients in general practice'.

Once a year, the Annual CaRe Meeting takes place, organised in turn by one of the four participating institutes. All researchers and PhD candidates are invited. In 2012, the Annual CaRe Meeting was held on Friday October 5th. NIVEL was the organising host of the meeting, which focused on 'International Research in Primary Health Care'. The programme included a renowned international speaker, parallel sessions on examples of international research and a parallel session on grant possibilities for international research. At the CaRe Meeting, the CaRe award is allotted to the best CaRe dissertation. The CaRe meeting is a great opportunity to extend cooperation between CaRe PhD-students and researchers. Next year, the Annual CaRe Meeting (2013) will be organised by CAPHRI in Maastricht; the topic will be 'Challenges in health care: quality, accessibility and affordability'.

Cooperation within CaRe is based on long-term relationships between researchers of the participating institutes. Recently, a consortium was initiated by the CaRe partners to prepare a project proposal in the framework of the NWO 'Zwaartekracht' programme. The consortium is named 'the SHARED CaRe consortium' and aims to bridge the gap between physician expertise and personalised person-centred care. The members of this consortium together will be able to combine the necessary theoretical and practical knowledge on personalised medicine and shared decision making with implementation science. As a special CaRe consortium they will look at the entire chain of health care inside and outside the hospital, offer a multidisciplinary approach, look at the subject from a bio-medical, pharmaco-genomics, molecular, sociological, psychological, clinical and ethical point of view and furthermore they are aware of the fact that together, they are very well connected both at the national and the international level. The fact that a consortium of this calibre was formed in a very short space of time demonstrates clearly the potential power of the research school CaRe.

2c Composition of the research groups

Over the last 6 years there have been developments in the composition of the research groups. CAPHRI shows a considerable increase in the number of PhD-students. All CAPHRI research programmes are involved in CaRe. The same is true for NIVEL: the whole organisation is included in CaRe. While expanding to EMGO$^+$, EMGO participation in CaRe was focussed within the largest of the 4 new programmes, "Quality of CaRe". . This meant a decrease in the number of EMGO PhD students and senior staff participating in CaRe. Two NCEBP divisions are included in CaRe: the divisions 'Primary Care' and 'IQ health care'.. More information can be found on the websites of the participating organisations[1]: .

2d Positioning in the national and international field and cooperation with research groups in the Netherlands and abroad

CaRe is strongly positioned in the national and international field. The external review reports of the CaRe partners stress the leading role in the Netherlands and abroad. To illustrate this, some quotes out of the review reports are presented here. In the case of CAPHRI, the review report states that CAPHRI's work is 'at the forefront internationally and has an important and substantial scientific and societal impact in the Public Health and Primary Care field. The School is considered an international leader'. Furthermore, according to the Review Committee 'Programmes within CAPHRI are world leading and may serve as a role model to academic centres for the successful transdisciplinary integration of innovative research institutes'. The review committee who evaluated EMGO$^+$ was similarly enthusiastic:

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[1] CAPHRI: http://www.caphri.nl/en/about-caphri/organisation.aspx;
EMGO: http://www.emgo.nl/research/quality-of-care and
NCEBP: http://www.ru.nl/onderzoek/instituten/overzicht-instituten/evidence-based/nijmegen_centre_for/

‘EMGO$^+$ is an outstanding research institute. In terms of the volume and quality of output, the number of completed PhD dissertations, the infrastructure and resources and their management, and the research income generated by the institute as a whole, the achievements of EMGO$^+$ by the end of the assessment period have clearly been excellent on all counts as defined by the evaluation protocol, producing work of international quality and influence’. Furthermore, the committee was of the opinion that ‘the potential of EMGO$^+$ to continue to achieve against targets of internationally excellent influential research output is secure’ . As far as NCEBP is concerned, the external review committee judged that NCEBP as a whole was of excellent quality. The general productivity and quality of this programme were recognised by the Committee as meeting the best international standards. According to the committee ‘the quality and productivity of the research of NCEBP show impressive achievements’. NCEBP’s divisions of ‘Primary Care’ and ‘IQ health care’, both world leading in their field are included in the research school CaRe. The primary care research embedded in the NCEBP Programme ‘Patient-Centred Interventions’ has according to the review committee ‘a long-standing history of world leadership’. Finally, in the NIVEL evaluation report, the Committee stated: ‘the international academic reputation of NIVEL is illustrated by the prominent position in international collaborations and the increasing number of publications in international journals’. According to the committee ‘NIVEL has a unique position as a research institute because of its longstanding relations with health care professionals and patient organisations, in which NIVEL has acquired a position with high credibility and trust among these organizations both because of its independence and its efforts in regular consultation for the demands, needs, experiences, and ideas of professionals and patients. These resources enable projects and investigations that are highly relevant for science and policy making alike.’

CaRe was one of the initiators of the Brisbane International Initiative (BII). This international network of top centres in the field of primary care research has been founded at a Brisbane meeting of leaders in primary care research from eight countries, among which representatives of the CaRe-partners. Former CaRe-director prof. dr A Knottnerus and CAPHRI’s prof. dr GJ Dinant were the initiators. The purpose of the BII, which is executed in close collaboration with the Department of Primary Care of the University of Oxford, is to stimulate research in primary care worldwide by advanced research training of internationally independently selected highly talented young researchers. There are liaisons with academic primary care groups worldwide, and with the World Organization of Family Doctors (WONCA). A comprehensive curriculum for primary care research training and an advanced international training context for PhD and MSc research students, have been developed and implemented.

3. Educational context

The aim of CaRe is to foster the education of highly qualified, independent and scientific researchers, with an open mind for collaborative research. PhD candidates are required to make a Training and Supervision Plan (TSP) during the first weeks of their trajectory. PhD students choose CaRe courses that fit their specific educational background and work experience, and which offer the theories and skills needed in their research project. The TSP is approved by the local PhD coordinator or PhD committee in line with quality standards formulated by the research school. It is a tailored and flexible plan that can be adapted during the PhD trajectory in agreement with the supervisors, according to the needs of the PhD student and the skills needed for the project. The supervisors ensure the development of each of their PhD candidates into a well-rounded research professional. Progress of the PhD trajectory is monitored by the PhD committee.

A major task of CaRe is to provide a rich selection of high quality PhD training opportunities (courses, lectures, workshops etc) that cover transferable skills, methodological skills as well as the scientific topics central to CaRe’s mission in health care. CaRe PhD candidates choose from a variety of these courses for their Training and Supervision Plan. Basic courses on methodology and writing skills are part of every TSP. More advanced courses are chosen depending on the specific topic of the PhD student. Each institute is responsible for the organisation of several PhD courses, which are offered via CaRe. PhD candidates have the opportunity to follow PhD courses at their own institute and other institutes. CaRe ensures the quality of the courses.

Lecturers in the PhD courses are well-established researchers who have demonstrated their lecturing and research skills in several educational and research programmes. CaRe has an annual Lecturer Award for the best teacher of the year as an incentive and role-model.

CaRe has a PhD Education Committee (POC) which includes representatives from each of the institutes, generally a PhD coordinator and a PhD student. They meet four times a year to discuss developments within CaRe and policies regarding PhD students, to evaluate the quality of the CaRe courses currently on offer, and to brainstorm about new courses to be set up in view of the field's recent developments. Each of the participating institutes also has an internal PhD council which represents the interests of the PhD-students of that institute.

All four institutes participating in CaRe were praised in the official external reviews for the environment and facilities they offer to their PhD candidates (see appendix 1a- 1d):

- CAPHRI: According to the ERC, 'The present breeding ground within CAPHRI is of excellent quality and is one of the important factors which led to the School being graded as excellent.' 'The Committee rated PhD training as excellent (5).'
- EMGO$^+$: The external evaluation committee recognised the training facilities as excellent: ' it seems hugely successful and impressive in its range and volume and training capacity'.
- NCEBP: The External Review report stated that 'The PhD training programme (of NCEBP) is of high quality, and has shown an impressive positive development in the past few years.'
- NIVEL: The PhD students rate the institute in a very positive way, according to the ERC report: 'As a research environment, NIVEL is very attractive and is highly appreciated by the PhD-students and postdocs.'

4. Education in Bachelor's and Master's phase

The research school CaRe considers the bachelor, (research)masters' and PhD courses as a continuum, in which students get the opportunity to specialise, from rather general programmes to specific courses, tailored to the individual needs of the student. Many core staff members of the research school contribute to the masters and bachelors programmes, to ensure quality of these programmes and continuity with PhD courses. In the period since the last re-accreditation, research master programmes have been developed at CAPHRI and at the VU campus in which EMGO$^+$ staff participates[2]. These programmes have a high percentage of professors and assistant professors performing educational roles. As the supervision of the internships in general is reviewed as being highly important, it accounts for a substantial input accomplished by scientific staff.

5. Career prospects for alumni

The career prospects for CaRe PhD graduates are good. After their graduation, PhD's often combine working as professionals in healthcare with further scientific research. In line with the recommendations of the last reaccreditation, CaRe has started monitoring the careers of PhD-graduates. Data from 2004 onwards have been gathered for all participating partners and are presented in table 1. This shows that there is no unemployment amongst CaRe PhD graduates. 74% of all PhD graduates continue working as researchers (often combined with policy, care or teaching) in the academic world, 25% choose other positions, such as policy or care, and of 1% the whereabouts are unknown.

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[2] CAPHRI: (http://www.caphri.nl/en/education/research-master.aspx);
_EMGO: (http://www.vu.nl/nl/opleidingen/masteropleidingen/opleidingenoverzicht/i-l/lifestyle-and-chronic-disorders/index.asp)

Tabel 1: CaRe PhD graduates and their employed position after graduation (2005-2011)

Current position	CaRe PhD graduates and their employed position after graduation (2005-2011)							
	2005	2006	2007	2008	2009	2010	2011	Total
Researcher	35	17	31	47	32	24	28	214/ 74%
Other	10	7	11	10	12	1	20	71/ 25%
Unknown	1	2	-	-	-	-	-	3/ 1%
Unemployed	-	-	-	-	-	-	-	-
Total	46	26	42	57	44	25	48	288/100%

6. Graduation rate

Over the years, the enrolment of PhD-students in the research school CaRe has increased. In 2004, 23 students started their PhD trajectory, whereas in 2008 38 PhD candidates enrolled and in 2011 ten more: 48 (not in the table). See table 2.

Table 2: Enrolment PhD students in CaRe and graduation rate

Enrolment CaRe				Success rates CaRe				Total CaRe		
Starting year	Enrollment		Total M+F	Graduated after (≤) 4 years	Graduated after (≤) 5 years	Graduated after (≤) 6 years	Graduated after (≤) 7 years	Total graduated	Not yet finished (01-01-12)	Disconti-nued (01-01-11)
	Male	Female								
2004	10	13	23	3 / 13 %	8 / 34,8%	4 / 17,4 %	2/ 8,7 %	17/ 73,9%	4/ 17,4%	2 / 8,7%
2005	5	17	22	2 / 9,1 %	4/ 18,2%	3/ 13,6%	1/ 4,5%	10 / 45,5 %	6 / 27,3%	6 / 27,3%
2006	5	20	25	4 / 16 %	6 / 24,0%	5 / 20,0 %	0	15/ 60,0 %	7 / 28,0%	3 / 12,0%
2007	6	23	29	4/13,8 %	2/ 6,9%	0	0	6/ 20,7 %	17 / 8,6%	6 / 20,7 %
2008	9	31	40	6/ 15,0 %	0	0	0	6 / 15,0%	33 /82,5%	1 / 2,5 %
Total	**35**	**104**	**139**	**19/13,7%**	**20/14,4%**	**12/8,6%**	**3/2,2%**	**54/38,8%**	**67/48,2%**	**18/12,9%**

Please note, that it was not possible to include the EMGO data due to differences in registration

Overall there are more female (104) than male (35) PhD candidates. This is further discussed in section 9. A point of concern is the rather high discontinuation rates. Altogether, nearly 9% of PhD students have decided to discontinue their PhD-studies. The CaRe partners strive to have a discontinuation rate below 5%. Preferably a decision about discontinuation is made in the first year of the PhD study.

Median time (in years) to be graduated

Based upon the information currently available of the cohorts between 2004 and 2008 (table 2) it looks like the majority of PhD students graduates after ≤ 5 years. Given the fact that this includes PhD students who combine research with work as a practitioner in healthcare, this result is satisfactory. However, of the 2004 – 2007 cohort 25 PhD candidates were not yet finished by the end of 2011.

7. The measures taken in response to criticisms made at the time of the previous accreditation or re-accreditation

The subcommittee Medical Sciences has recommended in her official advice of June 12, 2006 that in the application for re-accreditation the following aspects should be considered:

- A clearer demarcation of the CaRe research mission
- A more structured educational profile

- More attention should be paid to providing information about career perspectives for PhD-graduates in the area of health sciences and enhance a better registration of career flow in the job market

CaRe has seriously considered the recommendations. It was decided to express the need for the development and implementation of new knowledge in the area of primary care, transmural care, public and occupational health and health policy more clearly in the CaRe mission. The generalist approach to changing needs in healthcare practice delineates CaRe research from other, more specialized research schools in the area of medicine and healthcare.

CaRe has further structured its training and education. A Training and Supervision Plan is mandatory for all PhD students. The progress of research and education of individual students is checked on a regular base by the supervisor and the PhD committee respectively. The PhD courses have been brought in line with bachelor and master programmes, securing continuity of education. New courses have been developed, aiming to support the PhD students in acquiring skills for new types of research. The needs for new courses are discussed within the CaRe PhD Education Committee. All courses on offer are evaluated by the CaRe PhD Education Committee.

As mentioned above, CaRe has started to track the careers of its PhD students after graduation. The results show that there is close to no unemployment among CaRe graduates. Often, graduates continue to do research in their home institute, in other CaRe institutes, or elsewhere. The good career perspectives of CaRe graduates are presented at information meetings for future PhD students. Furthermore, attention is paid to informing the current PhD students about their career perspectives, in bilateral conversations, but also in group sessions.

8. The measures proposed in response to the most recent external peer reviews of the participating partner institutes

The most recent international Reviews of the participating partner institutes took place in 2010 and 2011. The full review reports can be accessed through internet; the URL can be found on page 2. Recommendations have been used to further strengthen CaRe policy regarding PhD training and supervision, and research strategy. For CAPHRI, the ERC recommended to further facilitate the breeding ground policy, the research master programme and the PhD coordinator. This is in line with CaRe policy regarding the continuum between research master and PhD training (see 4), and the central role of the local PhD coordinator in the CaRe PhD Education Committee (see 3). For EMGO+ as well as for NCEBP, the ERC suggested introducing a system that would enable the institute to provide data on the duration of the PhD trajectories, completion rates and subsequent career destinations. For the current reapplication, CaRe has gathered data on the duration of PhD trajectories for three of the four institutes (see 6). In line with the recommendations of the previous re-accreditation, CaRe is now able to give information on careers after graduation (see 5 and 7). For NIVEL, the ERC did not give specific recommendations on PhD training and supervision.

9. Male/female ratio among the members of the permanent staff, the post-docs and PhD students in the research school

In general, in all CaRe partners, the male/female ratio among PhD students and Postdocs works out in favour of the women. This is in line with developments in medical schools and health sciences curricula, which show a growth in female students. Given this situation, CaRe does not aim to change the male/female ratio of PhD students and Postdocs. Among the permanent staff, there are relatively more men than women. This is specifically the case within CAPHRI and NCEBP. EMGO$^+$ has an equal division of men and women and at NIVEL there are more female than male permanent staff members employed. Over the past years, the number of female permanent staff members has grown in CaRe institutes. This is regarded as positive, since it will lead to a more equal distribution between men and women.

Table 3: Male/female ration for permanent staff, postdocs and PhD students in CaRe

Category	Total CaRe 2011	Men	Women
Permanent staff	404	238,4/ 58,6%	168,6/ 41,4%
Postdocs	246	73/ 27,7%	190,2/ 72,3%
PhD-students	199	50,7/ 25,4%	148,7/ 74,6%

(# = absolute number, % = percentage of relevant category)

10. Organisation and Management

Over the years, since 1995, CaRe has established an efficient and stable organisational structure to support the overall school activities, i.e. reporting on output of research activities, supporting and organising the PhD teaching programme, preparing strategic meetings, regularly evaluating its functioning and performance, facilitating the bulletin CaRré, the development of a website, the Annual CaRe Meeting, financial control, and preparing and organising the directors and board meetings. The research school CaRe has a lean, transparent and flexible structure, complementary to the organisation of the participating institutes. PhD supervision and PhD courses are organised by the participating institutes; for overall coordination and quality assurance, PhD coordinators of the institute meet regularly in the PhD Education Committee; strategic issues are discussed in the Board of Directors and in the Board of Governors.
The organisational structure and the joint agreements concerning rules and regulations are described in the *'Gemeenschappelijke Regeling Hernieuwd'* – the Renewed Consortium Agreement (Appendix 3a-3b). The most important change in comparison to the former version, is the fact that CaRe has decided to focus on its educational (PhD) programme and provide a flexible network infrastructure that will make it possible to organise research cooperation according to CaRe's mission statement when needed. CaRe research is organised within the research programmes of the participating institutes. Research coordination between the CaRe partners takes the form of strategic cooperation, anticipating and responding to developments in the field of primary care, transmural care, public and occupational health and health policy. Furthermore the agreement has been simplified.

11. Financial resources

Table 4 gives an overview of CaRe's annual financial resources between 2005 – 2011. The decline in research staff in 2009 is due to a change in the EMGO$^+$ institute. From 2010 onwards, a shift can be seen from direct funding to contract funding.. Over the years, financial resources have in general shown a stable pattern, with slight growth. For the next period, the focus will be on continuity of resources. Given the economic crisis and cuts in budgets of universities and funding organisations, this will require major efforts of the staff. European funds will become more important. CaRe aims at further cooperation and exchange of expertise in this area (which was also the topic of the 2012 CaRe day).

Table 4: Financial resources CaRe

	2005		2006		2007		2008		2009		2010		2011	
CaRe	**Fte**	**%**	**Fte**	**%**	**Fte**	**%**	**fte**	**%**	**fte**	**%**	**Fte**	**%**	**fte**	**%**
Funding:														
Direct funding (1)	173,8	35,7%	165,3	33,3%	171,85	34,9%	188,4	36,9%	167,08	36,8%	168,22	31,7%	174,37	31,1%
Research grants (2)	101,0	20,7%	99,5	20,0%	92,19	18,7%	118,8	23,2%	106,16	23,4%	116,33	21,9%	125,48	22,4%

Contract research (3)	208,3	42,8%	227,6	45,9%	223,04	45,3%	200,7	39,3%	179,48	39,6%	243,51	45,9%	258,31	46,1%
Other (4)	4	0,8%	4	0,8%	5	1,0%	3	0,6%	1	0,2%	2	0,4%	2	0,4%
Total funding	**487,08**	**100%**	**496,3**	**100%**	**492,08**	**100%**	**510,9**	**100%**	**453,72**	**100%**	**530,06**	**100%**	**560,16**	**100%**

Notes:
(1) Direct funding by the university / KNAW / NWO
(2) Research grants obtained in national and international scientific competition (e.g. grants from NWO, KNAW and European Research Council)
(3) Research contracts for specific research projects obtained from external organisations, such as industry, governmental ministries, European Commission and charity organisations
(4) Funds that do not fit the other categories

12. Organisation and Management

In 2011, the total number of CaRe scientific staff was 504,5 full time equivalents (fte). Of the 504,5 fte scientific staff, there was 158,4 fte tenured staff, 193,3 fte non-tenured staff and 152,8 fte PhD-students. Over the years, the ratio tenured staff/ non-tenured staff has changed slightly in favour of the non-tenured staff.

Table 5: Total number of CaRe scientific staff between 2005 and 2011

	2005	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
CaRe	**fte**	**fte**	**fte**	**fte**	**fte**	**fte**	**fte**
Funding:							
Tenured staff (1)	166,1	155,5	151,3	117	135,8	148,2	158,4
Non-tenured staff (2)	151,7	160,9	156,2	123	151	183	193,3
PhD students (3)	122,5	133,8	140	97	122,9	146,2	152,8
Total staff	**440,2**	**450,1**	**447,6**	**337,2**	**409,6**	**477,4**	**504,5**

Note 1: Comparable with WOPI categories HGL, UHD and UD
Note 2: Comparable with WOPI category Researcher, including post docs
Note 3: Standard PhD (employed) and Contract PhDs (externally or internally funded but not employed)

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Appendix 15 Policy sensitive reviews

2015	Funding
Self-management by people with a chronic disease	Ministry of Health
Functioning of the health insurance market	VRZ - Association of Dutch quality health insurers
Social support for preconception carrier screening in the Netherlands	Ministry of Health
Not too much and not too little: the balance between necessary and unnecessary care in general practice	Ministry of Health
The Future of General Practice 2022, general practice in 2014	Ministry of Health
2014	**Funding**
Monitoring changes in Chronic Care. An Inventory of indicators, instruments and blind spots	Ministry of Health
The district nurse of today and tomorrow: roles, cooperation and expertise of district nurses	Ministry of Health
Health literacy: not obvious for everyone	Ministry of Health
Elderly of the future. Differences in the wishes and possibilities for housing, welfare and care	Ministry of Health
New model for palliative care: update 2014	ZonMw - The Netherlands Organisation for Health Research and Development
2013	**Funding**
Technology in care at home. Still a world to win!	Ministry of Health
Room for substitution? Shifts from secondary care to primary care	Ministry of Health
An overview of the Dutch patient and health care user	Ministry of Health
The chronically ill and work: employment of people with a chronic illness or disability	Ministry of Health
Care and sport excising in the neighbourhood	Ministry of Health
2012	**Funding**
New model for palliative care	The Netherlands Organisation for Health Research and Development ZonMw
Practice nurses in general practice?	Ministry of Health
Five patients' rights from the draft Patients' Rights Act (WCZ) in 2012	Ministry of Health
Prevention	Ministry of Health

– *table to be continued* –

2011	Funding
What has five years of CQ-index given us?	Ministry of Health
Supply and demand trends in nursing and care in the Netherlands: a knowledge synthesis of existing literature and data sources	Ministry of Health
The care for people with a chronic disease	Ministry of Health
Primary care	Ministry of Health

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Appendix 16 Overview of EU funded studies at NIVEL in 2015

NIVEL as principal executor	**NIVEL as partner**
- Innovating care for people with multiple chronic conditions in Europe (**ICARE4EU)**. - Study on sound evidence for a better understanding of health literacy in the European Union **(HEALIT4EU)**. - Antimicrobial resistance and causes of non-prudent use of antibiotics in human medicine **(ARNA)**. - Determinants of Successful Implementation of Selective Prevention of Cardio-metabolic Diseases Across Europe **(SPIMEU)**. - Study on off label use of medicinal products in the European Union **(OFF LABEL)**. - Support for the definition of core competences for healthcare assistants **(CC4HCA)**.	- Translational Medicine and Patient Safety in Europe (**TRANSFoRm)**. - Network for Patient Safety and Quality of Care **(PaSQ)**. - Cancer Control Joint Action **(CANCON)**. - Joint Action on Chronic Diseases **(CHRODIS)**. - Integrated Monitoring of Vaccines Effects in Europe: a platform to measure and compare effectiveness and impact of influenza and pneumococcal vaccines and vaccination strategies in the elderly **(IMOVE+)**.

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Appendix 17 The national databases and panels

NIVEL operates a number of national databases and panels (see box 1). These provide information for further scientific research as well as for products of research orientated towards policy. During the review period new databases and panels have been added and existing ones expanded to include new domains, health care providers and/or patient groups. In 2010, we started with the integration of the existing primary care databases (Netherlands Information Network of General Practice (LINH), the National Information Network for Allied Health Care (LIPZ) and the National Information Network of Primary Care Psychologists (LINEP). This integrated database is called the NIVEL Primary Care Database and is financed by the Ministry of Health (MoH). The integration of the databases makes it possible to conduct research using a pseudonym to follow individuals on a large scale in their use of several health care facilities in primary care over time. The use of pseudonyms allows data from the NIVEL Primary Care Database to be enriched from other databases such as Statistics Netherlands (CBS), Vektis (Information centre for health care with data on declared care) and the Dutch Foundation for Pharmaceutical Statistics (SFK)). Using pseudonyms also makes it possible, in cases of informed consent of the panel member, to enrich panel data, for example for the Dutch Health Care Consumer Panel or NPCG-National Panel of Chronically ill and Disabled, with data from the NIVEL Primary Care Database.

Our national databases link our research to many university groups. NIVEL's policy is to share data with others, within the limits of data protection and the governance and regulations of the different data bases. NIVEL has implemented procedures for the external use of these databases and panels.

Box 1 NIVEL's national databases and panels funded by the MoH

Research area	National databases and panels	Description
Demand for health care	Dutch Health Care Consumer Panel; NPCG-National Panel of Chronically ill and Disabled (including patients with cancer); Panel of people with an intellectual disability.	Questionnaire-based information from the general population and several groups of health care users.
Supply of health care	Human resources registers for several professional groups.	Information about individual professionals and their practices.
	Panel of Nurses and Carers.	Information about professional issues, work satisfaction, work-related pressure, training opportunities, career planning and involvement in the policy of the organisation.
	NIVEL health care monitor for depopulating regions.	Monitor using information on the actual use and supply of primary care in depopulating regions compared to the national situation. In addition, the monitor gives insight into the expected use of care based on the composition of the population.

– box to be continued –

Health care processes and outcomes	NIVEL Primary Care Database.	Information about patient demographics, consultations, diagnoses, services, prescriptions and referrals. Morbidity, as presented in general practice and other primary care practices.
	Database of Doctor-Patient Communication.	Video recordings of real life consultations
	Monitor Patient Safety.	Monitor of the effects of the policy to reduce the number of unintentional health care-related damage, or 'adverse events', in hospitals.
Surveillance of diseases and environmental threats	Continuous Morbidity Registration Centres and Surveillance Network Netherlands (SuNN).	Continuous morbidity registration as presented in general practice. Surveillance of epidemics and environmental threats.

The national databases and panels contribute to the societal and scientific impact of NIVEL. The impact upon society is demonstrated by the feedback of information to participating health services, policy sensitive reviews, and the use of research results in policy documents and professional guidelines. The scientific impact is demonstrated, for example, by scientific articles and dissertations.

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Appendix 18 The societal uptake of NIVEL research in newspapers and in governmental documents

Table 1 Societal uptake of NIVEL research in newspapers in number of times the name of an institute was mentioned in 'Krantenbank (plus)', in absolute numbers

Year	NIVEL [1]		Trimbos[2]		Vilans[3]	
2010	65	(85)	103	(147)	9	(9)
2011	38	(54)	107	(149)	4	(6)
2012	39	(56)	89	(127)	3	(4)
2013	62	(91)	107	(150)	10	(12)
2014	47	(56)	105	(141)	8	(9)
2015	33	(45)	88	(112)	6	(6)

[1] Numbers differ from the total number of clippings because 'Krantenbank' only includes quality newspapers. Krantenbank Plus contains quality newspapers and free papers (Metro, Spits, and NRC.Next. Since 2006 the number of times an institute is mentioned in Krantenbank Plus is provided between brackets.

[2] The Trimbos Institute is the Netherlands Institute of Mental Health and Addiction, a non-profit research and knowledge center

[3] Vilans is the centre of expertise in the field of long-term care.

Table 2 Societal uptake of NIVEL research in governmental documents in number of times the name of an institute was mentioned in 'Opmaat', in absolute numbers

Year	NIVEL	Trimbos	Vilans
2010	97	118	28
2011	108	113	30
2012	108	100	31
2013	110	140	40
2014	148	150	52
2015	174	163	75

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Altmetrics analysis NIVEL 2016

by Jeroen van Honk, Ed Noyons and Rodrigo Costas,
May 19, 2016.

Altmetrics is a relatively new research field that aims to provide alternative methods of evaluating research, though over time it is increasingly coming to be seen as a complementary source of data, as opposed to a possible replacement of classical bibliometric analysis. It offers an hitherto unavailable insight into the non-scholarly reception of a publication, by collecting mentions and connecting blogs, news articles, and social media interactions to scholarly publications. It should be mentioned here that the field remains in development, and current research is investigating which are the possible conclusions (if any) that can be drawn from such highly informal yet (potentially) rich data sources.

The present study is exploratory in order to analyze the altmetric data[1] for the subset of NIVEL publications that is indexed in the Web of Science, and as used in the most recent bibliometric performance analysis done by CWTS for NIVEL. This subset is limited to publications published between 2012 and 2015, since the altmetric data for prior years are deemed inadequate. The NIVEL publications will be benchmarked against a larger subset consisting of publications with a Dutch affiliation (NIVEL excluded) and in the same research fields in which NIVEL publishes. In this way, NIVEL's altmetric performance will be compared to that of its direct Dutch peers.

Altmetric.com (a UK-based company oriented to gather altmetric events for scientific publications) has since its beginnings in 2010 added many different and diverse sources to its data set, going from tweets, to mentions in blogs, news media sources, Facebook mentions, etc. Most of the attention of altmetric researchers has so far been drawn to Twitter and Mendeley[2], which are the most commonly used platforms and have also increasingly become part of standard university, journal, and publisher operating policies. The take-up of various media within the contrasted publication sets is illustrated in Fig. 1.

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[1] In this report, when we refer to "altmetric data", we are speaking of the combined data sources of Altmetric.com and Mendeley.

[2] In this study we have collected data on Mendeley readers directly from Mendeley.com using their REST API (the data collection was performed 25 July 2015).

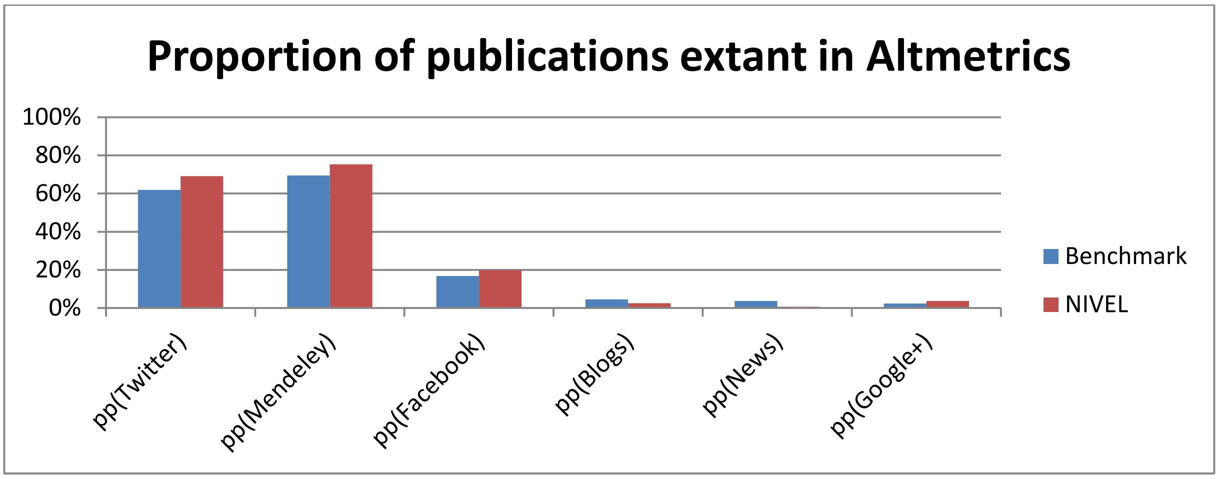

Figure 1

This is only a selection of what Altmetrics.com offers[3], yet here you can already see that the data for most sources are quite scarce. Clearly, Mendeley and Twitter offer the best analytical opportunities. From Mendeley we obtain the number of "readers", where readers denotes simply the number of people who saved a publication in their Mendeley libraries.

Tables 1 to 3 list some indicators for those of the sources that are not entirely negligible: Twitter, Facebook, Blogs, News, Google+ and Mendeley. The tables list totals, averages, and proportions respectively.

Label	p	p (DOI/PMID)	pp (DOI/PMID)	total (Twitter)	total (Mendeley)	total (Facebook)	total (Blog)	total (News)	total (Google+)
Benchmark	3407	3315	97,30%	18292	32660	1234	241	367	116
NIVEL	275	268	97,45%	2037	2754	108	9	39	12

Table 1: Totals

Label	mean (Twitter)	mean (Mendeley)	mean (Facebook)	mean (Blogs)	mean (News)	mean (Google+)
Benchmark	5,52	9,85	0,37	0,07	0,11	0,03
NIVEL	7,60	10,28	0,40	0,03	0,15	0,04

Table 2: Means of Altmetric sources (as measured against *p(in WoS)*)

Label	pp (Twitter)	pp (Mendeley)	pp (Facebook)	pp (Blogs)	pp (News)	pp (Google+)
Benchmark	61,90%	69,35%	16,80%	4,49%	3,65%	2,44%
NIVEL	69,03%	75,37%	19,78%	2,61%	0,75%	3,73%

Table 3: Proportions that have at least one Altmetric entry per source

In the first table (Table 1) we see first of all that the two units (NIVEL and benchmark) vary considerably in size. As such, we will have to focus primarily on averages and

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[3] Please refer to https://help.altmetric.com/support/solutions/articles/6000060968-what-data-sources-does-altmetric-track- for the full and up-to-date list.

proportions to make a meaningful comparison. It is important to make a few reservations furthermore: altmetric data are linked to the Web of Science database used by CWTS through either the DOI or the PubMedID (PMID), and this link cannot be made on each occasion. In some cases this will be because no Altmetrics.com ID has ever been created for the specified publication, which is the case when no altmetric data exist. There might however also be some cases where the match cannot be made because the DOI or PMID attached to a publication is faulty or absent on either side of the matching process. Moreover, while the altmetric data are generally considered acceptable from 2012 onwards, it does seem as if potential adjustments in the methodology of Altmetric.com might have been made from 2013 onwards as well. As shown in Table 4 below, the mean jumps up from 2012 to 2013, and then stays relatively stable. At the same time the proportion of publications tweeted about rises too, but less significantly, which means the rise concerns mostly the publications already tweeted about being tweeted about more frequently still.

Publ. year	p	p (Benchmark)	p (NIVEL)	pp (Twitter)	pp (Twitter) (Benchmark)	pp (Twitter) (NIVEL)	mean (Twitter)	mean (Twitter) (Benchmark)	mean (Twitter) (NIVEL)
2012	834	783	51	58,27%	58,11%	60,78%	3,51	3,58	2,51
2013	854	775	79	66,63%	66,19%	70,89%	6,04	5,74	9,05
2014	947	865	82	72,86%	71,79%	84,15%	7,1	6,8	10,23
2015	945	889	56	52,49%	52,53%	51,79%	6,03	6,01	6,34

Table 4: Mean number of tweets for the collected publication sets over time

In Table 2, then, we can see that NIVEL scores are higher than the benchmark for both number of tweets and Mendeley readers. The results for the other sources vary, but the data here are too scarce to draw strong conclusions. In proportions of publications that have at least one tweet or one reader in Mendeley, NIVEL also scores above the benchmark. Again the other sources vary, but this can be an effect of the low numbers.

We will now zoom in further on the Twitter data. One thing that is noticeable when scrutinizing these data is that many tweets – due in part to the well-known limitations of length (i.e. 140 characters), constitute little more than the combination of URL and publication title, and sometimes other formal elements such as the journal name, hashtags and/or handles of fellow researchers. In this study we have considered the inclusion of hashtags a way of broadening the potential audience for the tweets. We have also considered the followers of the Twitter accounts tweeting NIVEL (or the benchmark) publications as a proxy of the ‘exposure’ that the Twitter users provide to the publications. Similarly, Altmetric.com also provides some geolocation data on the Twitter users, thus we have identified those Twitter accounts that are located in the Netherlands, thus providing a perspective on the local reception of NIVEL (and benchmark) publications by Dutch Twitter accounts.

label	total (pubs with >=1 tweet)	total (tweets)	total (users)	total (tweets by Dutch users)	total (retweets)	total (tweets by highly followed users)	total (hashtags)	total (followers)
Benchmark	2049	18292	9235	1122	8907	6825	7091	44905756
NIVEL	185	2037	1388	211	1155	773	863	4065844

Table 5: Totals for Twitter

label	mean (tweets per user)	pp (tweets by highly followed users)	pp (tweets that are not RT)	pp (tweets by Dutch users)	pp (tweets with hashtag)	mean (followers)	mean (hashtag per paper)
Benchmark	1,98	37,31%	51,31%	6,13%	26,55%	21915,94	3,46
NIVEL	1,47	37,95%	43,30%	10,36%	32,74%	21977,54	4,66

Table 6: Proportions for Twitter, where 100% represents all publications with *at least one* tweet

Table 5 shows the overall totals for the different indicators based on Twitter information. In Table 6 the proportion of publications for the different indicators are presented. We can see that the proportion of tweets made by a user with a significant number of followers (here specified as higher than 1000) is slightly higher for NIVEL than for the benchmark, and so is the mean number of followers of Twitter users. NIVEL also has a higher proportion of tweets made by Dutch users, yet the number of original tweets (as opposed to retweets, or RTs as captured by Altmetric.com) is lower. NIVEL's publications are on average tweeted more together with hashtags, which is an important means of broadening the exposure of the publications in Twitter (e.g. by introducing them in discussions or conversations). NIVEL has a lower mean of tweets per user, meaning (superficially) that they proportionally attract a larger group of users (exposure), yet with somewhat lower engagement.

Figure 2 puts the above proportions in a graph.

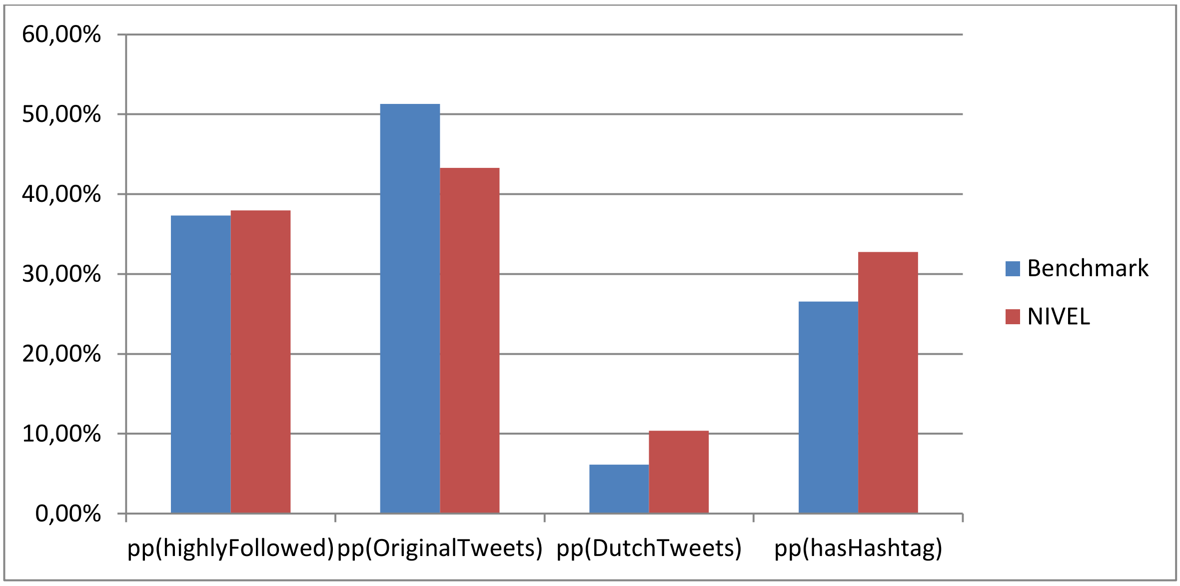

Figure 2: Proportions of Twitter users for various indicators

Finally, let's take a look at the ten NIVEL publications which have been tweeted about the most:

DOI	Tweets	Publication author(s)	Publication title
10.1177/0269216313493685	183	van der Steen, JT; Radbruch, L; Hertogh, CMPM; De Boer, ME; Hughes, JC; et al.	White paper defining optimal palliative care in older people with dementia: A Delphi study and recommendations from the European Association for Palliative Care
10.1186/1472-6963-13-497	142	Baines, RJ; de Bruijne, MC; Langelaan, M; Wagner, C	What are the safety risks for patients undergoing treatment by multiple specialties: a retrospective patient record review study
10.1371/journal.pmed.1001558	124	Simonsen, L; Spreeuwenberg, P; Lustig, R; Taylor, RJ; Fleming, DM; et al.	Global Mortality Estimates for the 2009 Influenza Pandemic from the GLaMOR Project: A Modeling Study
10.1177/0269216314528742	82	de Korte-Verhoef, MC; Pasman, HRW; Schweitzer, BPM; Francke, AL; et al.	General practitioners' perspectives on the avoidability of hospitalizations at the end of life: A mixed-method study
10.1177/0269216314546712	72	Leemans, K; Deliens, L; Francke, AL; Vander Stichele, R; Van den Block, L; Cohen, J	Quality indicators for palliative care services: Mixed-method study testing for face validity, feasibility, discriminative power and usefulness
10.1136/bmjqs-2014-003702	72	Baines, R; Langelaan, M; de Bruijne, M; Spreeuwenberg, P; Wagner, C	How effective are patient safety initiatives? A retrospective patient record review study of changes to patient safety over time
10.1177/0269216314526271	69	Evans, N; Pasman, HRW; Donker, GA; Deliens, L; Van den Block, L; et al.	End-of-life care in general practice: A cross-sectional, retrospective survey of 'cancer', 'organ failure' and 'old-age/dementia' patients
10.1136/bmjqs-2012-001126	64	BainesS, RJ; Langelaan, M; de Bruijne, MC; Asscheman, H; Spreeuwenberg, P; et al.	Changes in adverse event rates in hospitals over time: a longitudinal retrospective patient record review study
10.1186/1472-6963-14-61	50	Okuyama, A; Wagner, C; Bijnen, B	Speaking up for patient safety by hospital-based health care professionals: a literature review
10.3399/bjgp13X674422	42	Kringos, D; Boerma, W; Bourgueil, Y; Cartier, T; Dedeu, T; Hasvold, T; et al.	The strength of primary care in Europe: an international comparative study

Table 7: Top 10 tweeted NIVEL papers

A cursory look at Table 7 help to pinpoint two topics of research at NIVEL that seem to receive a substantial attention from Twitter users: palliative care services and patient safety.

Conclusion

From the altmetric data we have analyzed, we can conclude that NIVEL performs relatively higher than the benchmark publications in terms of discussion and reception of its publications in Twitter and Mendeley. NIVEL has a higher average number of tweets and Mendeley readers, as well as higher proportions of publications that are tweeted or saved in Mendeley at all. Its publications are also tweeted more with hashtags, and more by Dutch users. The latter might be an important measure in trying to capture the impact of NIVEL production on Dutch citizens.

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Appendix 20 NIVEL Feedback reports for health care professionals and organisations

1. NIVEL Primary Care Database (General practitioners, Physiotherapists, Exercise therapists, Dieticians, Speech therapists, Primary care psychologists, GP out-of-hours services, Health centres).
2. Database Communication
3. Consumer Quality Index (CQ-index)
4. Monitor Patient Safety

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Appendix 21 Narratives

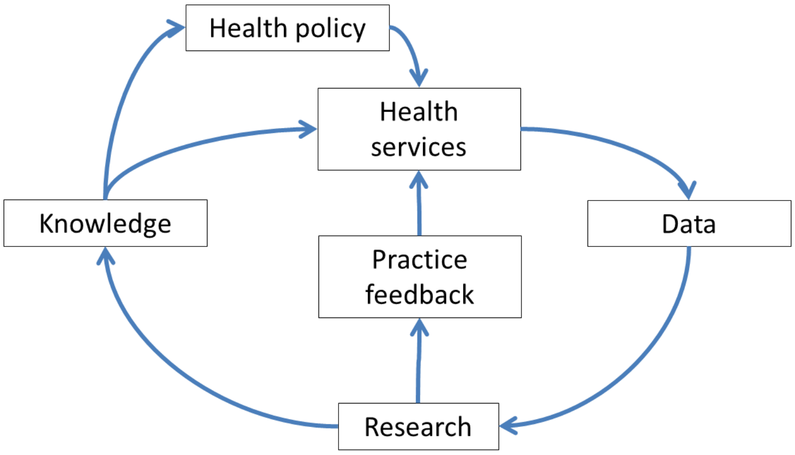
Narratives

1. The NIVEL Primary Care Database contributes to the learning health care system: giving meaning to routinely collected data.
2. NIVEL’s international research: the case of antimicrobial resistance.
3. Towards a person-centered approach to chronic care with the National Panel of people with Chronic illness or Disability.
4. Improving patient safety in hospitals – reducing potentially preventable adverse events (harm to patients) and patient death.
5. Patient participation – both in the consulting room and in research.
6. Providing relevant knowledge, and moderating between different stakeholders: the case of substitution.

The NIVEL Primary Care Database contributes to the learning health care system: giving meaning to routinely collected data

NIVEL started collecting health data in general practice in 1970, using this data for epidemiological and health services research. This data was collected using paper forms and questionnaires and included individual patients´ health problems and treatment. Together with relevant stakeholders, this information was used to improve health and health care in the Netherlands. During the 1990s NIVEL was able to take advantage of advances in medical information technology and the spread of electronic health records (EHR) systems in primary care. It started using data from these systems, not only from general practitioners, but also from physiotherapists, psychologists and out-of-hours services, culminating in what is now the NIVEL Primary Care Database. Today, more than 40 years later, a nationally representative network of health care professionals send their routinely recorded data to NIVEL on an annual, weekly and, if necessary, even daily basis, without requiring any extra effort from the health care professionals recording the data.

Over the years, research based on this data infrastructure lead to useful scientific knowledge which contributes to health and health care improvement in two ways. Firstly, by feeding back individual information to health care professionals. Secondly, through scientific publications and information oriented towards health care policy. The NIVEL Primary Care Database thus constitutes an example of a “learning health care system”.



Individual feedback information

NIVEL collects this data and in return provides health care professionals with feedback information. This information enables health care professionals to reflect on the quality of their recording, their own performance and to discuss with their colleagues and collaborative partners their professional choices and the quality of their care. With individual feedback information NIVEL facilitates in building bridges between health care providers to improve health care. Moreover, this individual feedback information includes quality of care indicators which can be used by health care providers and their professional organisations in their negotiations with health care insurers.

Scientific knowledge as the basis for policy in health care

NIVEL also uses its data to conduct research aimed at informing and evaluating health care policy on the local, regional and national level. Ad hoc policy questions can be answered relatively quickly. NIVEL shares its data with other collaborating institutes for example, the National Institute for Public Health and the Environment (RIVM) and Statistics Netherlands (CBS).

Research based on the NIVEL Primary Care Database meets the scientific standards and connects data from different health care providers. Consequently, health care benefits from the scientific knowledge acquired in this manner. Our knowledge is being used by government policy makers, professional organisations and educational bodies in order to improve health and health care. Health care professionals also benefit via professional and scientific publications and professional guidelines.

NIVEL gives meaning to the data

The availability of data has increased tremendously in recent years and is still increasing thanks to developments in information and communications technology (ICT). The availability of data may have a great impact upon the future of health care, yet acquiring this data is not an easy task. Privacy issues have to be taken care of, ICT, as well as governance challenges have to be addressed in order to create adequate levels of trust among stakeholders.

Moreover, having data as such, is not enough. Data cannot be translated into knowledge without a thorough understanding of the health care system in which the data have been recorded, how they have been collected and how they must be interpreted to give meaningful results. Having this expertise, is what makes NIVEL and the NIVEL Primary Care Database unique. NIVEL has invested decades in acquiring this expertise.

NIVEL's international research: the case of antimicrobial resistance

NIVEL's international research not only contributes to the quality of health care and health policy in the Netherlands but also in other European countries. For a number of decades, NIVEL has initiated and participated in international comparative research, building up an extensive network of collaborators in other countries. The exchange of knowledge through international research has been of great benefit, both for the Netherlands and for other countries.

Strengthening the links between NIVEL's national and international activities

A good example of how NIVEL's national and international activities strengthen each other is its research in the field of antimicrobial resistance (AMR). Currently, the Netherlands has a leading position in the AMR field and in 'antibiotic stewardship'. The use of antibiotics is low, there are good treatment guidelines available, surveillance is of high quality and longstanding, and cooperation between stakeholders is well established. On the national level, NIVEL has researched the topic among others through its Continuous Morbidity Registration (CMR) Sentinel General Practice Network which has helped reinforce our international position. Over recent years, NIVEL has coordinated two major EC-funded projects, APRES and ARNA. The FP7-funded APRES project focused on tailoring treatment guidelines to AMR patterns in the general population in nine EU countries. The project provided an important scientific basis for national treatment guidelines in support of professionals in their choice of antibiotics in all participating countries. The ARNA project funded by the European Commission's public health directorate general, DG Santé, looked at the problem from a different angle and was aimed at encouraging the prudent use of antibiotics in Europe with an emphasis on self-medication. After intensive field surveys, policy dialogue meetings were held with relevant stakeholders comprising policy makers, professional organisations and patient organisations in six countries with high levels of imprudent antibiotic use. At these meetings, measures to reduce antibiotic use were discussed taking the country's context into account. The policy plans which resulted were supported by all stakeholders. The ARNA project concluded with a conference and statement on how to stimulate the prudent use of antibiotics in the EU. This conference was organised as an associated event of the Dutch Presidency of the EU in the first half of 2016. The Dutch Ministry of Health regards this topic as a key international priority. Therefore, we were able to use this to enable us to reach high level audiences, including in the policy community.

NIVEL communicates knowledge to stakeholders in an international context

NIVEL has shown here how to communicate knowledge on antibiotics and AMR to all relevant stakeholders in health care: patients, researchers, health care professionals and policy makers. This multidisciplinary approach fits perfectly with the international vision of NIVEL. We believe scientific research must be relevant to stakeholders, both in the Netherlands and in other countries. Conducting research internationally makes our national research better, and vice versa. We aim to establish such forms of cross-fertilisation, in other projects too. We can achieve this by embedding our international research projects into programme areas that also conduct research on a national level, and, increasingly, by conducting national follow-up studies to translate the results of international projects, for example on the strength of primary care, to the national context.

Towards a person-centered approach to chronic care with the National Panel of people with Chronic illness or Disability

For people with a chronic illness or disability, the emphasis is not on cure, but on dealing with their chronic health condition as best as they can. This differs from people with an acute disease. Relevant themes are, for example, social participation, the quality of life and self-management. NIVEL had already realised twenty years ago that the policy on chronic illness should focus on the person as a whole. Review studies showed that the quality of care for people with chronic illness was insufficient and that these people fell behind on many areas of society. In response, NIVEL initiated patient and consumer panels of which the National Panel of people with Chronic illness or Disability (NPCD) is one. Today 3.800 people participate in this panel which is conducted by NIVEL with financial support from the Ministry for Public Health, Welfare and Sport and the Ministry for Social Affairs and Employment.

Understanding the needs of people with chronic illness or disability

The NIVEL panels gave patients a voice and the opportunity to point out their needs, their wishes and their experiences in health care. In this way, NIVEL has already been committed for years to bringing the patient perspective on care into the spotlight. With our NPCD, we systematically monitor the experiences with primary and hospital care as well as social support provided to people with chronic illness or disabilities. Next to this we monitor participation in society within the framework of the UN Convention on the Rights of People with Disabilities, including their participation in the labour market.

NIVEL anticipates an increase in the number of people with one or more chronic diseases in the near future. In 2030, 40% of the population in the Netherlands will have at least one chronic disease such as heart disease, cancer, diabetes, asthma and COPD. This often concerns older people with complex needs, but younger people with a chronic disease are also included in our research. This is because their social perspective falls behind compared to that of their healthy peers and their talent and potential is underused.

Giving an active role to people with chronic illness through self-management

As professional support is becoming scarce, self-management is being introduced into health care. But, there are still some challenges for policy makers and health care providers. Nearly one in every two patients in the Netherlands struggle to take control of their own health, illness and care. Health care providers, who should support people with chronic illness with self-management, encounter difficulty with their coaching role or lack the specific skills required for this role. NIVEL examines how patients can take control over their own life and provides feedback to health care providers and policy makers about their roles. In this way, NIVEL research contributes to achieving a person-centered approach in chronic care and support.

Health literacy can support people with chronic illness to take an active role

In response to the alarming findings on self-management, NIVEL conducted more in-depth studies on this topic. We discovered there are vulnerable groups of people who do not have adequate health literacy to take on an active role. These are people who are not able to understand and use health information and people who lack motivation and self-confidence. We know that between 30% and 50% of the population in the Netherlands have a low health literacy. This low health literacy has a negative effect on their health. These people need other types of support to achieve self-management. Meanwhile, NIVEL's research has raised awareness among policy makers and health care providers of the vulnerability of people with low health literacy and their need for special attention.

Improving patient safety in hospitals – reducing potentially preventable adverse events (harm to patients) and patient death

In 2004, the Dutch Association of Medical Specialists raised questions about the incidence of preventable adverse events and deaths in Dutch hospitals. It knew the numbers for the US, and was familiar with the report 'To err is human' by the Institute of Medicine. The Dutch media, however, translated the percentages in the US to the Dutch situation and concluded that there must be 3000-6000 preventable deaths each year in Dutch hospitals. The medical specialists had no argument against it as they had no real insight into the Dutch situation. Therefore, they decided to ask for and support a national patient safety research programme. With funding from the Ministry of Health, NIVEL and the EMGO+ institute of the VU University medical center started the research programme in 2005. The aspects to be focused upon were the incidence of adverse events and preventable adverse events, the causes of adverse events, and strategies for improvement.

The first report on incidence was published in 2007. Results showed that the incidence was lower than the extrapolations from the US percentages, but still 1,735 patients died because of a potentially preventable adverse event. This was an unacceptable number for the patient organisations and the Ministry of Health. In a very short time, the associations of medical specialists and registered nurses, together with the hospital organisations, developed a plan and launched a five-year patient safety improvement programme which started in 2008. NIVEL and EMGO+ were asked to monitor the implementation and measure its impact. A mid-term evaluation showed no improvement, but the final evaluation published in 2013 showed a remarkable reduction in potentially preventable adverse events and deaths.

Since the first report was published in 2007, the knowledge from this independent monitoring and evaluation stimulated the health care professionals and organisations to implement the improvement activities of the patient safety programme. Every publication of results lead to an extensive discussion by the press and questions were asked by the public. The research results were the basis for political discussions between the different parties in the health care field, the Ministry of Health and the Health Care Inspectorate. But, the results were also used to write scientific articles and several PhD theses.

To date, the implementation of patient safety improvement activities in hospitals is ongoing, concentrating on the more difficult areas, including medication safety, infection control, handovers and proficiency in using medical technology. Our research, in collaboration with EMGO+, also continues, as everybody is convinced that knowing the numbers and giving feedback strongly supports improvements in health care practice and policy decision-making.

Patient participation – both in the consulting room and in research

Patients are expected to be empowered health care consumers who actively participate in decision-making. This ideal is usually not reflected in the role they play in the consulting room of the health care professional. Many patients are timid and passive when visiting a professional as they are worried and prefer to let the doctor do the talking. And yet, the patient's voice should count in order to share information and concerns and to participate in decision-making. To increase the likelihood of patient participation, the professional should be taught to approach the patient as a person and enhance their conversational contribution. Patients, at the other hand, will also benefit from training in which they learn to adopt a more active role.

Developing interventions for, and with, patients

In this context, NIVEL develops and evaluates many interventions - including those online - and research projects to increase patient participation and communication. In similar projects of others, researchers usually define the project aims and research questions. However, these may not always comply with patients' agenda and needs. For example, many health websites and apps are not used since they do not meet patients' needs and patients are not involved in the development of these e-health interventions. NIVEL embraces another approach. The project 'Listening time', a website for elderly patients with cancer, was developed by involving patients from the start. They were asked about their needs before the development of the online intervention, they were involved in developing the website and reflected on how easy or not it was to use the 'beta version'. In addition, the communication training PatientTIME for patients with Non-Hodgkin lymphoma was developed at the request of the patient organisation Hematon. In this latter project, patients were invited to act as co-researchers by having them audio-record consultations with their oncologist.

Tailor-made patient information for better outcomes

In patient education, patient participation is also limited as health care professionals usually provide patients with complex, often not personally relevant, information. As a result, patients do not recall all information, not even the information that is important. One way to prevent this is to assess in advance what is important for a patient using an online questionnaire (question prompt list), and to only provide the information that meets the patient's profile and needs. This increases patient participation during consultations and their satisfaction with the health care encounters. Moreover, providing tailored information to patients ensures better adherence to medication and lifestyle recommendations.

Health care professionals reflecting on video recordings improves interaction with patients
Yet, training patients is not enough. Health care professionals should also be taught to communicate in a more person-centered way. In the project ‘Listening time’ patients are asked to reflect on personally relevant, simulated consultation fragments, while professionals have the opportunity to view examples of ‘good’ patient-professional communication. Video feedback, in which health care professionals reflect on their own consultations recorded on video, is also important. Such training makes a difference. The interaction with the patient proceeds better; professionals are more satisfied with their work.

Today, NIVEL is investigating whether patients actually participate more actively during encounters with their health care professional after having gone through one of our online communication training programmes. The first results show that, because of the increased attention to communication in various projects, patients already learn to think about good communication. They are also already aware of the importance of being taken seriously by health care professionals. We may need to take steps to ensure patients’ voices count even more in research projects on communication and participation. This could include adding meetings with ‘lay’ patients to our annual rounds of consultations with stakeholders. In this way we could get inspiration for new research proposals that really matter to patients.

Providing relevant knowledge, and moderating between different stakeholders: the case of substitution

The substitution of care from secondary care to primary care is a major issue in health care policy. However this is also a relatively new theme for research and policy. The idea is that substitution will lead to cost reductions and that it is more comfortable for the patient to receive care close to home. For NIVEL, major issues in health care policy are important issues to study in order to provide policy with relevant information. For this topic several stakeholders are involved including: health care providers, patients, insurance companies and the national government.

There is room for substitution, barriers have to be overcome
NIVEL studied the transfer of care from hospitals to GPs, including all the different stakeholders involved by means of questionnaires, interviews, registration data and by presenting the study results. Based on the real life behaviour of GPs and medical specialists, we could start with showing, that there is room for substitution for several conditions, such as diabetes, COPD and aftercare for prostate cancer. However, it is important that several preconditions exist for substitution. It was found that there are two major barriers that hinder a greater role for primary care: a lack of confidence between GPs and medical specialists, and financing.

A tradition of providing relevant knowledge and moderating between stakeholders
Increasing the role of primary care is not to be realised overnight. There are barriers to be crossed and that require various policy measures. It is therefore important to

develop policy in this area, so that the quality of care also remains guaranteed in the future. NIVEL has a tradition in providing relevant knowledge to stakeholders to support them in developing effective policy. The consequences of changes to policy are often monitored by NIVEL and the results can be used for timely adjustments in the policy. Next to monitoring, NIVEL has connections with all stakeholders and is well equipped to moderate between different stakeholders. Therefore, NIVEL’s ambition is to initiate or cooperate further in studies determining the effect, impact, feasibility or safety of substitution in the everyday life of health care services.

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