

Institut für Public Health

Institute of Public Health

Sektion Epidemiologie und Biostatistik

Unit of Epidemiology and Biostatistics

Bericht • Report

2009-2013

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Vorwort • Preface

Das Fach Epidemiologie ist an der Medizinischen Fakultät der Universität Heidelberg innerhalb des Instituts für Public Health repräsentiert. Dieser Bericht beschreibt die Aktivitäten der Sektion Epidemiologie und Biostatistik in den Jahren 2009 bis 2013.

Die Sektion hat im Berichtszeitraum eine Reihe von Veränderungen erfahren. Insgesamt ist die Sektion stark gewachsen – bei gleichbleibender institutioneller Förderung. Das Drittmittelaufkommen hat sich deutlich gesteigert, und dazu haben eine Reihe von Mitarbeitern beigetragen.

Zwei Mitarbeiter - Herr Dr. Heribert Ramroth und Frau Dr. Sabine Gabrysch - haben sich habilitiert bzw. ihre Habilitationsschrift eingereicht, für einen weiteren, Herr Dr. Volker Winkler, ist der Weg dahin nicht mehr weit. Alle haben selbständig Drittmittelprojekte eingeworben, wobei die Nachwuchsgruppe von Frau Gabrysch im Rahmen des Förderprogramms Epidemiologie des BMBF besonders hervorzuheben ist.

Aus Anlass der Erstellung dieses Berichts möchte ich mich herzlich bei allen Kooperationspartnern für die angenehme Zusammenarbeit bedanken. Besonders hervorheben möchte ich die Kollegen am „Centre de Recherche en Santé de Nouna“ (CRSN) in Nouna, Burkina Faso.

Mein Dank gilt auch allen Mitarbeiterinnen und Mitarbeitern des Instituts für Public Health, und ganz besonders allen Mitgliedern meiner Sektion für die vertrauensvolle und konstruktive Unterstützung.

Epidemiology is represented at the Medical Faculty of Heidelberg University as a unit within the Institute of Public Health. In this report the activities of the unit “Epidemiology and Biostatistics” in the years 2009 until 2013 are described.



The unit experienced a number of major changes within the reporting period. Overall, the unit has strongly increased in size – with constant institutional support. This was only possible through increased external funding, to which several members of the unit have contributed.

Two members of the unit completed their “habilitation” resp. submitted the thesis, Dr. Heribert Ramroth and Dr. Sabine Gabrysch, and another member, Dr. Volker Winkler, will follow soon. All of them have independently acquired research funding. The junior group of Dr. Gabrysch under the funding scheme of the BMBF is of particular relevance.

I would like to thank all colleagues for the smooth collaboration over the last years. In particular to be named are the colleagues at the Centre de Recherche en Santé de Nouna“ (CRSN) in Nouna, Burkina Faso. My special thanks goes to all members of the Institute of Public Health, in particular all members of the unit, for trustful and constructive support.

Heidelberg, im November 2013



Prof. Dr. Heiko Becher

Leiter der Sektion und stv. Direktor
Head of Unit and Deputy Director

Einleitung • Introduction

Epidemiologie hat in Deutschland eine vergleichsweise kurze Geschichte. In den achtziger Jahren des letzten Jahrhunderts existierten nur wenige Lehrstühle in diesem Fach. Mittlerweile gibt es an vielen Universitäten Deutschlands eigenständige Institute für Epidemiologie. In Heidelberg begann der Aufschwung der Epidemiologie im Deutschen Krebsforschungszentrum mit der Neubesetzung der Abteilungsleitung im Jahr 1986 und Umbenennung der ehemaligen Abteilung medizinische Dokumentation und Statistik in die Abteilung Epidemiologie. Weitere Gründungen epidemiologischer Abteilungen im DKFZ und im Deutschen Zentrum für Altersforschung – mittlerweile in das DKFZ integriert – brachten einen weiteren Aufschwung des Faches in Heidelberg mit sich.

An der Universität Heidelberg wurde eine entsprechende Abteilung nicht eingerichtet, und es fanden nur einige epidemiologische Aktivitäten innerhalb verschiedener klinischer Abteilungen oder in Instituten statt. Eng verbunden mit der Epidemiologie ist die Biostatistik. Die Biostatistik ist in Heidelberg seit langer Zeit mit der Abteilung „medizinische Biometrie“ sehr gut vertreten, allerdings mit deutlichem Schwerpunkt auf klinischen Studien und weniger auf biostatistischer Methodenforschung in der Epidemiologie.

Im Jahr 1998 wurde an der medizinischen Fakultät der Universität Heidelberg eine C3-Professur für Epidemiologie und Biostatistik eingerichtet, die am damals existierenden Hygiene-Institut in der Abteilung Tropenhygiene und öffentliches Gesundheitswesen angesiedelt wurde. Die Besetzung dieser Professur war verbunden mit der stellvertretenden Abteilungsleitung dieser relativ großen Abteilung mit ca. 60 Mitarbeitern. Der damit verbundenen informellen Gründung einer „Unit of Epidemiology and Biostatistics“ folgte im Jahr 2003 die formale Schaffung der Sektion Epidemiologie und Biostatistik.

Meilensteine in der Entstehung und Entwicklung der Sektion waren die Projektleitung von zwei Teilprojekten des SFB 544 „Kontrolle tropischer Infektionskrankheiten“, der mittlerweile beendet ist, und die Gründung und Förderung durch die DFG des Graduiertenkollegs 793 „Epidemiologie übertragbarer und chronischer, nicht übertragbarer Erkrankungen und deren Wechselbeziehungen“, welches eine Laufzeit von 2002-2012 hatte, und dessen Sprecher der Sektionsleiter war.

Epidemiology has a relatively short tradition in Germany. A few such research departments existed in the eighties of the last century. This however has clearly changed. By now, there are institutes or departments of epidemiology in many universities in Germany. In Heidelberg the growth of the field began in 1986 with the appointment of a new professor in epidemiology to head a new Department of Epidemiology (formerly medical documentation and statistics) at the German Cancer Research Center (DKFZ). The establishment of further departments of epidemiology were installed at the DKFZ and at the German Center for Research on Ageing – now merged with the DKFZ – which led to a significant development of the field in Heidelberg.

At the medical faculty of the University of Heidelberg there was still no department of Epidemiology. There were nevertheless some epidemiological activities which took place within different clinical departments or other institutes. Closely linked to Epidemiology is the field of Biostatistics. This subject is well represented at Heidelberg University by the reputable Department of Medical Biometry, however, it has its focus on clinical trials and not on methods in epidemiology.

In 1998 a new position for a professor of Epidemiology and Biostatistics was created at the Medical Faculty of the University of Heidelberg, assigned to the Department of Tropical Hygiene and Public Health at the Institute of Hygiene with the additional responsibility of being deputy head of this relatively large department with about 60 members. A working group Epidemiology and Biostatistics was established which became an official unit (section) under the statutes of the faculty in 2003.

Milestones in the development of the unit were two projects within the collaborative research grant SFB 544 “Control of Tropical Infectious Diseases” which ended in 2011, and the PhD Program (Graduiertenkolleg 793) for epidemiology “Epidemiology of communicable and chronic, non-communicable diseases and their interrelationships”, which was funded from 2002 to 2012, and of which the head of this unit was the speaker.

There are a number of different areas of research in the unit. These include studies in infectious disease epidemiology, with focus on malaria, studies of chronic diseases – among these studies in cancer epidemiology and stroke epidemiology – studies in social epidemiology with focus on migrants from the

Die Forschungsthemen innerhalb der Sektion sind vielfältig. Sie beinhalten infektions-epidemiologische Studien im Bereich Malaria, Studien zur Epidemiologie chronischer Krankheiten – darunter Krebs, Schlaganfall –, sozialepidemiologische Studien zu Migranten, Studien im Bereich der deskriptiven Epidemiologie und Gesundheitsberichterstattung in Afrika, biostatistische Forschungsprojekte und andere. Diese Vielfalt hat verschiedene Gründe. Epidemiologische Studien sind in der Regel Langzeitprojekte, bei denen sich sinnvolle Folgeprojekte aus der Thematik heraus ergeben. Beispielsweise ist die Fall-Kontroll-Studie zum Larynxkarzinom, die bereits 1996 zusammen mit der HNO-Universitätsklinik in Heidelberg begonnen wurde, bis zum heutigen Tag ein aktuelles Projekt, bei dem zahlreiche Erkenntnisse und entsprechende Publikationen entstanden sind und noch entstehen werden. Der Wechsel des Sektionsleiters von dem Deutschen Krebsforschungszentrum an das Institut für Public Health, brachte die oben genannten neuen Themenfelder mit sich, die heute einen breiten Raum einnehmen und auch in der Zukunft einnehmen werden.

Einen breiten Raum nimmt seit dem Jahr 2010 die sogenannte „Nationale Kohorte (NaKo)“ ein, bei der der Leiter der Sektion der Vertreter des dazu gegründeten Vereins für die Universität Heidelberg ist. Unter seiner Leitung fanden eine Reihe von Machbarkeitsstudien statt, die zur Vorbereitung der Erhebung der Kohorte durchgeführt wurden. Für dieses bisher größte epidemiologische Projekt in Deutschland liegt die gemeinsame Verantwortung für das Rekrutierungszentrum Mannheim bei unserer Sektion gemeinsam mit der Abteilung Krebs Epidemiologie am DKFZ.

Eine Ausschreibung des BMBF zur Stärkung der Epidemiologie in Deutschland erfolgte im Jahr 2012. Der Antrag auf eine weitere eigenständige Arbeitsgruppe war erfolgreich. Sie wird geleitet von Frau Dr. Sabine Gabrysch und beinhaltet eine Projektförderung für die nächsten sechs Jahre.

Im Bereich der Lehre ist die Sektion vielfältig tätig. Die Organisation der Epidemiologie im Querschnittsbereich Epidemiologie, medizinische Biometrie und medizinische Informatik, ein Pflichtbereich nach der neuen Approbationsordnung, obliegt dem Sektionsleiter. Eine Reihe von Mitarbeitern der Sektion, sowie Kollegen aus dem DKFZ, sind hier an der Lehre beteiligt. Die epidemiologischen Teile der Masterprogramme und anderer Kurse an der Abteilung werden von der Sektion bestritten. Das Lehrprogramm für das Graduiertenkolleg wurde ebenfalls organisiert. Dies ist in dem Bericht weiter

former Soviet Union, so-called “Aussiedler”, descriptive studies with focus on data quality for health statistics in Africa, biostatistical research projects and others. An important area is also the methodological support of studies performed by other members of the department or of the SFB. This large variety of topics is easily explained. Epidemiological studies are usually long-term studies, and often new projects directly develop from these. For example, the case-control study on laryngeal cancer which started in collaboration with the Department of Otolaryngology at Heidelberg University Clinics in 1996, is an ongoing project up to the present day, in which results are still produced and corresponding publications have been emerged and more are expected in the future. The head of the unit who moved from the German Cancer Research Center (DKFZ) to the Department of Tropical Hygiene and Public Health brought with him the new fields of research which are a focus today and will remain a focus in the future.

A new large project which already attracted much public attention is the so-called “German National Cohort (NaKo)”. The head of this unit is the representative of the University of Heidelberg in the union (German: Verein) which has been founded for administrating this study. For this project, which is the largest epidemiological study ever performed in Germany, the joint responsibility for the recruitment center Mannheim lies with our unit together with the department of Cancer Epidemiology at the DKFZ.

In 2012 a call for new epidemiology units and junior working groups was issued by the German Ministry of Education and Research. Our unit was successful in an application to install a new independent working group within the unit. The group is headed by Dr. Sabine Gabrysch. The funding period is for initially six years.

Teaching also plays a major role in the unit. The epidemiological part of the “Querschnittsbereich” Epidemiology, Medical Biometry and Medical Informatics which is compulsory according to the new “Approbationsordnung” for medical students is organized by the unit head. A number of members of the unit as well as colleagues from the DKFZ are involved in teaching. The epidemiological modules of the master course “International Health” and other courses within the department are covered by the unit. The teaching program for the former PhD program has also been organized by our unit. This is further outlined in the report, as well as further scientific activities within and outside the medical Faculty of the University of Heidelberg.

aufgeführt, sowie auch weitere wissenschaftliche Aktivitäten innerhalb und außerhalb der Fakultät.

Die Sektion war in den letzten Jahren in Bezug auf Publikationen und Drittmittelwerbungen recht erfolgreich, so wurden in dem Berichtszeitraum insgesamt über 100 Zeitschriftenbeiträge veröffentlicht, viele davon in den besten Zeitschriften unseres Faches. Das Verzeichnis der Veröffentlichungen und eine entsprechende Aufstellung der geförderten Drittmittelprojekte findet man am Ende dieses Berichts.

Der Bericht ist größtenteils in Deutsch und **Englisch** verfasst. Aus Platzgründen sind die Beschreibungen der wissenschaftlichen Projekte nur auf **Englisch** enthalten.

In terms of publications and grant acquisition our unit was quite successful over the last five years. The number of peer-reviewed publications exceeded 100, many of these in the highest ranked journals of our field. The corresponding list of publications as well as a list of projects funded with soft money are given at the end of this report.

Most parts of this report are given in German and English, indicated by the print color. The description of scientific projects, however, is given in English only.



Abb. 1: Campus „Im Neuenheimer Feld“ mit Institut für Public Health im Gebäude 324

Fig. 1: New University Campus „Im Neuenheimer Feld“ with Institute of Public Health in building 324

1. Forschung • Research

In diesem Kapitel werden die wesentlichen Forschungsprojekte des Berichtszeitraums kurz beschrieben, wobei ebenfalls ein Ausblick auf laufende und geplante Projekte eingeschlossen ist. Für jedes Projekt bzw. jeden Themenbereich sind die beteiligten Mitarbeiter und externen Kooperationspartner genannt. Der bzw. die Projektleiter ist bzw. sind unterstrichen (falls zutreffend).

Publikationen aus den jeweiligen Projekten sind mit der Nummer angegeben, die sich auf die Publikationsliste am Ende des Berichts bezieht.

In this chapter the main ongoing research activities of the reporting period are briefly described. This includes completed and ongoing projects as well as projects in preparation. For each project or topic the names of the internal working group and of the external collaborators are given. The project leader(s) is (are) underlined (if applicable).

Publications are listed for each project with the number that refers to the publication list at the end of the report.

1.1. Gemeinsame Projekte mit dem CRSN, Nouna, Burkina Faso und dem INDEPTH Network, Accra, Ghana • Joint Projects with the CRSN, Nouna HDSS, Burkina Faso and the INDEPTH network, Accra, Ghana

Mit Anfang des SFB 544, der mittlerweile ausgelaufen ist, begann eine enge Kooperation mit dem „Centre de Recherche en Santé de Nouna“ (CRSN) in Nouna, Burkina Faso, auf dem Gebiet der Epidemiologie, die auch über den SFB hinaus in zahlreichen Projekten fortgesetzt wird.

Basis der in diesem Kapitel beschriebenen Studien ist jeweils ein so genanntes „Health and Demographic Surveillance System (HDSS)“, welches in Nouna seit 1993 existiert, und in dem eine Population von gegenwärtig über 80000 Personen unter konstanter demografischer Surveillance ist. Dieses HDSS ist mit den sich daraus ergebenden Projekten in einem Übersichtsartikel (Sie et al., 2010) [26] beschrieben.

With the special research grant SFB 544, which has now ended, we started a close collaboration with the „Centre de Recherche en Santé de Nouna“ (CRSN) in Nouna, Burkina Faso. This collaboration with joint epidemiological projects continued after the SFB has ended.

Basis of all studies described in this chapter is a so-called „Health and Demographic Surveillance System (HDSS)“, which exists in Nouna since 1993, and in which a population of currently more than 80000 persons is under constant demographic surveillance. This HDSS and major projects which emerged from this database are described in a review article (Sie et al., 2010) [26].

Publication: [26]



Abb. 2: Dorf im Distrikt Kossi, Burkina Faso
Fig. 2: Village in district Kossi, Burkina Faso

Risikofaktoren, zeitliche und räumliche Muster der Sterblichkeit in Burkina Faso

Risk factors, temporal and spatial patterns of mortality in Burkina Faso

Project team: Heiko Becher, Anja Schoeps, Gisela Kynast-Wolf, Sabine Gabrysch, Heribert Ramroth, Gabriele Stieglbauer, Robert Ndugwa

Collaborators within the Institute: Olaf Müller, Valerie Louis, Manuele De Allegri,

External collaborators: Louis Niamba, Ali Sié, Bocar Kouyaté, Corneille Traoré, Maurice Yé, Nouna, Burkina Faso

Funding: DFG (SFB 544) and GRK 793

The database of the HDSS in Nouna, Burkina Faso and the collaboration with the scientists at the CRSN allowed several studies to investigate patterns of mortality. These analyses contributed to the evaluation of the progress towards the millennium development goals of the WHO which aimed at considerable reducing in particular childhood and maternal mortality worldwide.

In one analysis we included 6,387 children aged less than five years (mean follow-up time: 2.8 years; 16,099 person years (PY)). During the study period, 443 deaths were registered with malaria accounting for 49% of all deaths. All-cause and malaria-specific MR were 26.7 (95% CI: 24.2_29.2) and 15.8 (95% CI: 14.2_17.7) per 1,000 PY. All-cause MR declined over years of follow-up (from 31.2 to 16.3 per 1,000 PY in 1999/2000 to 2004, respectively) but malaria MR remained relatively stable (from 15.8 to 12.1 per 1,000 PY in 1999/2000 to 2004, respectively) resulting in an increasing relative effect of malaria on all-cause mortality. Variations in all-cause and malaria specific mortality were observed with increasing age and across village town clusters. The findings of this study support the continuously decreasing trend of all-cause mortality in most of SSA, but call for more efforts to comprehensively address malaria with existing control tools such as insecticide-treated bed nets and effective first-line combination therapies.

In a further study we aimed to investigate the relation between distance to health facilities, measured as continuous travel time, and mortality among infants and children younger than 5 years of age in rural Burkina Faso, an area with low health facility density. This study included 24,555 children born between 1993 and 2005 in the Nouna Health and Demographic Surveillance System. The average walking time from each village to the

closest health facility was obtained for both the dry and the rainy season, and its effect on infant (<1 year), child (1–4 years), and under-5 mortality overall was analyzed by Cox regression. We observed 3,426 childhood deaths, corresponding to a 5-year survival of 85%. Walking distance was significantly related to both infant and child mortality, although the shape of this effect varied distinctly between the 2 age groups. Overall, under-5 mortality, adjusted for confounding, was more than 50% higher at a distance of 4 hours compared with having a health facility in the village ($P < 0.0001$). The region of residence was an additional determinant for under-5 mortality. The findings of this study emphasize the importance of geographic accessibility of health care for child survival in sub-Saharan Africa and demonstrate the need to improve health-care access to achieve the Millennium Development Goals.

Another study was to evaluate seasonal patterns of cardiovascular death in adults, which are possibly influenced by hot and dry climate, in a rural setting of Burkina Faso. Cause of death was ascertained by verbal autopsy. Age-specific death rates (cardiovascular death and all-cause) by month of death were calculated. Seasonal trends and temperature effects were modelled with Poisson regression. In 11 174 adults (40+), 1238 deaths were recorded for the period 1999–2003. All-cause mortality in adults (40–64 years) and the elderly (65+ years) was 1269 per 100 000 (95% CI 1156–1382) and 7074 (95% CI 6569–7579), respectively. Cardiovascular death was the fourth most frequent cause of death in adults (40+), with a mortality of 109.9 (95% CI 76.6–143.1) for ages 40–64 and 544.9 (95% CI 404.6–685.1) for ages 65+. For all-causes, the mortality was highest in March and for cardiovascular death highest in April, the hot dry season (March–May). Mean monthly temperature was

significantly related to mortality in old ages. Cardiovascular mortality varies by season, with higher mortality rates in the hot dry season. The pattern seems to be consistent with other studies suggesting association between hot weather and cardiovascular disease. A 'heat-

wave' effect appears to be observable also in areas with hot average temperatures.

Publications: [8], [19], [42]

Räumliche Muster der Kindersterblichkeit Spatial Clustering of childhood mortality

Project team: Heiko Becher, Gisela Kynast-Wolf, Robert Ndugwa, Heribert Ramroth, Gabriele Stieglbauer

Collaborators within the institute: Olaf Müller

External collaborators: Osman A. Sankoh, INDEPTH Network, Ghana and HDSS sites in twelve countries in Africa and Asia

Funding: DFG (SFB 544), INDEPTH

In an earlier analysis of the data from the DSS in Nouna, Burkina Faso, an extremely high childhood mortality was found in a particular village. Spatial scan statistics was the method used for the analysis. In an ongoing analysis, we investigate whether this clustering persists after a new well has been built to improve water supply in the village. Preliminary results show that the childhood mortality has slightly decreased in the years 2000 to 2003, however, the mortality is still significantly higher than in the neighboring villages. This result gave rise to similar analyses in other HDSS sites which are linked together within the INDEPTH Network. We organized a workshop in Accra, Ghana to investigate such patterns. The results have

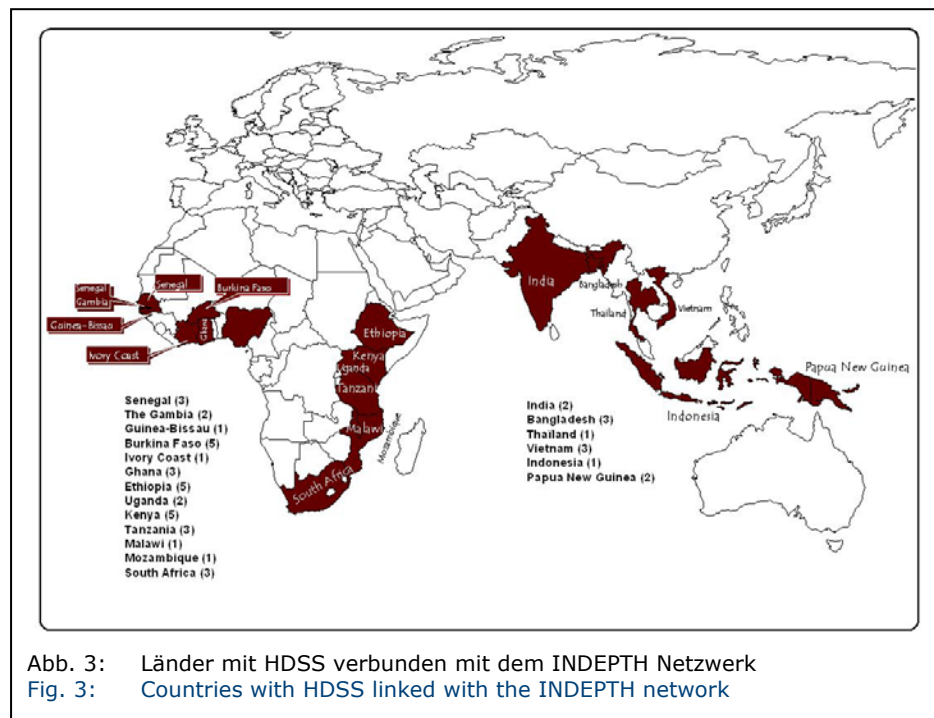


Abb. 3: Länder mit HDSS verbunden mit dem INDEPTH Netzwerk
Fig. 3: Countries with HDSS linked with the INDEPTH network

been published in a special issue of the journal "Global Health Action" together with an editorial from H. Becher.

Publication: [16]

Ermittlung der Todesursache mit Daten der "Verbalen Autopsie": das probabilistische InterVA

Ascertaining the Cause of Death using Verbal Autopsy Data: The probabilistic InterVA.

Project team: Heribert Ramroth, Johanna Rankin, Eva Lorenz, Mark Ssenonono, Heiko Becher

External collaborators: Ali Sié, CRSN Nouna, Burkina Faso, Peter Byass, Umea Universitet, Sweden and others

Funding: DFG (SFB 544), Project D1

Funding period: 2008-2012

In many developing countries most deaths occur outside hospitals. Therefore verbal autopsy (VA), involving following up deaths with those present at the time, has been shown to be a useful and often the only possible method for deriving cause of death statistics in such settings. The most common method for determining the probable cause of death (COD) from the VA interview is Physician Coded Verbal Autopsy (PCVA), an independent review of questionnaire data by physician(s) trained in VA coding.

An alternative method, the Interpret Verbal Autopsy (InterVA) model, is based on a Bayesian approach which derives posterior probabilities for causes of death given an a priori distribution at population level and a set of interview-based indicators. The InterVA model has begun to be used in developing countries, most notably in the INDEPTH network.

The aim of the project was to compare the COD distribution using the PCVA approach versus the InterVA model, based on information from a French VA questionnaire in rural north-western Burkina Faso. We found that at the population level, 62.5% of causes of death using the Interpreting Verbal Autopsy model corresponded with those determined by two or three physicians. Although seven of the 10 main causes of death were present in both approaches, the comparison of percentages of single causes of death shows discrepancies, dominated by higher malaria rates found in the Physician Coded Verbal Autopsy approach. Our results confirm that national mortality statistics, which are partly based on verbal autopsies, must be carefully interpreted.

Difficulties in determining malaria as cause of death in holoendemic malaria regions might result in higher discrepancies than those in non-endemic areas. As neither Physician Coded Verbal Autopsy nor Interpreting Verbal Autopsy results represent a gold standard, uncertainty levels with either procedure are high.

A subsequent project covered special aspects of the verbal autopsy (VA) questionnaires. The question is: How informative is so called "free text" in the VA questionnaires? The free text part serves to describe the background situation of the time before death like general health of the deceased, health seeking behavior and other information found important to report by the relatives of the deceased. Additionally, this part is not in general coded by the fieldworker doing the interview in the standardized section of the interview. The aim of this project was to determine the impact of free text information seeking the final cause of death. We found that there were changes of between 5.5-10.2% between models before and after free-text incorporation. No impact on malaria CSMFs was seen in the representative sub-sample, but the proportion of malaria as cause of death increased in the physician sub-sample (2.7%) and saw a large decrease in the InterVA subsample (9.9%). Information on 13/106 indicators appeared at least once in the free-texts that had not been matched to any item in the structured, electronically available portion of the Nouna questionnaire. We concluded that free-texts are helpful in gathering information not adequately captured in VA questionnaires, though access to free-text does not explain differences in physician and model determination of malaria as cause of death.

Publications: [65, 66]

Mangelernährung bei Kindern Childhood malnutrition

Unit member in project team: Sabine Gabrysch

Project team at Institute of Public Health: Olaf Müller, Claudia Beiersmann, Valerie Louis, Albrecht Jahn

External collaborators: Maurice Yé, Nouna, Burkina Faso

Funding: DFG (GRK 793)

For measurement of progress towards the Millennium Development Goal (MDG) 1, reliable data on nutrition indicators of specific countries are essential. Malnutrition is also the main determinant for childhood mortality, which is addressed in MDG 4. In the Nouna HDSS, nutritional parameters were compared in two cohorts of young children of the same age range from eight villages. Surveys took place in June and December of the year 1999 and 2009. A multivariate model was used to control for confounding variables. Prevalence of underweight was highest in December 1999

(42.6%) and lowest in December 2009 (34.1%). After adjustment for age, sex and village, there was a slight but not always significant improvement in the z-scores of weight-for-age, weight-for-length, length-for-age, and mid-arm circumference over time. The findings from this study confirm the still unacceptable high prevalence of malnutrition in young children of rural sub-Saharan Africa (SSA). We concluded that progress in the reduction of malnutrition remains slow on this continent making it rather unlikely that the corresponding MDGs will be achieved.

Publication: [48]

Effekt von imprägnierten Bettnetzen im Säuglingsalter Effects of insecticide-treated bednets during early infancy

Unit members in project team: Heiko Becher, Heribert Ramroth, Gabriele Stieglbauer

Project team at Institute of Public Health: Olaf Müller

External Collaborators: Corneille Traoré, Bocar Kouyaté, Yazoumé Yé, Claudia Frey, Boubacar Coulibaly

Funding: DFG, SFB 544

This study was performed under the supervision of Prof. Dr. Olaf Müller and analyzed in this unit. Insecticide-impregnated bednets and curtains have been shown by many studies to be effective against malaria. However, because of possible interactions with immunity development, treated bednets may cause no effect at all or even an increase in malaria morbidity and mortality in areas of high transmission. To clarify this issue, we did a randomized controlled trial to assess the long-term effects of bednet protection during early infancy.

Between 2000 and 2002 a total of 3387 neonates from 41 villages in rural Burkina Faso were individually randomized to receive either bednet protection from birth (group A) or from age 6 months (group B). Primary outcomes were all-cause mortality in all study children and incidence of falciparum malaria in a

representative subsample of the study population.

After a mean follow-up of 27 months, there were 129 deaths in group A and 128 deaths in group B rate ratio (RR) 1.0 (95% confidence interval (CI): 0.78-1.27)). Falciparum malaria incidence was lower in group A than in group B, during early (0-5 months) and late infancy (6-12 months) (RR 3.1, 95% CI: 2.0-4.9; RR 1.3, 95% CI: 1.1-1.6) and rates of moderate to severe anaemia were significantly lower during late infancy (11.5% vs 23.3%, $P = 0.008$), but there were no differences between groups in these parameters in children older than 12 months. The findings from this study provide additional evidence for the efficacy of insecticide-treated nets in young children living in areas of intense malaria transmission.

In the reporting period, a further analysis with a long-term follow-up has been performed. After a median follow-up time of 8.3 years,

443/3387 (13.1%) children had migrated out of the area and 484/2944 (16.4%) had died, mostly at home. Long-term compliance with ITN protection was good. There were no differences in mortality between study groups (248 deaths in group A, 236 deaths in group B; rate ratio 1.05, 95% CI: 0.889-1.237, $P = 0.574$). The survey conducted briefly after the rainy season in 2009 showed that more than 80% of study children carried asexual malaria parasites and up to 20% had clinical malaria.

Publication: [60]

We conclude that insecticide-treated mosquito net protection in early infancy is not a risk factor for mortality. Individual ITN protection does not sufficiently reduce malaria prevalence in high-transmission areas. Achieving universal ITN coverage remains a major challenge for malaria prevention in Africa.

Optimising the impact and cost-effectiveness of child health intervention (OPTIMUNIZE)

Unit members in Project team: Heiko Becher, Anja Schoeps

Project team members within the institute: Olaf Müller, Nobila Ouédraogo

External Collaborators: Peter Aaby, Christine Benn, Ane Fisker, Statens Serum Institut Denmark; Instituto Nacional de Salude Publica, Guinea-Bissau; Ali Sié et al., Centre de Recherche en Santé de Nouna, Burkina Faso; Ghana Health Service, Ghana; INDEPTH Network, Ghana and others

Funding: EU

Recent studies have consistently shown that vaccines and micronutrients have non-specific effects, i.e. effects which are not explained by prevention of the targeted infections or deficiencies. These effects are often sex-differential. Furthermore, interventions may interact. Hence, the overall impact of child health programs cannot be extrapolated from small-scale target-specific studies.

In this study we first used the health and demographic surveillance system (HDSS) sites in Nouna, Burkina Faso to register information routinely on all interventions in childhood, such as all vaccinations, micro-nutrient supplementation, and de-worming, given at health centres or in campaigns. We estimated vaccination coverage using a data set of 11 906 children aged <5 years. Data were collected from September 2008 to December 2009. We found that vaccination coverage based on

information from existing vaccination cards ranged from 80% (measles) to 94% (OPV1). When taking into consideration all information available (including BCG scars in children with and without vaccination card), full coverage in children aged 12–23 months was around 75%, with a significantly higher coverage in rural compared with urban areas. There were no differences in vaccination coverage between boys and girls. The study supports other studies that found vaccination coverage improvement in Burkina Faso recently.

In a second step we perform a two center randomised intervention trial in Burkina Faso and in Guinea-Bissau.

Providing early measles vaccine at 4.5 and 9 months of age is currently being compared with the recommended measles vaccine at age 9 months. Mortality is the main outcome. This trial is currently ongoing. Data collection will continue until 2015.



Abb. 4: Randomisierung bei der Optimunize Studie
Fig. 4: Randomization within the Optimunize trial

Publications: [74], [78]

INDEPTH Training and Research Centres of Excellence (INTREC)

Unit members in project team: Heiko Becher, Nicholas Henschke, Heribert Ramroth

External Project team members: Osman Sankoh et al., INDEPTH Network, Ghana; Peter Byass, John Kinsmann et al., Umea, Sweden; Joke Haafkens, Amsterdam, The Netherlands; Lisa Berkmann, Anna Mirny, Harvard University, USA, Laksono Trisnantoro, Indonesia, Karen Hofmann, South Africa

Funding: EU

The WHO's Commission on Social Determinants of Health (**SDH**) argued in 2008 that the dramatic differences in health status that exist between and within countries are intimately linked with degrees of social disadvantage. These differences are unjust and avoidable, and it is the responsibility of governments, researchers, and civil society to work to reduce them. Part of this work requires the production of setting-specific, timely, and relevant evidence on the relationship between social determinants of health and health outcomes, and yet this information is limited, especially in *low- and middle-income countries* (LMICs). Thus there is a strong need for the development of capacity-building activities to enable such research.

INTREC has been established with this concern in mind and its dual aims include:

- **Providing SDH-related training** for *The International Network for the Demographic Evaluation of Populations and Their Health researchers* (INDEPTH), thereby allowing the production of evidence on associations between SDH and health outcomes.
- **Enabling the sharing of this information** through facilitating links between researchers and decision makers, and by ensuring that research findings are

Publications: [77]

presented to decision makers in an actionable, policy-relevant manner.

INTREC activities will cover three African (Ghana, South Africa, Tanzania) and four Asian countries (Indonesia, Viet Nam, Bangladesh, India) and will be concentrated in two training centres in Ghana and Indonesia. The centers are to become focal points for research on social determinants of health in LMICs, thus enabling extensive South-South and North-South networks and research cooperation.

INTREC approach to capacity-building is holistic and includes both, providing state-of-the-art region-specific training for young researchers, and educating decision-makers on social determinants of health. The work will be carried by a

strong Consortium team of five university-based centres in Sweden, Germany, Netherlands, Indonesia and USA and by one research network of demographic surveillance sites in LMICs with headquarters in Ghana (INDEPTH).

INTREC approach will be evaluated at the end of a 3.5-year period. Based on the results of this evaluation, a conceptual framework on how to build sustainable capacity for research on health and its social determinants that could be applied in other LMICs will be developed.

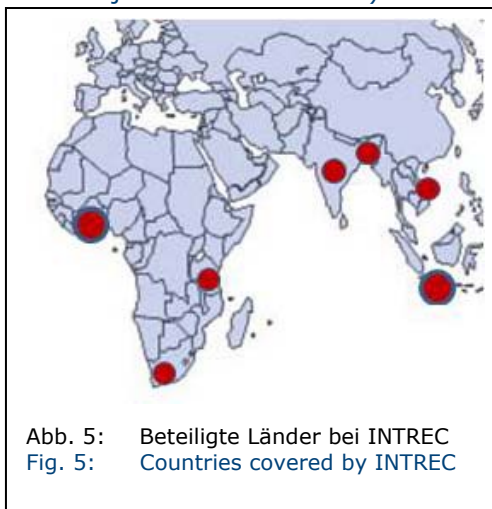


Abb. 5: Beteiligte Länder bei INTREC
Fig. 5: Countries covered by INTREC

Weitere Studien zu Malaria in Nouna, Burkina Faso Further Studies on Malaria in Nouna, Burkina Faso

Project team members in Unit: Heiko Becher, Gisela Kynast-Wolf, Gabriele Stieglbauer

Project team members within the institute and the medical faculty: Olaf Müller, Michael Lanzer, Thomas Jänisch, Caroline Geiger, and others

External project team members: Ali Sié, Boubacar Coulibaly, CRSN, Nouna, Burkina Faso and others

Funding: DFG (GRK 793 and SFB 544)

One study (Geiger et al., 2013) within the PhD program 793 aimed at assessing the dynamics of parasite prevalence and malaria species distribution over time in an area of highly seasonal transmission in Burkina Faso and to compare frequency of asymptomatic parasitaemia between wet and dry season by parasite density status and age group. Cross-sectional studies were performed in the rural village Bourasso in the Nouna Health District in north-west Burkina Faso. In subsequent rainy and dry seasons blood samples were collected to assess the parasite prevalence, species, density and clinical parameters. In total, 1,767 children and adults were examined and compared to a baseline collected in 2000. The microscopical parasite prevalence (mainly *P. falciparum*) measured over the rainy seasons decreased significantly from 78.9% (2000) to 58.4%, 55.9% and 49.3%, respectively (2009–2011; $p < 0.001$).

The frequency of *Plasmodium malariae* infections (mono- and co-infections) decreased parallel to the overall parasite prevalence from 13.4% in 2000 to 2.1%, 4.1% and 4.7% in 2009–2011 ($p < 0.001$). Comparing parasite-positive subjects from the rainy season versus dry season, the risk of fever was significantly reduced in the dry season adjusting for parasite density (grouped) and age group. The results of this study suggest a decline of malaria transmission over the rainy seasons between 2000 and 2009–2011 in the region of Nouna, Burkina Faso. The decreased transmission intensity was associated with lower prevalence of *P. malariae* infections (both mono-infections and co-infections). Asymptomatic parasitaemia was more frequent in the dry season even adjusting for parasite density and age group in a multivariate regression. Possible reasons for this observation include the existence of less pathogenic *Plasmodium falciparum* genotypes prevailing in the dry season, or the effect of a reduced incidence density during the dry season.

Another study (Kynast-Wolf et al., 2012) was nested into the aforementioned insecticide-

treated mosquito net (ITN) trial during which neonates were individually randomized to ITN protection from birth vs. protection from month six onwards in rural Burkina Faso. A sub sample of 120 children from three villages was followed for 10 months with six measurements of MSP142 antibodies (ELISA based on recombinant 42 kDa fragment) and daily assessment of malaria episodes. Time to the next malaria episode was determined in relation to MSP142 antibody titres. MSP142 antibody titres were dependent on age, season, ITN-group, number of previous malaria episodes and parasitaemia. There were no significant differences in time until the next malaria episode in children with low compared to children with high MSP142 antibody titres at any point in time (101 vs. 97 days in May, $p = 0.6$; 58 vs. 84 days in September, $p = 0.3$; 144 vs. 161 days in March, $p = 0.5$). The findings of this study support the shortlived nature of the humoral immune response in infants of malaria endemic areas. The study provides no evidence for antibodies against a subunit of MSP1 being protective against new malaria episodes in infants.

Malaria blood-stage vaccines are in an early phase of clinical development with MSP1 being a major antigen candidate. There are limited data on the protective efficacy of antibodies against subunits of MSP1 in the malaria endemic areas of sub-Saharan Africa.

A further study (Oster et al., 2010) investigated a question on resistance to chloroquine. This has been linked to polymorphisms within the *pfcr* gene of the human malarial parasite *Plasmodium falciparum*. Here, we have investigated the prevalence of the *pfcr* allele associated with chloroquine resistance in the peripheral blood and the placenta of pregnant women diagnosed with a *P. falciparum* infection. Our molecular epidemiological data show an unequal distribution with a significant under-representation of parasites carrying the mutated *pfcr* allele in the placenta, as compared to the peripheral blood. In comparison, no differences were seen with regard to *pfmdr1* polymorphisms of these

parasites. Our data suggest a selective disadvantage of the polymorphic and a selective advantage of the wild-type pfcr1 haplotype in the placenta, supporting the

model that the human host provides various microenvironments that favor genetically distinct *P. falciparum* populations.

Publications: [21], [58]

1.2. Weitere infektionsepidemiologische Studien • Further studies in infectious disease epidemiology

Infektionskrankheiten waren das erste Feld der Epidemiologie. Ein klassisches Beispiel hierfür ist die Arbeit von John Snow, der Mitte des 19. Jahrhunderts die Übertragungsweise von Cholera entdeckte und effektive Interventionen vor der Entdeckung des *Vibrio cholerae* entwickelte.

Auch heute ist die Infektionsepidemiologie ein wichtiger Bereich, insbesondere im Zusammenhang mit Forschung in Entwicklungsländern. In dieser Sektion wurden in Berichtszeitraum eine Reihe von Studien zu Infektionskrankheiten durchgeführt. Soweit es sich um Projekte gemeinsam mit dem CRSN in Nouna, Burkina Faso, oder mit dem INDEPTH Network handelt, sind diese bereits im vorigen Kapitel beschrieben.

Epidemiology developed from research on infectious diseases. As a classical example the work of John Snow is often cited who discovered the mode of transmission of cholera in the 19th century and developed an effective intervention before the agent *Vibrio cholerae* was discovered.

Infectious disease epidemiology is still an important field, in particular in collaborative research in low- and middle-income countries. In this Unit a number of studies in the field of infectious diseases have been performed. If these have been joint projects with the CRSN in Nouna, Burkina Faso or with the INDEPTH network, they have already been described in the previous chapter.

Vergleich von Medikamenten gegen Kopfläuse Comparison of head lice treatment

Project team: Heiko Becher, Susanne Sonnberg

External Collaborators: Jörg Heukelbach, Fortaleza, Brasil and collaborators

Funding: DFG (GRK 793) and Bonusmittel

This was a joint project with colleagues in Fortaleza, Brasil. Head lice are common worldwide, and effective treatment is needed. In this study ovicidal efficacy of three dimeticone products of different compositions were tested. Against mature eggs, NYDA outperformed all other products (94.9% efficacy), with a significant difference to Jacutin (73.7%; $P = 0.016$) and the other pediculicides.

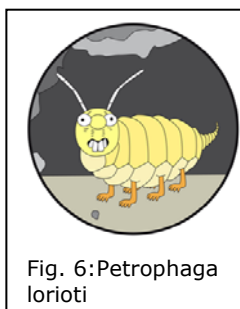


Fig. 6: Petrophaga lorioti

Within the project, an adaptation of historical methods for rearing head lice was done, and their development *ex vivo* was described. Adult head lice were collected

and fed on volunteers to obtain fertile eggs of known age. Two methods of feeding were applied: interval feeding (performed every 8-12 hours), and continuous feeding. The following outcome measures were used: appearance of eye spot; presence of embryonic structures; presence of embryonic movements; and hatching. Results: Eye spots of the embryos started to appear 6 days after oviposition (median = 7 days), and embryonic movements were first seen 9 days after



Fig 6a: Pediculus humanus capitis

oviposition (median 11 days). Continuous feeding of head lice on a human host is a suitable approach to obtain head lice eggs for ovicidal testing. The method is simple and cheap, offers conditions similar to the natural

habitat, and hatch rates are high. However, side effects on volunteers such as skin irritation (papular rash; moderate to severe itching) occur and must be considered.

Publications: [27], [36]

Tuberkulose in Deutschland Tuberculosis in Germany

Project team: Heiko Becher, Judith Barniol

Collaborations within the institute and the medical faculty: Thomas Junghanss

External Collaborators: Walter Haas, Berlin; Michael Forßbohm, Wiesbaden and others

Funding: DFG (GRK 793), DFG (Einzelantrag) and Bonusmittel

In one of our studies (Forsbohm et al, 2011) on Tuberculosis in Germany, we investigated the validity of the statistics on deaths caused by TB. The study population consists of the 926 fatal cases that were classified either as "death from TB" or as "death due to other causes". For the analysis, health authorities were asked to provide additional information and such documents as the death certificate, the autopsy protocol and the final medical report. Based on the findings, every second death caused by TB in 1997 and 1998 was not recorded correctly during the postmortem examination. Every third TB death was not diagnosed during the patient's lifetime. Patients who died due to TB were, on average, older and more likely to be born in Germany.

This indicates that age-related comorbidity among the native German population plays a relevant role. Yet, the uncausal death registration did not acknowledge comorbidity as a contributing factor to the fatal outcome.

In conclusion, the post-mortem examination often missed TB as the cause of death. Many native German TB patients showed age-related comorbidity. Pulmonary TB with positive microscopy, miliary TB and meningeal TB led more often to a fatal outcome than other organ manifestations. Alcohol abuse was a leading risk factor for TB deaths in patients younger than 65 years.

In another study (Barniol et al., 2009) we described how immigration influences TB transmission in Germany. A prospective study of confirmed culture positive cases of pulmonary TB and their contacts was carried

out in a German federal state from 2003 to 2005. Data for the study included: 1) case data routinely collected by the local public health staff and transmitted to the state health office and the national surveillance centre, 2) a study questionnaire designed to capture social interactions of relevance for TB transmission and 3) molecular genotyping data. Results: A total of 749 cases of culture-positive pulmonary tuberculosis voluntarily enrolled in the study. Forty-seven clusters, defined as at least two cases infected by the same TB strains, were identified by molecular methods and included 132 (17%) of the study participants. Epidemiological links were identified for 28% of the clusters by conventional epidemiological data. In mixed clusters, defined as clusters including German and foreign-born individuals, the probability of cases to be caused by foreign-born cases was estimated at 18.3%. We observed a trend to mixed clusters with increasing time spent by immigrants in the host country. This group also presented comparatively higher integration indexes than immigrants in immigrant-only clusters.

The study confirmed the findings of other studies that there is no significant TB transmission from TB high-prevalence immigrant to TB low-prevalence autochthonous population. This may be explained by the good performance of tuberculosis screening programs for certain groups arriving in Germany from high-prevalence countries, by a low degree of mixing of immigrants with the local population or by a combination of both.

Publications: [13], [32]

Die Bedeutung antimikrobieller Peptide bei Hautinfektionen The role of antimicrobial peptides in human skin infections

Unit member in project team: Sabine Gabrysch

External collaborator: Philipp Zanger, Tübingen

Funding: Core funding

Staphylococcus aureus is the most common cause of skin infections. Presentation and course of disease vary from minor self-limiting infections to deep, recurrent abscesses that require surgical intervention and systemic antibiotic therapy. A possible explanation for these differences in disease susceptibility and severity has been provided by recent insights into innate defence mechanisms of human skin, in particular antimicrobial peptides (AMP). These are natural antibiotics present in the skin that are thought to prevent infection in the first place, or that can be upregulated in response to infection and limit the severity of disease.

In the travel clinic of the Institute of Tropical Medicine in Tübingen, studies were conducted among travellers returning with *Staphylococcus aureus*-positive skin infection (cases) and healthy control subjects.

When examining healthy skin (from the gluteal region) from both cases and controls, we could show that expression of the antimicrobial

peptide RNase 7 was 64% higher in the skin of control subjects than in the skin of cases, while there was no difference in the expression of the antimicrobial peptides HBD-2 and HBD-3. Together with the known high baseline expression of RNase 7, this suggests that this AMP confers protection against skin infection.

In those travellers with skin infection, we furthermore examined AMP inducibility (upregulation) by comparing AMP levels in infected skin to that in healthy skin. Both HBD-2 and HBD-3 were strongly upregulated by *S. aureus* infection, but not RNase 7. When comparing inducibility between patients with different severity of skin infection, we found that expression of HBD-3 was 11 times lower in patients with more than 6 recurrences and 9 times lower in patients reporting surgical drainage than in the respective baseline groups. There was no difference in HBD-2 inducibility between severity groups. This suggests that high inducibility of HBD-3 can limit the severity of skin infection.

Publications: [30], [70]

Chronic kidney disease among HIV+ patients in Zambia

Unit member in project team: Andreas Deckert

Project team at Institute of Public Health: Florian Neuhann, Claudia Beiersmann

External collaborators: Helmut Reutter, CHRESO Ministries Zambia, Martin Zeier, Kidney Center Heidelberg; Thomas Bruckner, Institut für Medizinische Biometrie, Heidelberg; Dietrich Rothenbacher, Institut für Epidemiologie und Medizinische Biometrie Ulm

Funding: Else Kröner-Fresenius-Stiftung (proposal submitted)

This project plans to address the lack of knowledge regarding diagnosis/categorization of chronic kidney disease (CKD) in HIV+ patients in Sub-Saharan Africa (SSA), and regarding prevalence and incidence of CKD, what will make the need of action visible to health policy. HIV prevalence in Zambia, SSA, is known to be high at about 14%. It constitutes a top public health problem and is known to be jointly responsible for hampering development of the society. Among others, HIV infection can cause nephropathy and in the

long run end up in severe CKD, whose treatment needs additional medical devices, which are hardly available in SSA. Furthermore chronic kidney disease (CKD) is a major cause of morbidity and mortality particularly in low-income countries. The degree and burden of HIV+ related nephropathy in Zambia is widely unknown, single studies report about up to 34% CKD prevalence among HIV-patients in Zambia. Measurement and definition of renal function is challenging and can be estimated indirectly only in SSA by assessing the

glomerular filtration rate (GFR), based on serum creatinine. In the region of Lusaka, Zambia, a humanitarian project was established to provide anti-retroviral treatment to HIV+ patients. Within this project, routine laboratory time-series data of some thousand patients exist, starting in 2005. This data

should be used to estimate the CKD prevalence among HIV+ patients, to identify CKD favouring anti-retroviral treatment, and to establish a CKD preventive HIV treatment scheme in the long run. In the prospective part we plan to establish a HIV- control group and to include additional CKD risk factors.

1.3. Krebs epidemiologie • Cancer epidemiology

Krebs epidemiologie hat sich seit dem Nachweis des Zusammenhangs zwischen Rauchen und Lungenkrebs in den fünfziger Jahren des 20. Jahrhunderts rasant entwickelt. Studien fanden in der überwiegenden Mehrzahl in Industrieländern statt, in denen Krebs eine der Haupttodesursachen ist. In letzter Zeit werden auch zunehmend krebsepidemiologische Studien in Entwicklungsländern durchgeführt, bedingt durch eine insgesamt steigende Lebenserwartung und einer damit verbundenen ansteigenden Krebsinzidenz. In dieser Sektion werden bzw. wurden eine Reihe von Studien aus dem Bereich der Krebs epidemiologie durchgeführt.

Cancer epidemiology developed very rapidly since the 1950s when the link between smoking and lung cancer was discovered. Studies were mainly performed in western countries, where cancer is one of the major causes of death. Studies in developing countries, however, are becoming more and more common, mainly because of the overall increasing life expectancy and a related increasing cancer incidence. In this Unit we perform a number of cancer studies, which in part originated as long term projects from the former position of the unit head at the German Cancer Research Center.

Rauchen und Lungenkrebs in Afrika Smoking and lung cancer in Africa

Project team: Volker Winkler, Heiko Becher

External collaborators: Jördis Jennifer Ott, Melanie Cowan, WHO, Geneva;

Funding: GKR 793, SFB 544 and core funding

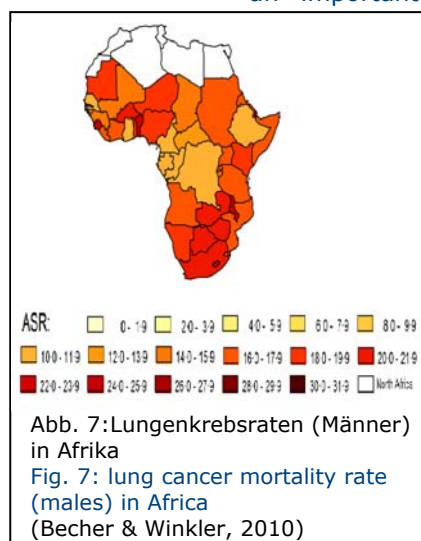
In general data on smoking prevalence is scarce for African countries, but there are several studies for different countries available that show an alarming trend: Male smoking prevalence in African varies from about 20% up to over 65% depending on age and country.

Traditionally, smokers are mostly males. The proportion of women smokers is very low, but is already rising in a few African countries. According to the WHO, in 1999, Africa smoked 4% of World cigarette consumption and the UN's Food and Agricultural Organisation (FAO) state cigarette smoking in Africa is growing by a record 3.5% a

year. Tobacco is the major cause of cancer and an important risk factor for several other

chronic diseases. Due to the epidemiological transition in developing countries (increasing life expectancy) there is an increasing relevance of chronic diseases to the total burden of diseases.

We developed a method to estimate the number of lung cancer cases caused by smoking in Africa using lung cancer mortality data from industrialized countries only in combination with smoking prevalence data in Africa. The results showed, that the previous estimates were too



high but on the other hand up to 50000 lung cancer deaths per year occur in Africa, most of them caused by smoking. This number will increase due to the demographic transition.

We applied the model to data from countries where data on lung cancer mortality are sufficiently reliable, and found that our model predicts total burden of lung cancer very well.

We were able to show that the estimates by IARC/WHO, which are based extrapolations from local cancer registries in a few African countries are not reliable and strongly underestimate the real burden of the disease. Even under the assumption of decrease in smoking prevalence, we showed lung cancer mortality will rise. The epidemiologic transition in African low-income countries alludes to the need for targeted health prevention efforts.

Publications: [28], [29], [31], [44], [82]

Studien zur Ätiologie und Prognose des Kehlkopfkrebs Studies on etiology and prognosis of laryngeal cancer

Project team: Heribert Ramroth, Irene Santi, Heiko Becher

External collaborators: Odilia Popanda, Angela Risch, Peter Schmezer, DKFZ Heidelberg Andreas Dietz, Leipzig; Wolfgang Ahrens, BIPS Bremen; and others

Funding: Dietmar Hopp foundation

The Rhein-Neckar-Larynx Study is a population-based case-control study 1:3 frequency matched by age and sex on laryngeal cancer in South-West Germany with 257 cases, histologically confirmed and diagnosed between 1.5.1998 and 31.12.2000 and 769 population controls. Information about occupational exposures, lifestyle factors and socio demographic background were obtained with face-to-face interviews using a detailed standardized questionnaire. This case-control study allowed numerous analyses and publication, some of which published in this reporting period.

Based on the data from the case control study, new analyses have been done to better understand the influence of occupation as risk factor for laryngeal cancer. Previous studies tried to assess the association between socioeconomic status and laryngeal cancer. Alcohol and tobacco consumption explain already a large part of the social inequalities. Occupational

exposures might explain a part of the remaining but the components and pathways of the socioeconomic contribution have yet to be fully disentangled. One aim of this analysis is to evaluate the role of occupation using different occupational indices, differentiating between physical, psycho-social and toxic exposures and trying to summarize the occupational burden into one variable.

A second of these analyses is to measure the extent to which the association between socioeconomic status and laryngeal cancer is mediated by smoking, alcohol consumption and occupational exposure. For this, a decomposition method for logit models

proposed by Karlson, Holm and Breen was used to return the percentage of change in odds ratios due to confounding.

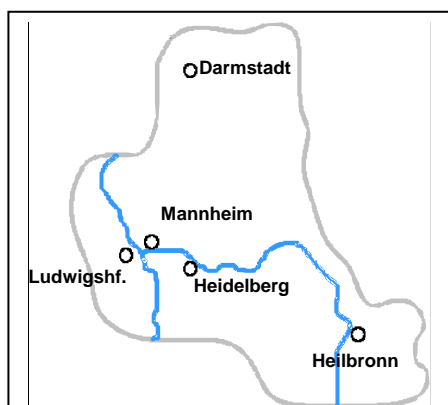


Abb. 8: Studienregion der Rhein-Neckar-Larynx Studie
Fig.8: Study region of the Rhein-Neckar-Larynx Studie

Publications: [107], [108]

The cases of the study have been supplemented by more than 500 further cases from the years 2001 to 2004 to generate a patient cohort which has been followed up until June 2011. This was done to better analyse those factors which influence survival of

laryngeal cancer patients, involving a variety of interacting factors. Five-year overall survival of all Europeans diagnosed with laryngeal cancer between 1995 and 1999 was 55%, slightly worse than survival rates for the German population (59%). Despite the knowledge that

smoking and alcohol are main risk factors for laryngeal cancer, it is not well determined up to which extent they influence survival time after diagnosis.

Publications: [40], [41]

The data of the case-control study have been added to a consortium of studies on head and neck cancer (INHANCE). (<http://inhance.iarc.fr/>) The International Head and Neck Cancer Epidemiology (INHANCE) Consortium was established in 2004, based on the collaboration of research groups leading large molecular epidemiology studies of head & neck cancer

Publication: [49]

Further on-going analyses focus on clinical factors, methylation and HPV-infections.

that are on-going or have been recently completed. When taken collectively, questionnaire data on over 26,000 cases & 34,000 controls, and biological samples from a majority of the study population would be available. These studies have been conducted in various regions of the world.

Prognostische Faktoren für das kolorektale Karzinom (ColoCare)

Prognostic factors for colorectal cancer (ColoCare)

Project team: Heiko Becher

External collaborators: Cornelia Ulrich, NCT Heidelberg and others

Funding: core budget

ColoCare is an international and multi-center prospective cohort study. Collaborative centers are the Fred Hutchinson Cancer Research Center in Seattle and the Moffitt Cancer Research Center in Tampa, Florida. H. Becher is member of the consortium and contributes to power considerations and biostatistical analyses. In a first pilot study 149 colorectal cancer cases and 91 age- and sex-matched controls from all three centers were included.

We assessed the levels of plasma 25-hydroxyvitamin D3 (25(OH)D3), folate and vitamin B12 in an international pilot study in order to determine variability of these biomarkers based on geographical location (Ulrich et al., 2013). Plasma 25(OH)D3, folate and vitamin B12 concentrations were measured. Their associations with potential predictors were assessed using multivariate linear regression analyses. Plasma 25(OH)D3, folate and vitamin B12 concentrations differed by location. Season-corrected average 25(OH)D3 concentrations were higher in Heidelberg (31.7 ng/ml; range 11.0–83.0 ng/ml) than in Seattle (23.3 ng/ml; range 4.0–80.0 ng/ml) and Tampa (21.1 ng/ml; range 4.6–51.6 ng/ml). In Heidelberg, a strong

seasonal variation was observed. Folate (11.1 ng/ml) and vitamin B12 (395 pg/ml) concentrations in Heidelberg were lower than those in Seattle (25.3 ng/ml and 740 pg/ml, respectively) and Tampa (23.8 ng/ml and 522 pg/ml, respectively). Differences in plasma 25(OH)D3 and folate concentrations between Heidelberg and the US sites were observed, probably reflecting variation in outdoor activities and sun-avoidance behaviour during summer as well as in folic acid fortification and supplement use. Intra-site differences at each study location were greater than between-location variability, suggesting that individual health behaviours play a significant role. Nevertheless, the intra-site differences we observed may be due to chance because of the limited sample size. Our pilot study illustrates the value of an international cohort in studying colorectal cancer prognosis to discern geographical differences in a broad range of exposures.

Our unit contributed to the biostatistical analysis of the pilot study, and is involved in the planning and future funding applications of the large prospective study.

Publication: [72]

1.4. Sozialepidemiologie und Migrantenforschung • Social epidemiology and migrant research

In der Sozialepidemiologie geht es primär um die Identifizierung von Determinanten von Gesundheitsrisiken (Stress, Risikoverhalten, soziale Isolation usw.) und um die quantitative Erfassung ihrer Auswirkungen auf Wohlbefinden, Lebensqualität, Krankheit und Mortalität. Wir ordnen eine Reihe von Studien in diese Kategorie ein, die sich mit der Gesundheit von Minderheiten, benachteiligten Bevölkerungsgruppen, oder Migranten befassen.

In Social Epidemiology we deal with identification of social and behavioral determinants of health risks (stress, risk behavior, social isolation etc.) and with the quantitative assessment of these determinants on wellbeing, quality of life, morbidity and mortality. We group a number of studies into that category, which deal with the health of minorities, disadvantaged population groups or migrants.

Studien bei Aussiedlern aus der ehemaligen Sowjetunion – die AMOR-Studien

Studies on resettlers (“Aussiedler”) from the Former Soviet Union – the AMOR-studies

Im Rahmen der Graduiertenkollegs 793 haben wir begonnen, im Rahmen einer Kohortenstudie die Mortalitätsmuster bei Migranten aus der früheren Sowjetunion zu untersuchen, die so genannten Aussiedler. Es handelte sich um eine Kohorte aus Nordrhein-Westfalen mit über 34000 Personen. Aus dieser ersten Studie, die eine Reihe von überraschenden Ergebnissen brachte, entwickelten sich weitere Studien mit dieser Bevölkerungsgruppe. Zwei weitere Kohorten – eine im Saarland, eine weitere im Landkreis Augsburg kamen hinzu.

Dieses Projekt, das in eine Reihe von Teilprojekte untergliedert ist, kann auch in die Kategorie der Migrantenstudien eingeordnet werden. Wir untersuchen hier verschiedene Aspekte der Gesundheit und Versorgung von Aussiedlern.

Within the PhD program GRK 793 we began in 2002 to investigate the mortality pattern of migrants from the former Soviet Union, the so-called resettlers (german: “Aussiedler”). The first study was a register based cohort study in the state North-Rhine – Westphalia with more than 34.000 individuals. This study had a number of surprising results, and several further studies with this migrant population group followed. Two further cohorts – one in the state of Saarland, the other in the region of Augsburg, Bavaria, have additionally been set up.

This project can be subdivided into a number of sub-projects and falls in the general area of migrant research. We investigate various aspects in health and health service of Aussiedler”.



Project team: Heiko Becher, Volker Winkler, Andreas Deckert, Ema Kuhrs, Jördis J Ott, Anna Volodina

External collaborators: Walter E. Haefeli, Heidelberg; Uli Ronellenfitsch, Mannheim; Judit Laki, Budapest; Ari Paltiel, Jerusalem, Israel; Oliver Razum, Bielefeld; Christa Stegmaier, Bernd Holleccek, Saarbrücken; Christa Meisinger, Margit Heier, Augsburg; H.-Erich Wichmann, München; Annette Peters, München; Katherine Kyobutungi, Nairobi, Kenya

Funding: DFG (GRK 793), DFG (Einzelantrag)

Studies on all-cause mortality among Aussiedler

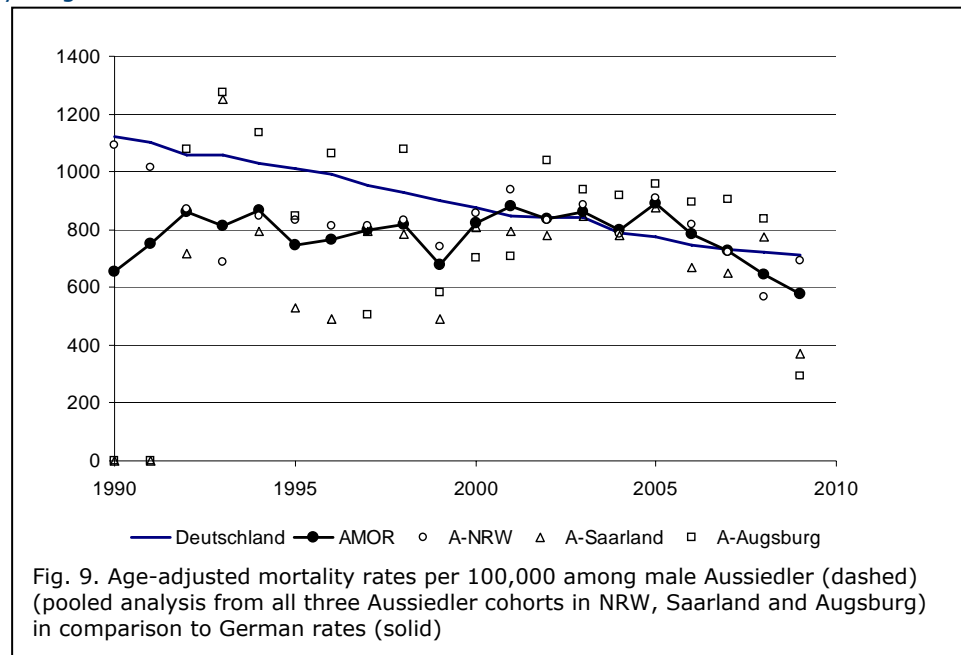
In contrast to our hypothesis based on the health situation in the former Soviet Union overall mortality among Aussiedler is significantly lower than in Germany's general population. Possible explanations are selection effects as the so-called healthy migrant effect. The healthy migrant effect refers to observations made in different migrant populations. In general younger and healthier people are more willing and able to migrate (Jasso et al., 2004). Older and ill people tend to stay in their country of origin. As a result, migrants tend to be healthier than their population of origin as well as their host population. However, this effect is known to diminish dramatically with length of stay in the destination country (Fennelly, 2007).

Combining the data of all three Aussiedler cohorts (n=60000) allowed a detailed analysis of Aussiedler mortality rates by a length of stay of 20 years in Germany. With respect to the complete observation period total standardized mortality ratios for female as well as for male Aussiedler were significantly lowered in comparison to the German population with 0.87 (CI 95% 0.84-0.90) and 0.95 (CI 95% 0.92-0.99).

Analysis of time trends among Aussiedler mortality shows age-standardized mortality rates are practically stable for both sexes whereas the mortality in the German population continuously decreases. Additional multivariate regression analysis does not

reveal an effect for length of stay in Germany (see fig. 9).

The absence of a rise in mortality supports our conclusion that the healthy migrant effect plays if at all a minor role among former Soviet Union Aussiedler. In consequence hardly any selection effects occurred during the migration process of Aussiedler from the former Soviet



Union. Aussiedler have a legal right to migrate to Germany without fulfilling any prerequisites (at least in times when the majority immigrated).

Additionally, we observed that Aussiedler tend to migrate as complete families e.g. about 1.5% of Aussiedler being in the age group 80+ at the date of immigration and about 4% of all deaths occur within transition hostels (the first intermediate place of residence in Germany). This all may be seen as arguments against selection towards healthy migrants.

Studies on cardiovascular diseases

In terms of mortality the most striking finding in the earlier AMOR study was the low mortality from cardiovascular diseases (CVD) despite the fact that the Aussiedler migrated from a country with very high rates as shown in figure 10.

We further investigated trends of this disease group in the former Soviet Union and in Germany (Deckert et al., 2010) We used WHO

data to map the CVD mortality distribution in Europe in 2005. Supplemented by data of the Statistisches Bundesamt, the mortality trends in three major CVD groups between 1980 and 2007 in Russia and Germany are displayed, as well as demographic information. The effects of migration on demography were estimated and percentage changes in CVD mortality trends

were calculated under the assumption that migration had not occurred.

We found that cardiovascular disease mortality patterns within Europe showed a strong west-east gradient with ratios up to sixfold. In Germany, the CVD mortality levels were low and steadily decreasing, whereas in Russia they fluctuated at high levels with substantial differences between the sexes and strong correlations with political changes and health campaigns. The trends in both Russia and Germany were affected by the migration that occurred in both countries over recent decades. However, our restricted focus in only adjusting for the migration of German repatriates and Jews had moderate effects on the national CVD mortality statistics in Germany (+1.0%) and Russia (-0.6%). Since the register based cohorts did not allow an estimate of risk factor prevalences, we performed a case-control study nested into the AMOR cohort (Kuhrs et al., <N>). Relatives of cases and controls were interviewed by telephone using a standardized questionnaire.

Commonly known risk factors for CVD were identified as relevant to Aussiedler. The best multivariate model for CVD includes five risk factors: consumption of alcohol, smoking, diabetes, cholesterol and consumption of sweets. For alcohol consumption and smoking, $OR = 3.68$ (95% CI, 1.58-8.58) and $OR = 3.07$ (95% CI, 1.42-6.62), respectively. For diabetes mellitus and high cholesterol values, $OR = 3.29$ (95% CI, 1.50-7.39) and $OR = 2.32$ (95% CI, 1.11-4.88), respectively. The almost complete abdication of sweets is associated with a protective effect, $OR = 0.34$ (95% CI, 0.18-0.64). The prevalence of risk factors is

somewhat different to that of the autochthon German population and partly explains the differences in CVD mortality between both groups. The reported lower prevalences of known risk factors of CVD such as alcohol consumption, high cholesterol, diabetes and smoking (in women) could contribute to a lower risk of CVD.

A somewhat different result was found in a third cohort in the Augsburg region (Deckert et al., [79]). Here, a CVD registry is available. We observed a lower CVD mortality with $SMR = 0.82$ (95% CI 0.65-1.03). In contrast, acute myocardial infarction incidence was significantly higher in male repatriates [standardized incidence ratio = 1.30 (95% CI 1.02-1.65)]. Whereas in the general population, mortality rates of CVD, IHD and AMI incidence have continuously decreased over time, the pattern in the repatriates was not as clear. In male repatriates, mortality rates seemed to be lower after immigration and remained rather constant.

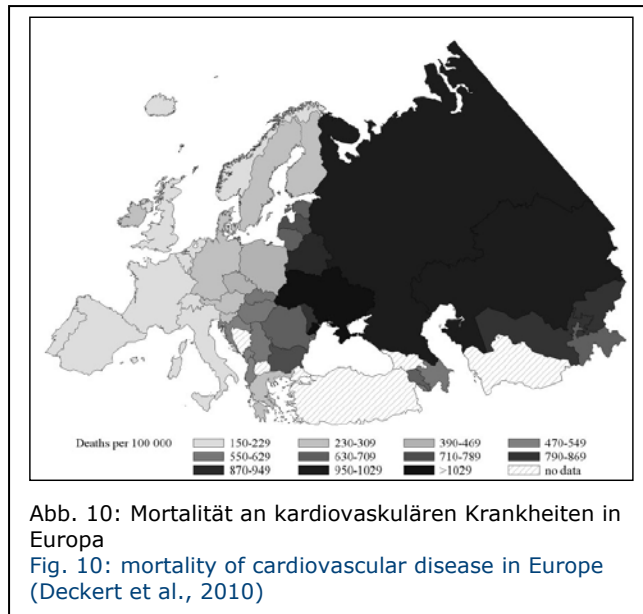


Abb. 10: Mortalität an kardiovaskulären Krankheiten in Europa
Fig. 10: mortality of cardiovascular disease in Europe (Deckert et al., 2010)

Incidence rates possibly exceed Germans rates by now. In contrast to the low CVD mortality which was somewhat differently pronounced in the three cohorts, Aussiedler seem to die more often owing to external causes and suicides. In the Augsburg cohort especially men were highly endangered to commit suicide who experienced migration in the age between 10 and 19 years ($SMR=3.84$, 95% CI 1.05-9.84).

Studies on cancer patterns

The cancer pattern in the first AMOR cohort differed for several cancer sites considerably from that in the German population. Overall, however, cancer rates are relatively similar (see figure 11). We therefore performed some more detailed analyses on stomach and prostate cancer. In addition, we set up a further cohort in the state of Saarland since in

this state a well functioning cancer registry is available which allowed the analysis of cancer incidence. With respect to stomach cancer, a further comparison with jewish migrants who migrated to Israel has been done. This was possible through a collaboration with Ari Paltiel from the Statistical Bureau in Jerusalem, Israel. Ronellenfitsch et al. [4] showed SMRs

(95% confidence intervals) for men in the German migrant cohort were 0.51 (0.36–0.70) compared with the FSU population and 1.44 (1.04–1.99) compared with the German population, respectively. For women, SMRs were 0.73 (0.49–1.03) compared with the FSU population and 1.40 (0.98–1.99) compared with the German population. We conclude that stomach cancer mortality in migrants from the FSU remains elevated after migration to Germany and Israel but is much lower than in the FSU. Due to a secular decline, it can be expected that mortality among migrants from the FSU reaches within a few years levels similar to those of the host countries today. Therefore, migrant specific prevention and early detection measures cannot be recommended.

Health service studies

One study within AMOR dealt with drug consumption patterns and their current health status (Volodina et al.). We performed a cross-sectional survey nested into the Saarland cohort. We found the one-year prevalence of asthma (6.9%), hypertension (26.7%), chronic bronchitis (8.6%), and diabetes (4.9%) in migrants to be similar to the general German population. 51% regularly took either over-the-counter (OTC) medication or prescription medicines. Six ATC (Anatomical Therapeutic Chemical Classification System) groups were

analyzed. The highest drug consumption was reported for the ATC cardiovascular (22%), nervous (9%), and muskulo-skeletal system (8%). 30% used OTC medicines obtained in the country of origin. Difficulties with drug handling were rare. We concluded that ethnic German migrants seem to differ only slightly from Germans in health status, drug utilization, and disease risk factors, and if so, not in an extreme way. Country of origin remains a source of medicines for a substantial part of migrants.

With respect to prostate cancer, we observed considerably lower rates in the migrants. Migrants had lower prostate cancer incidence (SIR 0.74 (95% CI: 0.52_1.03)) and mortality (SMR 0.57 (95% CI: 0.38_0.83)) compared to the German population. Multivariate analysis showed a strong age effect on incidence meaning young migrants (below age 60) were diagnosed significantly more often with prostate cancer compared to Germans of the same age. However, mortality did not show any effects. As a result, lower prostate cancer mortality and incidence among the migrants may reflect an ongoing situation in the FSU. Additionally, longitudinal analysis did not reveal convergence of migrant prostate cancer to German rates as expected from lifestyle driven cancer sites. Therefore, our results suggest a possible genetic effect on prostate cancer risk in this migrant group.

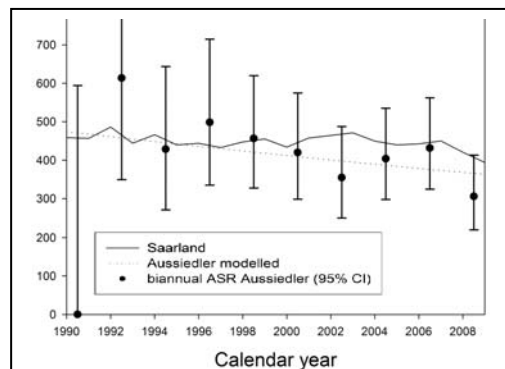


Abb. 11: Krebsinzidenz bei Aussiedlern und im Saarland
Fig. 11: Cancer incidence in resettlers and in Saarland state

Publications (all AMOR-related studies): [2], [4], [7], [18], [22], [43], [55], [68], [79], [95]

1.5. Die Nationale Kohorte (NaKo) • The German National Cohort (NaKo)

Unter Beteiligung der Sektion Epidemiologie und Biostatistik hat ein Netzwerk deutscher Forschungseinrichtungen aus der Helmholtz-Gemeinschaft, den Universitäten, der Leibniz-Gemeinschaft und der Ressortforschung deutschlandweit die Initiative für den Aufbau einer groß angelegten Langzeit-Bevölkerungsstudie ergriffen, um

1. die Ursachen von Volkskrankheiten wie z.B. Herz-Kreislaufkrankungen, Krebs, Diabetes, Demenzerkrankungen und Infektionskrankheiten aufzuklären,
2. Risikofaktoren zu identifizieren,
3. Wege einer wirksamen Vorbeugung aufzuzeigen
4. Möglichkeiten der Früherkennung von Krankheiten zu identifizieren.

In dieser (Kohorten-) Studie werden ab 2014 200.000 Menschen im Alter von 20-69 Jahren aus ganz Deutschland medizinisch untersucht und nach Lebensgewohnheiten (z.B. körperliche Aktivität, Rauchen, Ernährung, Beruf) befragt. Darüber hinaus werden allen Studienteilnehmern Blutproben entnommen und für spätere Forschungsprojekte in einer zentralen Bioprobenbank gelagert. Nach 5 Jahren werden alle Teilnehmer erneut zu einer Untersuchung und zweiten Befragung in die Studienzentren eingeladen. Im Laufe der Nachbeobachtung über 10-20 Jahre werden bei einigen Teilnehmern naturgemäß bestimmte Erkrankungen auftreten, die dann mit den erhobenen Daten in Verbindung gebracht werden können. Die Studie bietet damit ein einzigartiges Potential für eine Vielzahl von wissenschaftlichen Untersuchungen. Aus alledem werden die Forscher wertvolle Erkenntnisse darüber gewinnen, wie

- genetische Faktoren,
- Umweltbedingungen,
- soziales Umfeld und
- Lebensstil

bei der Entstehung von Krankheiten zusammenwirken. Aus den Erkenntnissen sollen Strategien für eine bessere Vorbeugung und Behandlung der wichtigsten Volkskrankheiten abgeleitet werden.

Zur Vorbereitung dieser Studie liefen in den Jahren 2012 bis 2013 Feasibilitystudien in allen beteiligten Zentren, in denen spezifische

A network of German research institutes from the Helmholtz Association, the Leibniz Association, various universities and research departments has taken the initiative for the creation of a large-scale, nationwide, long-term population study with the aim of

1. explaining the causes of widespread diseases such as cardiovascular disease, cancer, diabetes, dementia, and infectious diseases,
2. identifying risk factors,
3. highlighting effective forms of prevention, and
4. identifying options for the early detection of diseases.

In this cohort study, 200,000 people aged between 20 and 69 from across Germany will be medically examined and questioned on their

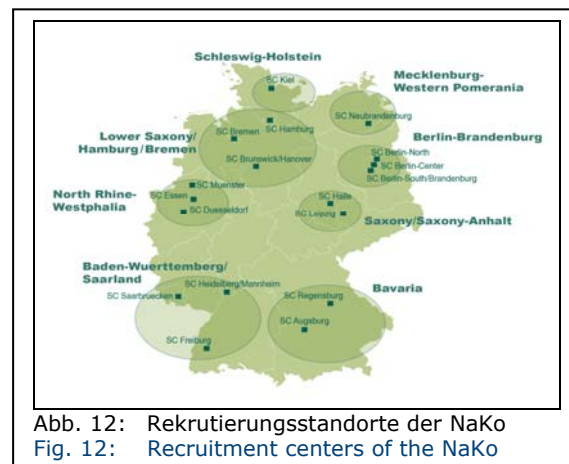


Abb. 12: Rekrutierungsstandorte der NaKo
Fig. 12: Recruitment centers of the NaKo

living habits (e.g. physical activity, smoking, diet, occupation etc.). In addition, all participants in the study will supply blood samples which will be stored in a central biobank for later research projects. After five years, all participants will again be invited to complete a second questionnaire and have themselves examined at their local study center. In the course of their observation over a period of 10–20 years, some of the participants are bound to develop diseases, which we will then be able to correlate with the data collected. The study thus offers unique potential for a wide range of scientific investigations. Researchers will therefore be able to derive valuable findings on how

- genetic factors,
- environmental conditions,
- social milieu and
- lifestyle

interact in the development of disease. These

Aspekte der Machbarkeit untersucht wurden. Unsere Unit war in den Bereichen „Einbeziehung von Menschen mit Migrationshintergrund in die Nationale Kohorte“ und „Untersuchung der Responseraten und deren Einflußfaktoren“ federführend und beteiligte sich weiterhin in der Machbarkeitsstudie „Zahngesundheit“, hier in direkter Zusammenarbeit mit zahnmedizinischen Abteilungen des Universitätsklinikums.

findings, it is hoped, will greatly facilitate the development of more effective prevention and treatment strategies for the most widespread diseases.

In the pilot phase of this study feasibility studies have been performed in the years 2012 and 2013 to investigate the feasibility of specific aspects. Our unit was responsible for the aspects “Incorporation of migrants” and “investigation of response rates and factors to increase the response”. We were also involved in the module “oral health”, in direct collaboration with oral health departments at the university hospital Heidelberg.

Publications: [94], [105], [106]

1.6. Biostatistische und epidemiologische Methoden • Biostatistical and epidemiological methods

Die Analyse epidemiologischer Studien erfordert ein weit gefächertes biostatistisches Handwerkszeug. Viele der heute angewendeten Methoden wurden erst in der jüngsten Vergangenheit entwickelt, da die für die Berechnungen notwendige Computerkapazität früher noch nicht vorhanden war. Darüber hinaus ergeben sich nicht selten neue methodische Probleme, für die ein angemessenes Instrumentarium entwickelt werden muss. Die hier beschriebenen Projekte sind Beispiele dafür.

$$N = \sum \sum n_{ij}$$

For the analysis of epidemiological studies a wide range of biostatistical methods is needed. Many of the methods currently used have been developed only recently since the increasing computer power triggered the research on computer intensive methods. In addition, quite often it occurs during the course of a study that the analysis requires methods which are not yet available. The projects described in this part of the report are examples of that kind.

Dose-response analysis with a Spike at Zero (SP@TZ) using Fractional Polynomials

Project team: Heiko Becher, Eva Lorenz

External Collaborators: Willi Sauerbrei, Carolin Jenkner, Freiburg; Patrick Royston, London

Funding: DFG (Funding period: 2011-2015)

In observational studies a common goal is to estimate the effect of covariables on an outcome quantitatively. Such covariables often have individuals with a value of zero while the distribution of exposed is continuous (variables with a spike at zero). Typical examples are cigarette consumption, alcohol intake, or occupational exposures. The question arises as how to model such variables statistically.

In this DFG-funded project we contribute to the theory, practical procedures and application in epidemiology and clinical research to derive multivariable models with an emphasis on dose-response-relationships in spike at zero situations. This will result in a further extension of the modelling techniques using the class of fractional polynomials to

determine whether non-linear functions improve the fit of data.

We theoretically derive the correct dose-response curves for a spike at zero situation under several specific distributional assumptions. We show that under these, the inclusion of a binary indicator variable denoting the exposure status (yes-no) plus the

continuous part of the variable, possibly transformed, yields the correct dose-response curve. Since in observational studies, we rarely have the situation that only one single covariable is considered, we expand these investigations into the bivariate case and validate and compare them in a simulation study and apply the methods to real data sets.

Publications: [24], [47]

Reliability of self reported BMI and adjustment methods

Project team: Heiko Becher, Anton Safer, Gabriele Stieglbauer, Milena Vučanovic, Volker Winkler

External Collaborators: Frederic Palm, Ludwigshafen

Funding: DFG, Bonusmittel

For many diseases the body mass index is a relevant factor. Information is often based on self-reporting of weight and height. Using the controls of a case-control study we determined reporting bias of self-reported vs. measured anthropometrics. For this, we compared self-reported with measured anthropometrics. We found a lower self-reported BMI on average by

1.0 kg/m² in men, 1.2 kg/m² in women ($p < 0.001$). Bias correction of self-reported BMI was derived from self-reported BMI with age, age-BMI interaction and sex as further adjustment factors. Under-estimation of correct BMI resulted in the underestimation of overweight prevalence, with relatively low sensitivity of self-reported values (88%).

Publication: [112]

1.7. Epidemiologie des Schlaganfalls • Stroke Epidemiology

Der Schlaganfall ist eine der häufigsten Todesursachen und ist zudem häufig mit massiven Einschränkungen und damit einer Reduktion der Lebensqualität verbunden.

In unserer Sektion besteht seit vielen Jahren eine enge Kooperation mit der neurologischen Universitätsklinik

Heidelberg und mit dem Klinikum Ludwigshafen. Dort existiert seit 2006 ein regionales

Schlaganfallregister. Unsere Arbeitsgruppe trug wesentlich zu der Analyse dieses Registers bei. Im Jahr 2008 waren wir gemeinsam mit einem DFG-Antrag erfolgreich und haben eine Fall-Kontroll-Studie zu Risikofaktoren des Schlaganfalls durchgeführt, die derzeit ausgewertet wird.

Eine neue Kooperation hat im Jahr 2012 mit dem Sultanat Brunei Darussalam begonnen. Hier konzipiert unsere Sektion eine Querschnittstudie zu Prävalenzen relevanter Risikofaktoren. Diese Studie hat im Herbst 2013 mit der Feldphase begonnen.

Stroke is one of the most common causes of death worldwide. Stroke is also responsible for major disabilities and thus a reduced quality of life.

In our Unit we have since a long time a successful collaboration with the neurological

clinic at the university hospital, and with the Klinikum Ludwigshafen. In Ludwigshafen, a regional stroke registry has been built up, and our unit contributed substantially to the analysis of this database.

In 2008 we were also successful in a grant application for a case-control study on stroke risk factors. The field phase of this study has just ended, and the analysis has started.

A new project in the field of stroke epidemiology has started in 2012 in

Brunei Darussalam. Here our unit planned a cross-sectional study to assess prevalences of relevant risk factors in this country. This study has started in autumn 2013 with the field phase.

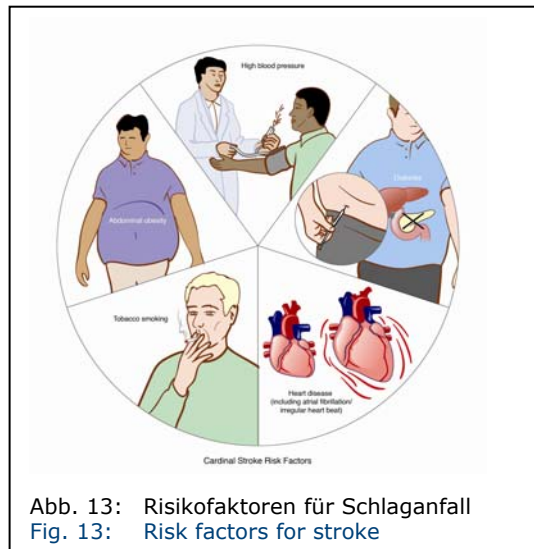


Abb. 13: Risikofaktoren für Schlaganfall
Fig. 13: Risk factors for stroke

Analysis of the stroke registry in Ludwigshafen

Project team: Heiko Becher, Anton Safer, Nicholas Henschke, Gabriele Stieglbauer

External Collaborators: Armin Grau, Florian Buggle, Frederic Palm, Abteilung Neurologie, städt. Kliniken Ludwigshafen, Caspar Grond-Ginsbach, Neurologische Klinik, Universitätsklinikum Heidelberg

Funding: DFG, Core Funding

In collaboration with the Department of Neurology, Städt. Kliniken Ludwigshafen we analysed data from the population based stroke registry in the Ludwigshafen area.

The Ludwigshafen Stroke Study is a prospective population-based stroke registry. All residents of the city of Ludwigshafen who suffer from acute stroke or TIA (transient ischemic attack) are registered. Patients with first-ever stroke (FES) were included for the present analysis. Between January 1, 2006 and December 31st, 2010, 1,779 patients (mean age 71.7 years) suffered a FES.

The crude annual incidence rate per 1000 for first-ever stroke was found to be 2.16 (95% CI 2.10 to 2.32). After age adjustment to the European population, incidence for first-ever stroke was 1.46 (95% CI 1.35-1.57; men: 1.63; 95% CI 1.46-1.81; women: 1.29; 95% CI 1.15-1.43). Crude annual incidence rates per 1000 were 1.86 for ischemic stroke, 0.19 for intracerebral hemorrhage, 0.05 for subarachnoid hemorrhage, and 0.05 for undetermined stroke. Case-fatality rates for first-ever stroke were 13.6%, 16.4%, and 23.2% at days 28, 90, and 365 respectively.

One recent analysis considered seasonal patterns. Here, data on stroke incidence are conflicting. Little is known about seasonal variability in etiological stroke subtypes and population-based data on possible trigger factors are lacking. Incidence for FES was lowest in summer (reference) with significantly higher rates in winter (rate ratio (RR) 1.20, 95 % confidence interval (CI) 1.05–1.37) and spring (RR 1.21 95 % CI 1.06–1.38). First-ever ischemic stroke (FEIS) was more common in winter (RR 1.16, 95 %CI 1.01–1.34) and first-ever intracerebral haemorrhage (FE-ICH) was more frequent in spring (RR 2.0, 95 %CI 1.24–3.22) than in summer. In FES, systolic and diastolic blood pressure on admission (SBP/DBP) showed significant variation with lowest values in summer (SBP: $p = 0.02$; DBP

$p = 0.05$). In subtypes of FEIS, cardioembolism tended to be more common in winter ($p = 0.14$). There were no differences in risk factor prevalence between seasons. Leukocyte count on admission was lowest in summer ($8.2 \pm 1.4/ll$) and highest in winter ($8.9 \pm 1.9/ll$; $p = 0.008$). The hematocrit showed a similar trend ($p = 0.06$). Our data show higher incidence rates for FES in winter and spring, for FEIS in winter and for FE-ICH in spring. Variations in blood pressure on admission and leukocyte counts were associated with these findings and may possibly contribute to seasonal stroke variability.

Publications: [1] , [11] , [23], [53], [62], [71], [76], [80]

Case-control study on inflammatory, genetic and socioeconomic determinants of ischemic stroke (GENESIS)

Project team: Heiko Becher, Anton Safer, Nicholas Henschke, Gabriele Stieglbauer

External Collaborators: Armin Grau, Florian Buggle, Frederic Palm, Abteilung Neurologie, städt. Kliniken Ludwigshafen, Caspar Grond-Ginsbach, Neurologische Klinik, Universitätsklinikum Heidelberg

Funding: DFG, Core Funding

The case-control study had a total sample size of 470 cases (282 males, 188 females) and 809 controls (471 cases, 338 controls). The median age for males and females is 69 years in the control group and 68 respectively 70 in the group of cases. The following research questions were investigated: To assess whether and how risk of stroke increases with (1) the number of pre-defined pro-inflammatory polymorphisms (2) the number of chronic infections and (3)



disadvantageous socio-economic factors, in particular those in childhood. These risks should be estimated adjusted for other known risk factors such as smoking, hypertension, diabetes and others. Preliminary results show little effect of the polymorphisms considered. We detected only minor effects from chronic infections. Socio-economic factors in childhood also appear to have little effect, whereas those factors later in life do have an effect. Further analyses are ongoing.

Publications: [81]

Cross-sectional study on risk factors for stroke and multiple sclerosis in Brunei-Darussalam – The Brunei epidemiological stroke study (BEST-study)

Project team: Heiko Becher, Mario Fix

External Collaborators: Agong Lupat, Masliza Liussin, Brunei Darussalam;

Uta Meyding-Lamadé, Eva Maria Craemer, Frankfurt

Funding: Ministry of research, Brunei Darussalam / Klinikum Nordwest, Frankfurt

This is a new project for which the planning has started in 2012. In Brunei Darussalam few epidemiological data are available. The burden of stroke appeared high according to clinical observations, however, reliable data to estimate disease incidence and risk factor prevalence do not exist. Therefore, our unit planned a cross-sectional study to assess prevalences of

relevant risk factors in this country. A study protocol has been developed and approved by the local ethical comitee. The study includes an interview and several test of neurological functions, blood pressure and anthropometric measures. It is planned to recruit 5000 individuals aged 20 and above. The field phase of the study has started in autumn 2013 and will continue for about two years.



1.8. Gesundheit von Müttern und Kindern • Maternal and child health

Weltweit sterben jährlich schätzungsweise 200 000 Frauen und 1 Million Neugeborene an Komplikationen unter der Geburt, hinzu kommen ca. 1 Million Totgeburten. Diese Todesfälle wären fast alle vermeidbar, denn lebensrettende Medikamente und Eingriffe, wie Antibiotika und Kaiserschnitt, existieren seit langem und sind grundsätzlich auch in ärmeren Ländern verfügbar. Dennoch entbinden Millionen Frauen weiterhin zuhause ohne Zugang zu professioneller Geburtshilfe. Die Ursachen hierfür sind vielfältig. Sie wurden aber bislang hauptsächlich bei den Frauen gesucht, während die Rolle des Gesundheitssystems wenig Beachtung fand. Dies liegt zum Teil daran, dass in den meisten Entwicklungsländern kaum Daten über Entfernungen zu Entbindungseinrichtungen und deren Qualität vorliegen.

Die neue Technologie der Globalen Positionierungssysteme (GPS) bietet hier einen Lösungsansatz, indem verschiedene Datensätze mittels geographischer Koordinaten verknüpft werden können. Unsere Studien in Sambia, Malawi und Ghana machen sich diese Technologie zunutze und verknüpfen Bevölkerungsdaten und Daten von Entbindungseinrichtungen, wodurch wir den Einfluss der Entfernung von Entbindungseinrichtungen und deren Qualität auf den

Worldwide, an estimated 200,000 women and 1 million newborns die every year due to complications at childbirth, and about 1 million babies are stillborn. Most of these deaths could be avoided since live-saving drugs and procedures, such as antibiotics and Caesarean section, exist and are in principle also available in low-income countries. However, millions of women continue to deliver at home without access to professional midwifery care. When studying the reasons for this, the focus has been on the women, while health system factors have been relatively neglected, partly because data on health facilities and their quality is scarce in most low- and middle-income countries and not linked to population data.

The new technology of Global Positioning Systems (GPS) provides an opportunity to overcome this problem, allowing to link different datasets using their geographic coordinates. In our studies in Zambia, Malawi and Ghana, we use this technology and link population and health facility datasets, which enables us to study the influences of distance and service quality on facility use. This method also allows assessing emergency obstetric care coverage in low-income countries in a cost-effective way and thus to more easily track progress.

Entbindungsort studieren können. Diese Methode ermöglicht es auch, die geburts-hilfliche Versorgung in Entwicklungsländern relativ kostengünstig zu evaluieren und Fortschritte somit besser messbar zu machen.



Abb. 14: Frühgeborenes in Ghana
Fig. 14: Preterm baby in Ghana

Distance to delivery care and service use in Zambia and Malawi

Project team: Sabine Gabrysch, Terhi Lohela

External collaborators: Oona Campbell, Simon Cousens, Jonathan Cox, London

Funding: Rahel Goitein-Straus fellowship for Sabine Gabrysch from the Medical Faculty of Heidelberg University

Maternal and perinatal mortality are alarmingly high in Sub-Saharan Africa, with little progress over the last decades. If all women delivered in settings where skilled attendants can provide Emergency Obstetric Care in the event of complications, most lives could be saved. Yet many African women, in particular in rural areas, continue to give birth at home without skilled care, the alternative often being substandard facilities unable to provide life-saving interventions.

The factors influencing whether women use health facilities for giving birth include demographic and socioeconomic characteristics of the mother and her household, but also health system aspects such as geographic accessibility of facilities and quality of care. While epidemiological research has extensively studied individual and household factors, the

role of the health system has been largely neglected, in part due to a lack of data on health services in the same datasets containing individual service use information.

In Zambia and Malawi, we can take advantage of existing georeferenced national Health Facility Census data and Demographic and Health Survey household data, linking the two datasets in a Geographic Information System and thus combining detailed individual and household information with detailed facility information. This allowed us to quantify the strong influences of distance and level of care on women's use of health facilities for delivery in both countries. In Zambia, we could also show that the population impact of poor geographic access to quality emergency obstetric care is at least of similar magnitude as that of education or wealth.

Publications: [34], [35]

Indicators and benchmarks for tracking progress towards safe motherhood

Project team: [Sabine Gabrysch](#)

External collaborators: Oona Campbell, London; Philipp Zanger, Tübingen; Harshalal Seneviratne, Sri Lanka; Reuben Mbewe, Zambia

Funding: Core funding

Millennium Development Goal 5 is off track. Substantial efforts are being made to measure maternal mortality, but as this is costly where routine data are of insufficient quality, it is not measured frequently enough to track quick changes. The indicator of skilled attendant at birth, as gathered from household surveys, has been criticised for not capturing quality of care and therefore not aligning well with maternal mortality.

Indicators of health-system outputs, namely Emergency Obstetric Care facilities, staff and their geographic distribution, have great potential to serve as monitoring tools towards achieving MDG5 as they can guide interventions. Most of the annual 225,000 maternal deaths (as well as many of the 2 million neonatal deaths and stillbirths) estimated to be intra-partum related, could be prevented if women had access to Emergency Obstetric Care. Yet despite their potential, output indicators are currently underused.

We took advantage of existing national health facility data from Zambia (a high maternal

mortality country) and Sri Lanka (a low maternal mortality country), to demonstrate how health-system output indicators can be studied and used to better understand the health system's potential contribution to preventing maternal mortality. We compared national and subnational density of health facilities, EmOC facilities and health professionals against current benchmarks for Zambia and Sri Lanka. For Zambia, we furthermore examined geographic accessibility by linking health facility data to population data.

Our study highlights that current health-system output indicators and benchmarks proposed by the WHO and other UN agencies may need some revision to make them consistent and more practically useful. Increased use of an improved set of output indicators could make an important contribution in guiding international efforts towards reducing maternal mortality.

Publications: [35], [52], [56]

Distance to delivery care and neonatal mortality in Zambia and Malawi

Project team: Terhi Lohela, [Sabine Gabrysch](#)

External collaborators: Oona Campbell, London

Funding: Rahel Goitein-Straus fellowship for Sabine Gabrysch from the Medical Faculty of Heidelberg University

Every year, around 3 million newborn babies die within their first month of life, of which most could be saved by currently existing preventive or curative interventions. This study, which started off with Terhi Lohela's MSc International Health Masters thesis project, linked existing DHS household data and national Health Facility Census data in a Geographic Information System to analyse the influence of distance to care and level of care

on early neonatal mortality in Zambia and Malawi.

Surprisingly, we found no effect of distance in Malawi, a protective effect of longer distance on early neonatal mortality in Zambia, and no effect of level of care in either country. In order to better understand these unexpected results, we analysed the role of facility delivery as the mediating factor. As expected, closer distance was strongly associated with higher

facility delivery in both countries. We then wanted to know whether higher facility delivery was associated with lower neonatal mortality. It is not straightforward to analyse this link, because facilities attract complicated births with higher risk of neonatal death which can make facility birth look more "risky".

We came up with an idea to overcome this problem: Stratifying by the frequency of facility delivery in the village or sampling cluster. In villages where facility delivery is rare, a high proportion of facility deliveries tend to be complicated cases, whereas in areas where facility delivery is common, health facilities also get many low-risk normal deliveries. There was

a tendency of lower neonatal mortality among facility births from villages where most women deliver in facilities. Overall, however, there was no difference in early neonatal mortality between villages with high and low facility use.

The conclusion from our findings could be that facility delivery is not effective in saving newborn lives, possibly due to low quality of care at facilities. Alternatively, the results could be explained by differential under-reporting of neonatal deaths in the DHS.



Abb. 15: Unbefestigte Straße in Ghana
Fig. 15: Dirt road in Ghana

Publications: [59]

Maternal and perinatal mortality in Ghana

Project team: Sabine Gabrysch, Terhi Lohela, Robin Nesbitt, Heiko Becher

External collaborators: Betty Kirkwood, Seth Owusu-Agyei, Alexander Manu, Eunice Okyere, Seeba Amengo-Etego, Chris Grundy, Karen Edmond, Lisa Hurt, Guus ten Asbroek

Funding: Postdoctoral fellowship of the Baden-Württemberg Foundation and Postdoctoral fellowship of the Daimler and Benz Foundation (Sabine Gabrysch)

This study uses data collected over five years from 4-weekly household surveillance of all women of reproductive age in seven predominantly rural districts in the Brong Ahafo region of Ghana. This surveillance system was established for the Obaapa-VitA cluster-randomised controlled trial on the effect of Vitamin A supplementation on maternal mortality, and extended for the Newhints cluster-randomised controlled trial on the impact of home visits by community volunteers on neonatal mortality, both conducted in collaboration between Kintampo Health Research Centre and the London School of Hygiene & Tropical Medicine.

To complement these sociodemographic, service use and mortality data, this study additionally collected data on all health facilities in the surveillance area, in particular on staffing and services provided for pregnant women and newborn babies, including routine antenatal, delivery and postpartum care, as well as emergency obstetric and newborn care. The facility data can be linked to individual mortality data using geographic coordinates.

The aim of this study is to better understand the role of distance to and quality of care on facility use, and on maternal and perinatal mortality in a typical Sub-Saharan setting, in order to inform current strategies to reduce maternal and child mortality.

Quality of antenatal care in Zambia, and influence of quality of care and distance on antenatal care use

Project team: Nicholas Kyei, Sabine Gabrysch

Funding: Rahel Goitein-Straus fellowship for Sabine Gabrysch from the Medical Faculty of Heidelberg University

The care that a woman receives during pregnancy is crucial not only for her own health but also for the unborn child. Antenatal care (ANC) attendance (for at least one visit) generally tends to be high even in low-income countries, however, the quality of antenatal service provided by health facilities has been poorly studied.

This project, which was Nicholas Kyei's MSc International Health Masters thesis, drew upon two existing datasets in Zambia which were linked by their geographic coordinates: the national Health Facility Census from 2005 and

the 2007 Zambia Demographic and Health Survey.

Quality of care at ANC facilities in Zambia was assessed using various quality dimensions and facilities were classified in good/recommended, moderate/fair and poor/inadequate ANC quality. We then studied how distance to ANC and quality of care at the closest ANC facility influence number and timing of women's ANC visits, and whether women receive at least four visits with a skilled health worker and the recommended ANC interventions.

Publications: [56], [57]

New signal functions for routine and emergency newborn care

Project team: Sabine Gabrysch, Giulia Civitelli

External collaborators: Oona Campbell, Karen Edmond, Matthews Mathai, Moazzam Ali, Zulfiqar Bhutta

Funding: Rahel Goitein-Straus fellowship and Margarete von Wrangell fellowship for Sabine Gabrysch

Signal functions are a representative shortlist of key interventions and activities that address major causes of morbidity or mortality and that are indicative of a certain type and level of care. For instance, signal functions indicative of "basic emergency obstetric care (EmOC)" could be provided by midwives at the level of a health centre, while "comprehensive EmOC" signal functions indicate a higher level of care, usually at a hospital.

Signal functions for EmOC already exist and are widely used, however no signal functions for emergency newborn care (EmNC) have been defined (except resuscitation). Neither are there agreed signal functions for routine care at health facilities for either mother or newborn (i.e. care for all women and babies, as opposed to emergency care for complications).

Current large-scale facility survey efforts mainly collect data on the established EmOC functions, and two EmNC functions (newborn resuscitation and prevention of mother-to-child transmission of HIV). Routine maternal or newborn care data are not regularly included.

We performed a literature review, mainly done by Giulia Civitelli during her internship, and did an expert opinion survey to develop a set of 23 maternal and newborn signal functions, focussing on delivery and postnatal care. These can be used to characterize both routine and emergency care in health facilities in low-income settings. Collecting the relevant data and promoting its use in a variety of ways should contribute to monitoring and improving the quality of maternal and newborn care, helping to meet MDGs 4 and 5.

Publication: [51]

1.9. Sonstige Projekte • Other projects

Neue Mitarbeiter bringen oft Projekte aus anderen Themenbereichen aus ihren früheren Instituten mit, die sie bei uns abschließen oder fortsetzen. Ein gutes Beispiel hierfür ist Nicholas Henschke, der mit einer Expertise für die Epidemiologie von Rückenschmerzen und Musculoskeletal conditions zu unserer Sektion kam, und dessen Projekte im folgenden zusammengefasst sind.

Die Mitarbeiter der Sektion sind beratend an weiteren epidemiologischen Projekten innerhalb und außerhalb der medizinischen Fakultät beschäftigt. Teilweise ergeben sich diese Projekte aus dem Angebot der Sektion, eine kostenfreie epidemiologische Beratung für Studenten und Mitarbeiter der medizinischen Fakultät durchzuführen. Ein Beispiel dafür ist im folgenden ebenfalls genannt.

New members often finalize or continue with projects they were involved in in their previous positions. These topics may not be related to the running projects at our unit. An excellent example for this is Nicholas Henschke who came as an expert for epidemiology of musculoskeletal conditions and back pain. His projects are summarized below.

Members of the unit are involved in other smaller projects within and outside the medical faculty of the University of Heidelberg. Occasionally this emerges from the free consulting service that our unit offers to students, physicians and scientists of the faculty. One example is also given below.

Epidemiologie der Rückenschmerzen • Epidemiology of back pain

Project team: Nicholas Henschke

External Collaborators: Christopher Williams, Petra Macaskill, Les Irwig, Christopher Maher, Sydney; Raymond Ostelo, Henrica de Vet, Maurits van Tulder, Bart Koes, Amsterdam

Lower back pain is a common complaint, often with no obvious cause. It is also one of the major causes of disability around the world. In around 5% of patients the condition results from a more serious underlying problem such as fracture or tumour. Guidelines for assessing patients with lower back pain recommend that doctors don't immediately start with imaging techniques such as X-ray and MRI. Instead, they are advised to perform a physical examination and look into their medical history for so-called red flag features that might point towards a more serious root cause.

In order to provide evidence on the most useful red flag features to identify serious spinal pathology in patients with lower back pain, a series of diagnostic systematic reviews was performed. After reviewing data from 13

studies and 49 red flags, it was found that many red flags in current guidelines provide virtually no change in probability of fracture or tumour, or have untested diagnostic accuracy. Some evidence is available for older age, prolonged corticosteroid use, significant trauma, and presence of a contusion or abrasion to increase the likelihood of spinal fracture.

While there are a large number of red flags endorsed in guidelines to screen for fracture or tumour, only a small subset of these have evidence that they are useful. Our results suggest a need for revision of many current guidelines and warn that the use of these red flags as triggers for further investigations leads to unnecessary tests that can themselves be harmful.

Publications: [84], [85]

Prävalenz der amyotrophen Lateralsklerose (ALS) in Deutschland • Prevalence of amyotrophic lateral sclerosis ALS in Germany

Project team: Heiko Becher , Anton Safer

External project team members: Joachim Wolf, Armin Grau et al., Ludwigshafen

This is a project to determine the incidence, course and phenotypic variety of amyotrophic lateral sclerosis in Rhineland-Palatinate, a county in South-West Germany with about 4 million inhabitants. During the period October 2009 to September 2012, 200 consecutive incident patients with amyotrophic lateral sclerosis according to the revised El Escorial criteria were enrolled and followed-up using multiple overlapping sources of case ascertainment. All patients were followed at least 12 months, except for 5 dropouts. The annual crude incidence for amyotrophic lateral

sclerosis in Rhineland-Palatinate was 1.8/100000 person years (95% CI: 1.6-2.2). Male to female ratio was 1.1:1.

Incidence increased with age with a peak in the 70 to 74 age group and declined markedly in older age groups. We found increasing crude incidence rate of ALS, depending on the inhabitant number at place of residence of the ALS patients (Cochran-Armitage trend test $p=0.03$).

Our unit contributed to data analysis in this project.

Publications: [111]

2. Lehre • Teaching

Die Lehre ist ein zentraler Bestandteil der Aktivitäten der Sektion. Fast alle Mitarbeiter der Sektion sind an der Lehre beteiligt. Die wesentlichen Bereiche der Lehre sind für

- (i) „HeiCuMed“-Ausbildung der Medizinstudenten an der Universität Heidelberg (s. 2.1),
- (ii) Masterkurs „Master of Science in International Health“ (s. 2.4)
- (iii) Lehrprogramm im Rahmen des Graduiertenkolleg 793 (s. 2.3)
- (iv) Bachelorstudiengang Gesundheitsförderung PH Heidelberg (s. 2.5)

Darüber hinaus sind Mitarbeiter der Abteilung an weiteren Kursen beteiligt. Seit 2007 führt die Sektion das Modul Epidemiologie im Masterkurs „Biometrie“ des Instituts für med. Biometrie und med. Informatik durch. Im Jahr 2008 fand der dreiwöchige Kurs „European Course in Tropical Epidemiology“ in Heidelberg, organisiert von H. Becher statt, seitdem ist H. Becher einer der Dozenten des Kurses. Weiterhin findet eine Beteiligung an der Lehre im Fach Epidemiologie an anderen Universitäten statt (s. Abschnitt 2.6).

Mitglieder der Sektion haben Weiterbildungen im Bereich der Didaktik durchgeführt. Andreas Deckert, Sabine Gabrysch, Heribert Ramroth und Volker Winkler haben das BW-Zertifikat für Hochschuldidaktik erworben.

2.1. HeiCuMed

Mit der neuen Approbationsordnung ist die Epidemiologie als Teil des Querschnittsbereichs „Epidemiologie, medizinische Biometrie und medizinische Informatik“ Bestandteil im Pflichtcurriculum des Medizinstudiums. Die Durchführung und Organisation der Lehre im Bereich der Epidemiologie obliegt dem Sektionsleiter.

Folgende Mitglieder der Sektion waren im Berichtszeitraum an der Lehre beteiligt:

Prof. Dr. Heiko Becher (verantwortlich)
 Dr. Sabine Gabrysch
 PD Dr. Heribert Ramroth
 Dr. Volker Winkler

Teaching plays a major role for university institutes in general and for this unit in particular. Almost all members of the unit contribute to lectures or courses. Major areas of teaching are

- (i) undergraduate teaching for medical students of Heidelberg University (see 2.1)
- (ii) Postgraduate Master Course “Master of Science in International Health” (see 2.4)
- (iii) Training within the PhD program “Graduiertenkolleg 793” (see 2.3)
- (iv) Bachelor program „Health Promotion“ at the University of Education Heidelberg (see 2.5)

In addition, members of the unit contribute to further courses. From 2007 onwards the unit organizes the module Epidemiology within the Master course “Biometry”, organized by the institute of Medical Biometry and Medical Informatics at the faculty. In 2008 H. Becher organized the three-week course „European Course in Tropical Epidemiology“ in Heidelberg. Since that time he is staff member of this international course. Furthermore there are contributions to teaching in epidemiology at other universities (see 2.6).

Members of the unit (Andreas Deckert, Sabine Gabrysch, Heribert Ramroth und Volker Winkler) attended courses on didactic skills and obtained the official certificate (“BW-Zertifikat für Hochschuldidaktik”).

The new “Approbationsordnung” includes Epidemiology as part of the topic „Epidemiologie, medical biometry and medical informatics“ as a compulsory subject within the medical curriculum. The unit head is responsible for organisation and the teaching of the part Epidemiology.

The following members of the unit contributed to the teaching within the reporting period:

Zusätzlich trugen auch folgende Kollegen zu der Lehre im Rahmen von HeiCuMed bei:

In addition, the following colleagues contributed to teaching within HeiCuMed:

PD Dr. Volker Arndt, DKFZ
Prof. Dr. Jenny Chang-Claude, DKFZ
Dr. Halina Greiser, DKFZ
PD Dr. Ulrike Haug, DKFZ
Dr. Michael Hoffmeister; DKFZ
Dr. Thomas Jänisch, Sektion klinische Tropenmedizin
Dr. Justo Lorenzo, PhD, Institut für med. Biometrie
Prof. Dr. Olaf Müller, Institut für Public Health
Dr. Ben Schöttker, DKFZ
Prof. Dr. Karen Steindorf, DKFZ

Die Lehrmaterialien wurden gemeinsam entwickelt und stehen den Studenten im Internet passwortgeschützt zur Verfügung.

Teaching material was jointly developed and is available to medical students in the internet (password-protected).

In Abb. 16 ist das Ablaufschema von HeiCuMed beschrieben. Die Epidemiologie wird in Block IV gelehrt. Der Unterricht findet in Gruppen von ca. 35 Studenten statt.

Fig. 16 shows the scheme of HeiCuMed. Epidemiology is taught in module IV. Teaching is done in small groups with an average number of about 35 students.

| Medizinische Fakultät Heidelberg | | | |
|--|---|--|--|
| HEICUMED (Heidelerger curriculum medicinale) | | | |
| (mit neuer Approbationsordnung) | | | |
| Jahr | Themenblöcke | Beschreibung | |
| Okt bis März | Propädeutischer Block 5 Module: 1. Pathologie (4 Wochen) 2. Pharmakologie, Toxikologie (4 Wochen) 3. Propäd.Immuno / Mikrobiologie einschl.Virol/Bakteriol (4 Wochen) 4. Hygiene / Prop.Med.Biometrie / Prävention, Gesundheitsförderung / Gesundheitsökonomie (4 Wochen) 5.1 Bildgebende Verfahren, Strahlenbehandlung Strahlenschutz (2 Wochen) 5.2 Blockpraktikum Innere Medizin und Chirurgie (2 Wochen) | | |
| | Blockdauer: 20 Wochen Durchführung: 1xjährlich Moduldurchführung: 5xjährl. Studenten im Block: 260 Studenten im Modul: 52 | | |
| Apr bis Juli | Block I Innere Medizin, Allgemeinmedizin, Klinische Chemie, Lab.Diagnostik Wochen 1-2: Klin. Chemie (für alle) Wochen 2+3: Einführung (für alle) Wochen 4-13: 5 Module zu je 2 Wochen im Rotationsverfahren >Kardiologie, Angiologie, Pulmol. >Gastroenterologie >Nephrologie / Allg.Innere Medizin >Hämatol./Onkol./Rheumatol. >Endokrinologie Allgemeinmedizin durchlaufend Woche 14: Prüfungen integriert: Klinische Pharmakologie/Pharmakotherapie, Medizin des Alterns | Block II Chirurgie, Orthopädie, Urologie Anästhesie// Notfallmedizin Woche 1: Einführung (für alle) Wochen 2-13: 5 Module zu je 2 Wochen im Rotationsverfahren >Herz-Thoraxchirurgie/Plast. Chirurgie >Viszeralchirurgie >Gefässchir./Urologie >Orthopädie/Unfallchirurgie >Anästhesiologie/Notfallmedizin Rehabilitation, Physikal.Medizin, Naturheilverfahren Woche 14: Prüfungen durchlaufend: klin-pathol.Konferenz | Block I und II fächerübergreifende Leistungsnachweise Blockdauer: 14 Wochen Durchführung 2xjährlich im Wechsel Moduldurchführung 10xjährl. Studenten im Block: 130 Studenten im Modul: 26 |
| | Blockpraktikum Allgemeinmedizin (1wöchig, nach Vereinbarung) | | |
| Okt bis Jan | Block II | Block I | |
| Feb bis Juni | Block III 4 Module zu je 4 Wochen 1. Neuro-Gruppe 2. Psycho-Gruppe 1+2 fächerübergreifender LN 3. HNO/Ophthalmologie 4.1 Dermatologie, Allergologie 2 Wo 4.2 Klinische Infektiologie /Immunologie 2 Wo | Block IV 4 Module zu je 4 Wochen: 1.Gynäkologie (incl.Blockpraktikum) 2.Pädiatrie (incl.Blockpraktikum) 3. Epidemiologie, Med.Biometrie + Med.Informatik (2 Wochen) Klinische Genetik (2 Wochen) 4. Arbeitsmedizin, Sozialmedizin Klinische Umweltmedizin Rechtsmedizin Vorl. Humangenetik durchlaufend | Blockdauer: je 16 Wochen Durchführung 2xjährlich im Wechsel Moduldurchführung 8xjährl. Studenten im Block: 130 Studenten im Modul: 33 Block III fächerübergreifender Leistungsnachweise |
| | Block IV Geschichte, Theorie und Ethik der Medizin (in Block III und IV) | | |
| Juli bis Nov | Wissenschaftliche Arbeit, Wahlfach (10 Monate, frei wählbar) | | |
| Okt bis Sept | Praktisches Jahr | | |
| 2. Staatsexamen | | | |

- neue Querschnittbereiche
- fächerübergreifende Leistungsnachweise
- Blockpraktika und Wahlfach

Abb. 16: Ablaufschema HeiCuMed, medizinische Fakultät Heidelberg
 Fig. 16: Teaching Scheme HeiCuMed, Medical Faculty, Heidelberg

2.2. Wahlfach „Global Health“ • Elective Course “Global Health”

Das „Wahlfach „Global Health“ für Medizinstudierende im Klinischen Studienabschnitt vermittelt einen Einblick in die globalen Zusammenhänge, welche die Gesundheit der Menschen hier und auf anderen Erdteilen beeinflussen. Durch Vorträge, Gruppenarbeiten, Filme und Diskussionen werden Themen wie Entwicklungspolitik, Migration, Millennium Entwicklungsziele, HIV, Klimawandel und Müttersterblichkeit behandelt.

Die Veranstaltung wird von Frau Dr. Sabine Gabrysch und zwei studentischen Hilfskräften organisiert. Es lehren Dozenten aus dem Institut für Public Health, aus der Allgemeinmedizin, sowie externe Dozenten, z.B. von Ärzte ohne Grenzen, und Studenten. Das Wahlfach erstreckt sich über zwei Wochenenden, jeweils Freitag nachmittag bis Sonntag nachmittag. Als Leistungskontrolle wird ein Aufsatz zu einem Global Health Thema eigener Wahl geschrieben.

Das Wahlfach findet seit dem WS 2010/11 jedes Semester statt und es haben bisher ca. 150 Studenten teilgenommen. Die Evaluationen zeigen durchweg eine hohe Zufriedenheit mit exzellenten Noten.

The elective course “Global Health” enables medical students in their clinical phase to get an insight into global factors influencing the health of populations here and in other parts of the world. Topics such as development politics, migration, millennium development goals, HIV, climate change and maternal mortality are introduced through talks, group work, films and discussions.

The course is organized by Dr. Sabine Gabrysch and two student assistants. Teachers come from the Institute of Public Health, General Medicine as well as from outside the university, e.g. from MSF, and students are also involved in teaching. The course is held over two weekends, from Friday afternoon to Sunday afternoon. To get their certificate, students write a graded essay on a global health topic.

The elective course has been running every term since winter term 2010/11 and so far around 150 students have participated. Evaluations are always very positive with excellent grades.

2.3. Graduiertenkolleg 793 • PhD program 793

Das Graduiertenkolleg (GRK) 793 „Epidemiologie übertragbarer und chronischer, nicht übertragbarer Erkrankungen und deren Wechselbeziehungen“ war bisher das einzige Doktorandenprogramm für das Fach Epidemiologie in Deutschland. Es hatte eine Laufzeit von 1.4.2002 – 30.3.2012 (incl. Auslauffinanzierung) und wird von der DFG gefördert. Die Sektion Epidemiologie stellte den Sprecher des GRK und zwei weitere Projektleiter. Die Sekretärin der Sektion, Elke Braun-van der Hoeven, nahm gleichermaßen die Verwaltungsaufgaben im Rahmen des GRK wahr.

Viele Absolventen haben eine weitere wissenschaftliche Karriere verfolgt, und den Erfolg des Graduiertenkollegs kann man unter anderem dadurch verdeutlichen, dass insgesamt weit über 300 Publikationen aus dem GRK heraus entstanden, zahlreiche Preise

The PhD program „Graduiertenkolleg 793: Epidemiology of communicable and chronic, non-communicable diseases and their interrelationships“ was the only PhD program for epidemiology in Germany. It started on April 1st, 2002 and ended on March 31, 2012. The speaker and two more projects leaders were members of this unit. The administration of the program was organized by Ms Elke Braun-van der Hoeven who is also the secretary of the unit.

Many fellows of the program proceeded with a scientific career. The overall success of the GRK is easily seen by the very large number of over 300 publications emerging from within the program, many scientific prizes were won by GKR members, and up to now at least four fellows successfully completed the next step in the academic career path, the habilitation.

Further information on the program including a

von Absolventen des GRK gewonnen wurden, und bisher schon mindestens vier Absolventen den nächsten Schritt der wissenschaftlichen Karriereleiter, die Habilitation, erfolgreich abgeschlossen haben.

Weitere Information zu dem Programm, die Liste aller Dissertationen und aller Publikationen findet man auf der Homepage <http://grk.dermis.net>.

Eine neue Initiative für ein nachfolgendes Doktorandenprogramm ist angelaufen. Eine erste Initiative, bei der als weiterer inhaltlicher Fokus die Versorgungsforschung aufgenommen wurde, bekam eine sehr positive Evaluation, aber eine Förderung wurde aufgrund begrenzter Mittel nicht ausgesprochen. Die neue Initiative beschränkt sich wieder auf epidemiologische Forschung. H. Becher wurde als Sprecher der Initiative wieder gewählt.

list of all PhD theses and a full list of publications is given on the website <http://grk.dermis.net>

An application for a new PhD program is underway. A first attempt, in which health service research was included was evaluated positively, however due to limited funding means it has not been funded. The new initiative is focused on epidemiological research. H. Becher has been re-elected as chairman for the initiative.

Graduiertenkolleg 793 Universität Heidelberg

HOME OBJECTIVES PROJECTS NEWS MEMBERS TEACHING PUBLICATIONS INFORMATION

Epidemiology of communicable and chronic, non-communicable diseases and their interrelationships

CHAIRMAN
Prof. Dr. Heiko Becher
 Department of Tropical Hygiene and Public Health
 University of Heidelberg

DEPUTY CHAIRMAN
Prof. Dr. Hermann Brenner
 Division of Clinical Epidemiology and Aging Research
 German Cancer Research Center

GRK 793

Last update: 18.09.2006 | Webmasters: Heiko Mueller, Melanie Weck | © GRK793 2002-2007

Abb. 17: Homepage des Graduiertenkolleg 793

Fig. 17: Homepage of the PhD program "Graduiertenkolleg 793"

2.4. MSc International Health

Die Sektion ist an der Lehre in dem seit 1993 laufenden Master-Studiengang der Abteilung maßgeblich beteiligt. Der MSc in International Health ist einer der wenigen englischsprachigen Postgraduiertenkurse in Deutschland. Vor kurzem wurde eine Umstrukturierung in ein modulares System gemäß angelsächsischer Vorbilder durchgeführt und erfolgreich abgeschlossen. Der MScIH in Heidelberg ist akkreditiert mit dem Europäischen Netzwerk TropEd (www.TropEd.org).

Im Kernkurs werden während des Blocks ‚Quantitative Methoden‘ epidemiologische und biostatistische Grundbegriffe sowie das Programmpaket EPI INFO (seit 2013 Stata) praxisnah gelehrt. Als Dozenten sind derzeit aus der Sektion folgende Mitglieder tätig: Gabrysch, Becher, Henschke, Ramroth, Nesbitt, Stieglbauer. In einer Vielzahl von ‚advanced modules‘ (www.klinikum-heidelberg.de/ph/shortcourses) können die Teilnehmer dann ihre Kenntnisse vertiefen, bevor sie den Abschluss „Master of Science in International Health“ erhalten. Themen der Vorlesungen sind in Tabelle 1 angegeben.

The unit is strongly involved in the Master course which is offered by the institute since 1993. The MSc in International Health is of the few postgraduate courses in Germany taught in English. Recently, a new structure into a modular system was successfully implemented according to successful models in Great Britain or North America. The MScIH in Heidelberg is accredited with the European network TropEd (www.TropEd.org).

Within the module “Research foundations” during the core course, basics in epidemiology and biostatistics are taught, and the software package EPIINFO (since 2013 Stata) is introduced. The following members of the unit are lecturing within the course: Gabrysch, Becher, Henschke, Ramroth, Nesbitt, Stieglbauer. In a number of advanced modules (www.klinikum-heidelberg.de/ph/shortcourses) the participants are given the possibility to broaden their knowledge and to specialize in certain fields before they obtain the degree „Master of Science in International Health“. Titles of lectures are given in table 1.

Module 4: Research foundations

Epidemiology

1. Introduction
2. Measures of frequency
3. Measures of effect and impact
4. Introduction to study design
5. Cohort and intervention studies
6. Case-control studies
7. Bias
8. Confounding and interaction
9. Diagnostic testing
10. Standardisation

Applications

1. Introduction to Stata / data description
2. Introduction to Stata / data management
3. Questionnaire design and variable construction
4. Questionnaire design and data entry
5. Data analysis exercise

Statistics

1. Describing data
2. Normal distribution
3. Sampling variability of a mean
4. Comparing two means
5. Analysis of categorical data
6. Stratification
7. Sampling and sample size calculation
8. Correlation and regression

Tab. 1: Stundenplan des Blocks „Research foundations“

Tab. 1: Time table module „Research foundations“

2.5. Bachelorstudiengang „Gesundheitsförderung“ • Bachelor „Health Promotion“

Seit dem Wintersemester 2008/2009 unterrichtet die Sektion im Bachelorstudiengang „Gesundheitsförderung“ der Pädagogischen Hochschule Heidelberg das Seminar „Epidemiologie und Statistik“. Der Studiengang orientiert sich an der Ottawa Charta der WHO. Hauptziel der Gesundheitsförderung ist die Unterstützung und Begleitung ressourcenorientierter Lernprozesse von Individuen und Systemen.

Since the winter term 2008/2009 the section teaches "Epidemiology and Statistics" in the Bachelor study program "Health Promotion" at the University of Education Heidelberg. The course is based on the WHO Ottawa Charter. The main objective of health promotion is to support and accompany resource-oriented learning processes of individuals and systems.

2.6. Weitere Vorlesungen • Other Lectures

Regelmäßig jedes Semester • Each term

Ringvorlesung „Epidemiologie“ • Lecture round „Epidemiology“

(Organisation: H. Becher)

In dieser Veranstaltung finden Vorlesungen zu verschiedenen epidemiologischen Themen statt. Dozenten sind hiesige und externe Wissenschaftler. Eine Liste mit einer Auswahl der Themen und Dozenten der letzten Jahre findet man in Tabelle 2:

This lecture round on various epidemiological subjects is given by local and external researchers. A list with a selection of topics and lecturers in recent years can be found in Table 2:

| | |
|------------|---|
| 08.11.2011 | Volker Arndt, Heidelberg Cluster Randomized Trials - Aspects of planning, field work, analysis, and examples |
| 22.11.2011 | Karel Kostev, Frankfurt Datenbankbasierte epidemiologische Untersuchungen zur Versorgung der Patienten mit Diabetes mellitus in Deutschland |
| 06.12.2011 | Heiko Becher, Heidelberg STROBE statement and rules for good epidemiological practice |
| 10.01.2012 | Jenny Chang-Claude, Heidelberg Coronary heart disease risk and estrogen/progestin therapy: resolving discrepant findings of observational studies and a randomized trial |
| 24.01.2012 | Karen Steindorf, Heidelberg Breast cancer and physical activity: current research based on different study designs for primary and tertiary prevention |
| 07.02.2012 | Justine Rochon, Heidelberg Propensity Score Methoden |
| 21.02.2012 | Gunther Laux, Heidelberg Methoden zur Konstruktion geeigneter Kontrollgruppen bei analytischen Beobachtungsstudien der Epidemiologie |
| 22.05.2012 | Olaf Müller, Heidelberg Malaria epidemiology – the importance of addressing the gametocytes for elimination programs |
| 05.06.2012 | Justine Rochon, Heidelberg Einführung in die Mehrebenenanalyse (und Anwendung in MLwiN/SPSS) |
| 19.06.2012 | Volker Arndt, Heidelberg Regression dilution bias in long-term cohort studies |
| 03.07.2012 | Jenny Chang-Claude, Heidelberg Gene-gene and gene-environment interaction: impact on risk prediction for complex diseases? |

| | |
|------------|---|
| 24.07.2012 | Annelies Wilder-Smith, Heidelberg Epidemiology of dengue: the knowns and unknowns |
| 23.10.2012 | Heiko Becher, Heidelberg Statistical methods in epidemiology |
| 20.11.2012 | Rudolf Kaaks, Heidelberg The National Cohort: Aims and Design |
| 04.12.2012 | Alexandra Nieters, Freiburg Chancen und Herausforderungen der epigenetischen Epidemiologie |
| 18.12.2012 | Olaf Müller, Heidelberg Unspecific effects of childhood vaccinations: design of a community-based measles RCT in Burkina Faso |
| 15.01.2013 | Jenny Chang-Claude, Heidelberg Phytoestrogen exposure and breast cancer risk and outcomes |
| 29.01.2013 | Lorenz Uhlmann, Heidelberg Einführung in die Netzwerk-Metaanalyse |
| 05.02.2013 | Volker Arndt, Heidelberg Das MorbiRSA-Public Use File für die versorgungsepidemiologische Forschung |
| 04.06.2013 | Karen Steindorf, Heidelberg Körperliche Aktivität und Training bei Brustkrebs - Wissenschaftliche Evidenz und Potential |
| 18.06.2013 | Volker Arndt, Heidelberg Prognostic Research: Development and Validation of Risk Scores |
| 02.07.2013 | Reyn van Ewijk, Mainz Ramadan fasting during pregnancy and the health of the child later in life: Evidence from a natural experiment |
| 09.07.2013 | Philipp Zanger, Tübingen Impact and determinants of Staphylococcus aureus colonization and infection |
| 16.07.2013 | Olaf Müller, Heidelberg Polio Eradication |
| 22.10.2013 | Heiko Becher, Heidelberg Tasks of epidemiological societies and rules for good epidemiological practice |
| 12.11.2013 | Christine Fischer, Heidelberg Risk calculation in families with breast and ovarian cancer |
| 26.11.2013 | Olaf Müller, Heidelberg Elimination Research: Example Malaria |

Tab. 2: Themen der Ringvorlesung „Epidemiologie“, 2011-2013

Tab. 2: Topics lecture series "Epidemiology", 2011-2013

Kolloquium Medizinische Biometrie, Informatik und Epidemiologie • Colloquium Medical Biometry, Informatics and Epidemiology

(Organisation: Becher, Dickhaus, Kieser, Knaup, Kopp-Schneider)

Dieses Kolloquium hat eine lange Tradition. Es werden Wissenschaftler aus den oben genannten Bereichen zu Vorträgen eingeladen.

This conference has a long tradition. Scientists specialized in the above mentioned topics are invited to give a lecture.

Weitere Vorlesungen • Further lectures

- Lecture "Statistical Methods in Epidemiology" for PhD students in epidemiology and other interested students or colleagues, Heidelberg University, WS 2012/2013
Becher
- Various guest lectureships within the Master course "Master of Epidemiology", Mainz University
Becher
- Yearly guest lectureship at the Department of Toxicology, University of Tübingen (Epidemiologie für Toxikologen)
Becher
- From 2007 onwards: module "Epidemiology" in the Master Course "Medical Biometry/Biostatistics"
Becher and colleagues
- European Course on Tropical Epidemiology: 2013 in Copenhagen, 2012 in Barcelona, 2011 in Berlin, 2010 in Antwerpen, 2009 in Göteborg (www.ecte.org)



This is a three-week course which is organized jointly by several units working in international epidemiology in Europe. The course takes place in a turnaround way at the various institutes involved. In 2008 Heidelberg was the host.

Becher and colleagues

- Seminar series about basics in biostatistics, epidemiology and in particular logistic regression, WS 2009, DKFZ and Heidelberg University
Deckert
- From 2006 onwards: module "Biometrie I" in the Master course "Medical Biometry/Biostatistics"
Deckert and colleagues
- Summer School "Disease-related malnutrition" of the Food Security Centre at Hohenheim University in 2010: "Introduction to Epidemiology"
Gabrysch
- London School of Hygiene & Tropical Medicine, Distance Learning MSc Clinical Trials: "Basic Statistics for Clinical Trials", since 2009
Gabrysch

3. Weitere Aktivitäten • Further activities

3.1. Tätigkeiten in Gremien, als Editor oder Reviewer • Council memberships, reviewing and editorial tasks

Heiko Becher

| | |
|------------------|--|
| 2002-2012 | Chairman of the PhD program Graduiertenkolleg 793 |
| since 2004 | Coordinator of the module "Epidemiology" of the Heidelberg Curriculum Medicinale (HeiCuMed) |
| 2008-2015 | Elected member of the "Fachkollegium" of the German Research Foundation (DFG) in the Section "Cancer Research" for the Subject 205-01 "Epidemiologie, med. Biometrie, med. Informatik, Public Health", 2008-2011, 2012-2015 |
| 2012-2014 | Council member (2012-2014) and founding president (2005-2007), of the German Epidemiological Association (Deutsche Gesellschaft für Epidemiologie, DGEpi) |
| Associate Editor | Biometrical Journal (since 2003) Global Health Action (since 2009) |
| Examiner | External examiner of PhD theses at <ul style="list-style-type: none"> • Swiss Tropical Institute, Basel, Switzerland, • University of Umea, Sweden, • University of Copenhagen, Denmark • University of Witswatersrand, South Africa |

Reviewer for funding agencies:

- Deutsche Krebshilfe
- DFG
- Wellcome Trust

Reviewer for scientific journals u.a. :

- | | |
|--|---|
| <ul style="list-style-type: none"> • Am J Tro Med Hyg • Am J Epid • BMC Women's Health • BMC Public Health • Env Hlth Persp • Eur J Epid | <ul style="list-style-type: none"> • Int J Cancer • Int J Epid • Hum Biol • Stat Med • Trop Med Int Hlth • J Epid Comm Hlth |
|--|---|

Sabine Gabrysch

Editorial board: Journal "Emerging Themes in Epidemiology"

Steering Committee: John Snow Society

Reviewer for scientific journals:

- | | |
|---|--|
| <ul style="list-style-type: none"> • The Lancet • PloS Medicine • PloS One • Bull WHO • Soc Sc Med • Health Policy Plan | <ul style="list-style-type: none"> • Public Health and Policy • Trop Med Int Hlth • AIDS Research and Therapy • Int J Equ Hlth |
|---|--|

Heribert Ramroth

Guest editor: BMC Public Health

Examiner: University of the Witwatersrand

Reviewer for funding agencies:

- BMBF
- Swiss Cancer League

Reviewer for scientific journals:

- | | |
|---|--|
| <ul style="list-style-type: none"> • Am J Ind Med • BMC Cancer • BMC Pregn and Child Health • BMJ • Brit J of Cancer • Int J Public Health • Indian J Cancer | <ul style="list-style-type: none"> • J Epid Com Hlth • J Occup Med Tox • J Pop Res • Trop Med Int Hlth |
|---|--|

Volker Winkler

Reviewer for funding agencies:

- Bundesministerium für Bildung und Forschung (BMBF)

Reviewer for scientific journals:

- Cancer Causes and Control
- J Publ Hlth
- Global Health Action
- Int J Publ Hlth
- BMC Publ Hlth

Nicholas Henschke

Reviewer for funding agencies:

- National Health and medical research Council, Australia
- Swiss National Science Foundation

Reviewer for scientific journals:

- | | |
|--|--|
| <ul style="list-style-type: none"> • J Physiotherapy • Afr Hlth Sciences J • Ann Intl Med • BMC Med Res Meth • BMC Musculoskel Disorders • Can Med Ass JI • Chiropractic & Manual Therapies • Cochr Database Syst Rev • Disability & Rehabilitation | <ul style="list-style-type: none"> • Eur J Pain • Ind Hlth • J Back Musculoskel Rehab • J Clin Epid • J Pain • Physical Therapy • Spine • Swiss Med Weekly • J Orthopdic Sports Phys Therap |
|--|--|

3.2. Organisation von Tagungen und Workshops • Organisation of meetings and workshops

15. Konferenz der SAS-Anwender in Forschung und Entwicklung (KSFE), February 24-25, 2011, Heidelberg

The German community of users of the statistical programming package SAS meets once a year to interchange knowledge and to discuss new developments of the SAS software. In 2011, this conference was held in Heidelberg from 24th to 25th of February: KSFE 2011 – Konferenz der SAS-Anwender in Forschung und Entwicklung (www.urz.uni-heidelberg.de/KSFE2011)

The number of participants exceeded any number seen before, reaching 530 registered conference participants. The main topic of the conference was "Learning from each other". The conference covered tutorials on the usage of SAS®/Base, SAS® Graph, SAS®

SQL, JMP and many other specific talks on the SAS software. Heidelberg contributed with this conference to the celebration of the 625th anniversary of the Ruperto Carola University of Heidelberg. Heribert Ramroth from our unit was one of the chairs for this conference.



Kickoff-Meeting of Work package 4 of the INTREC-Project Heidelberg, October 18-19, 2012



INTREC is an EU funded project to address Inequities and Social Determinants of Health in Asia & Africa.

Our unit is involved in work package 4 (WP 4: Development of the training activities with the objectives to develop a set of training activities concerning social determinants of health that can be adopted by the two INTREC centres) and responsible for work package 5 (WP 5: Piloting, evaluation and revision of the training activities with the objectives to pilot every training activity, to train the future trainees, to collect evaluation from both trainers and trainees and to revise the content and the teaching methods of every training activity).

In 2011, a Kickoff-Meeting of Work package 4 was held in Heidelberg organized by H. Becher, H. Ramroth and E. Braun van der Hoeven.



Abb. 18: Teilnehmer des WP 4 Kickoff-Meetings in Heidelberg
Fig. 18: Participants of the WP 4 Kickoff-Meeting in Heidelberg

Participants came from the USA, Ghana, Sweden, Indonesia, South Africa and the Netherlands

Symposium "Global Health in the 21st Century, Celebrating 50 years of Heidelberg's Contribution", September 13-15, 2012

Public Health and Tropical Medicine at Heidelberg University Hospital had a special anniversary in 2012. 50 years ago, in the year 1962, the Institute was founded under its former name "Department of Tropical Hygiene and Public Health".

In addition, there were in 2012 special birthdays of the former and the present director of the Institute, Professor Hans-Jochen Diesfeld and Professor Rainer Sauerborn, two personalities who significantly shaped the general direction of the Institute over the last decades.



Fig. 19: Opening lecture of the symposium "Global health in the 21st century"

On these occasions we organized in Heidelberg a two-day symposium in September 2012 entitled "Global Health in the 21st Century - celebrating 50 years of Heidelberg's Contribution". We wanted to acknowledge the development of the former field "Tropical Hygiene" into the more general term "Global Health".

A large number of renowned scientists from all over the world gave presentations at the symposium. The nobel price winner Prof. R.K. Pachauri gave a personal video message which was presented at the symposium.



Fig. 20: The chairman of the Symposium, Professor Heiko Becher, congratulates Professor Diesfeld and Professor Sauerborn on their birthdays.



Fig. 21: PD Dr. Heribert Ramroth and Dr. Robert Ndugwa (former PhD-student, now UN Nairobi, Kenia)



Fig. 22: A firework at the old castle of Heidelberg marked the end of the Symposium.

We acknowledge the generous funding from the German Research Foundation (DFG) that made this symposium possible.

Final Symposium of Graduiertenkolleg 793 Heidelberg, June 8, 2011

Das Graduiertenkolleg 793 (siehe Kap. 2.3) fand am 8. Juni 2011 mit einem Symposium seinen formalen Abschluss. Abb. 23 zeigt die Ankündigung und Abb. 24 einige Dozenten und Absolventen.

The PhD program 793 (see chapter 2.3) formally ended on June 8, 2011 with a final symposium. Fig. 23 shows the announcement and fig. 24 a photo with some of the supervisors and graduates.



Wissenschaftliche Fortbildungsveranstaltungen für Kollegen des CRSN, Burkina Faso Capacity building - Scientific courses for members of the CRSN in Burkina Faso

Die Zusammenarbeit mit dem CRSN in Nouna beinhaltet seit 2004 regelmäßige Fortbildungskurse, die von Mitgliedern unserer Sektion organisiert und veranstaltet wurden. Diese richteten sich in erster Linie an die Mitarbeiter des CRSN, Teilnehmer kamen aber auch von anderen HDSS sites in Burkina Faso, oder von anderen Gesundheitseinrichtungen. Im Berichtszeitraum wurden folgende drei Kurse veranstaltet, die von 10-20 Teilnehmern besucht wurden.

The collaboration with the CRSN in Nouna, Burkina Faso included contributions to capacity building, in particular for staff members of the CRSN, but also for scientists working at other HDSS sites in Burkina Faso or in the health districts office or in Nouna hospital. The first course was held in 2004. In the reporting period we performed three courses as described below. These courses had about 10 to 20 participants.

January 2009, Nouna, Burkina Faso**Biostatistical Methods for the Analysis of Data from HDSS and Clinical Trials.****Dozenten / Lecturers: Becher H, Ramroth H**

An intensive 10 day workshop for staff members from CRSN Nouna and from two collaborating institutes in Ouagadougou, Burkina Faso. Additional funding for external staff has been provided by INDEPTH network, Accra, Ghana.

A first part of the course covered basics of statistics. Practical exercises have been done using the statistical software package STATA and EpiInfo. A second part of the course covered the topic of survival analysis, like Kaplan Meier estimates, Log-rank-test, Cox-Regression.

March 2009, Lilongwe, Malawi**Introduction to epidemiology and use of the Epi Info Software****Dozenten / Lecturer: Ramroth H**

Teaching constitutes one important element of the collaboration with the Hospital in Lilongwe Malawi (www.esther-magnet.org). A training

course "Introduction to epidemiology and use of the Epi Info Software" was given by PD Dr. Heribert Ramroth in 2009.

April 2011, Nouna, Burkina Faso**Intensive workshop on the basic principles of epidemiology.****Dozenten / Lecturer: Ramroth H**

One week Workshop for staff members from CRSN Nouna. This workshop covered

epidemiological principles like study designs, bias and confounding.



Abb. 25: Kursteilnehmer, April 2011

Fig. 25: Participants of the course in April 2011

June 2013, Nouna, Burkina Faso**Statistical methods in Epidemiology with focus on HDSS data analysis****Dozenten / Lecturers: Becher H, Schoeps A, Müller O**

This one week workshop for staff members from CRSN Nouna had a focus on analyzing data from demographic surveillance systems and to estimate relevant epidemiological

parameters. STATA was used as the programming language and practical exercises were performed.

| | Monday 24 th | Tuesday 25 th | Wednesday 26 th | Thursday 27 th | Friday 28 th |
|--------------------|--|--|---|---|---|
| 8:30-10:00 | 8:30 internal meeting 9:00 Welcome Introduction, Organisational remarks | Self study with Exercise sheet 1 | Exercises (Becher and Schoeps) Analysis of cohort studies and longitudinal data I | Exercises (Becher and Schoeps) Solutions to Exercise sheet 2 | Exercises (Becher and Schoeps) Solutions to Exercise sheet 3 |
| 10:00-10:30 | Coffee break | | | | |
| 10:30-12:30 | Lecture (Becher) Epidemiological measures I | Self study with Exercise sheet 1 | Lecture (Müller) Progress in infectious disease prevention | Lecture (Becher) Survival analysis | Evaluation and closure |
| 12:30-13:30 | Lunch | | | | |
| 13:30-15:00 | Lecture (Becher) Epidemiological measures II | Lecture (Becher) Analysis of cohort studies and longitudinal data I | Self study with Exercise sheet 2 | Self study with Exercise sheet 3 | |
| 15:00-15:30 | Coffee break | | | | |
| 15:30-17:00 | Exercises (Becher and Schoeps) Epidemiological measures I+II | Exercises (Becher and Schoeps) Solutions to Exercise sheet 1 | Self study with Exercise sheet 2 | Self study with Exercise sheet 3 | |

Tab. 3: Program of the course in Nouna 2013

4. Mitarbeiter, Kooperationspartner, Drittmittel • Staff, Collaborators, Funding

4.1. Mitarbeiter • Staff

Zum 31.10.2013 gehörten der Sektion 19 Mitarbeiter an. Die Mehrzahl der Mitarbeiter wird aus Drittmitteln finanziert.

Die Sektion wird administrativ von Frau Elke Braun-van der Hoeven betreut.

Die Mitarbeiter sind in Tab. 4 aufgelistet. Weitere Informationen findet man auf der Homepage der Sektion:

<http://www.klinikum.uni-heidelberg.de/epistat>

As of October 31st, 2013, the unit had 19 full members. Most members have contracts based on soft money.

The unit office is managed by Ms. Elke Braun-van der Hoeven.

Members of the unit are listed in tab. 4. Further information is given on the homepage of the unit:




<http://www.klinikum.uni-heidelberg.de/epistat>












Abb. 26:
Fig 26:





Die Sektion Epidemiologie und Biostatistik im Sommer 2013
The unit epidemiology and biostatistics in summer 2013

Tab. 4: **Liste der Mitarbeiter, 31.10.2013 • Staff list as of 31.10.2013**

| Name, Vorname, Akad. Grad Name, first name, degree | Position Position | Finanzierung Funding |
|---|--|--|
|  Becher , Heiko, <i>Prof. Dr. rer. nat</i> | Leiter der Sektion Head of Unit | Landesmittel Core budget |
| <p>He studied statistics at the universities of Dortmund, Germany, and Sheffield, England, and received a diploma in statistics with minor computer science in 1983 and Ph.D. in Statistics in 1987. In 1993 he habilitated in Epidemiology and Medical Biometry at Heidelberg University. He is since 1999 full professor for Epidemiology and Biostatistics at Heidelberg University. Before that he worked at the German Cancer Research Center, Heidelberg, the Bremen Institute for Prevention Research and Social Medicine, Bremen, Germany, and the International Agency for Research on Cancer, Lyon, France. In 2007 he was visiting Professor at the Division of Epidemiology and Global Health, Umeå University, Sweden.</p> | | |
| Bortz , Martin, <i>cand. med.</i> | Doktorand Doctoral Student | Drittmittel Soft money |
| <p>He is a medical student who works towards his MD thesis since February 2013. The topic of his MD study in Brazil is to compare Rios urban districts using different health outcome indicators.</p> | | |
|  Braun-van der Hoeven , Elke, <i>Dipl- Betriebswirtin (FH)</i> | Projektmanagement Project+office management | Landesmittel/Drittmittel Core budget/Soft money |
| <p>She studied International Business Administration in Pforzheim, Germany and Groningen, The Netherlands and graduated as Business Economist/Diplom-Betriebswirtin (FH) in 1991. Before joining the Institute in 2001 she worked at the German Cancer Research Center (DKFZ) Heidelberg, Department of Project Management, where she was responsible for the administration of international and EU Projects. In our unit she is responsible for project administration, controlling and office management.</p> | | |
| Chenouda , Sami | Doktorand Doctoral Student | |
| <p>He is a medical student who works towards his MD thesis. The topic of his MD study in Germany is to analyse the impact of comorbidities on survival of laryngeal cancer patients.</p> | | |
|  Deckert , Andreas, <i>Dipl. Inf. Med.</i> | Doktorand Doctoral Student | Drittmittel Soft money |
| <p>He studied medical informatics and has advanced experiences in medical image processing and the design and analysis of large clinical trials. He was responsible for the design and implementation of the Master's programme "Medical Biometry/Biostatistics" in the Institute of Medical Biometry. He joined the institute in 2008 and has now just finished his PhD thesis on an epidemiological study on Aussiedler from the former Soviet Union. Since 2011 he is responsible for setting up a prospective cohort of Aussiedler together with colleagues in Augsburg.</p> | | |

| | | |
|---|--|--|
| | Fix, Mario, <i>cand. med.</i> Doktorand Doctoral Student | Drittmittel Soft money |
| <p>He is a medical student who works towards his MD thesis since July 2013 on a cross-sectional study on risk factors for stroke and other neurological diseases in Brunei Darussalam.</p> | | |
|  | Gabrysch, Sabine, <i>Dr. med., PhD</i> Senior Scientist, Leiterin der Nachwuchsgruppe | Drittmittel Soft money |
| <p>Sabine studied medicine in Tübingen, Heidelberg, the U.S. and Argentina, and did a medical research degree (Dr. med.) in molecular biology, graduating in 2002. She then worked as a medical doctor in Sweden for three years, in Ethiopia and as consultant for the GTZ. In 2006, she completed the MSc Epidemiology at the London School of Hygiene & Tropical Medicine (LSHTM) and subsequently worked as a Graduate Teaching Assistant at LSHTM while doing a PhD on obstetric care in Zambia. In 2009, she came to the Institute, where she continues to work on maternal and child health. Since 2013, she leads a BMBF-funded Junior Scientist Group in Epidemiology that will conduct a home gardening intervention study to reduce maternal and child undernutrition in Bangladesh.</p> | | |
|  | Henschke, Nicholas, <i>PhD</i> Post Doc | Drittmittel Soft money |
| <p>He studied physiotherapy at the University of Sydney, Australia and received a PhD in 2008. Before joining the institute he worked as a research fellow for the EMGO Institute for Health and Care Research, Amsterdam (2009-2010) and the George Institute for Global Health, Sydney (2011-2012). He is currently involved in research on musculoskeletal epidemiology and social determinants of health within the institute.</p> | | |
|  | Kynast-Wolf, Gisela, <i>Dr. sc.hum</i> Post Doc | Sondermittel Klinikum Special Hospital budget |
| <p>She studied statistics and received a diploma at the University of Dortmund, Germany. Before joining the Institute in 1999 she worked at the German Cancer Research Center (DKFZ) Heidelberg, Department of Documentation, Information and Statistics and Department of Epidemiology, University clinics of Heidelberg, Department of Neurology and Department of Clinical Social medicine. In 2008 she received a Ph.D. in Epidemiology at Heidelberg University. She mainly worked with the HDSS database from Nouna, Burkina Faso. Since 2013, she is also involved in the organization of the Master course within the institute.</p> | | |
|  | Lorenz, Eva, <i>Dipl.-Inform. Med.</i> Doktorandin Doctoral Student | Drittmittel Soft money |
| <p>She studied Medical Informatics at the University of Heidelberg and University of Applied Science Heilbronn with specializations in biostatistics and medical image and signal processing. She already wrote her diploma thesis on a biostatistical project at the institute and is now PhD student.</p> | | |

| | | | |
|---|---|--|-----------------------------|
|  | Nesbitt , Robin, <i>MSc</i> | Doktorand Doctoral Student | Drittmittel Soft money |
| <p>She studied Biomedical Science and Humanistic studies at McGill University in Canada, and completed a Masters of Epidemiology at the London School of Hygiene and Tropical Medicine in 2010. She joined Heidelberg University in 2011 where she is completing her doctoral studies in Epidemiology.</p> | | | |
|  | Ramroth , Heribert, <i>PD Dr. sc.hum</i> | Senior Scientist, stv. Sektionsleiter | Landesmittel Core budget |
| <p>Senior scientist for Epidemiology (habilitated). He studied Mathematics at the University of Mainz, Germany and Rome, Italy. He received a Ph.D. in Epidemiology in Heidelberg. In 2011, he habilitated in Epidemiology at Heidelberg University. Before joining the Institute of Public Health, he worked at the German Cancer Research Center (DKFZ), Heidelberg, Department of Clinical Epidemiology and the German Centre for Research on Aging (DZFA), Heidelberg. He is actively involved in different networks (INDEPTH network (capacity building); INTREC (capacity building, dealing with social inequalities and health) and INHANCE (International Network of Head and Neck Cancer Epidemiology)).</p> | | | |
|  | Safer , Anton, <i>Dr. rer.biol.hum</i> | Senior Scientist | Drittmittel Soft money |
| <p>He studied agricultural sciences at the University Stuttgart-Hohenheim, completed with degree Dipl.-Ing. Agr. In 1991 he completed his PhD in Human Biology (Theoretical Medicine) at the Hannover Medical School (MHH). Before joining the Institute of Public Health in 2009 he worked as a biostatistician for drug research and development within pharmaceutical companies. He works now as a project statistician for the studies on stroke.</p> | | | |
|  | Santi , Irene, <i>MSc</i> | Doktorandin Doctoral Student | Drittmittel Soft money |
| <p>She studied Biology with a post-graduate specialization in Epidemiology and Biostatistics. Currently she is completing her PhD on the study on laryngeal cancer.</p> | | | |
|  | Schoeps , Anja, <i>MSc</i> | Doktorandin Doctoral Student | Drittmittel Soft money |
| <p>She studied Public Health and wrote her Bachelor thesis at this institute. After obtaining her Master of Science in Epidemiology she is now a PhD student at the institute since 2012 in the OPTIMUNIZE vaccination trial in Burkina Faso.</p> | | | |

| | | | |
|---|---|--|--|
|  | Stieglbauer, Gabriele | Med. Dokumentarin Medical Documentalist | Landesmittel/Drittmittel Core budget/Soft money |
| <p>She graduated from the School of Medical Documentation in Ulm, Germany, with a certification in medical documentation. She joined the Institute of Public Health in 1999. The focus of her work is on data management and descriptive data evaluation for different ongoing projects.</p> | | | |
|  | Veile, Annette, <i>cand.med.</i> | Doktorandin Doctoral Student | Drittmittel Soft money |
| <p>She started her medical studies at the Heidelberg University in 2008. Currently, she is working on her MD-thesis on the association between smoking status and the prevalence of tinnitus.</p> | | | |
|  | Winkler, Volker, <i>Dr. sc.hum</i> | Senior Scientist | Drittmittel Soft money |
| <p>He received a diploma in Biology as well as a Ph.D. in Epidemiology at the university of Heidelberg. He works on two main topics the health status of migrants from the former Soviet Union and the estimation of tobacco related mortality in low and middle income countries.</p> | | | |
|  | Zimmermann, Heiko, <i>Dipl.-Inform. Med.</i> | Doktorand Doctoral Student | Drittmittel Soft money |
| <p>He studied Medical Informatics at the University of Heidelberg and University of Applied Science Heilbronn with specializations in (clinical) database management. The topic of his PhD thesis is based on a feasibility study of the German National Cohort. In addition, Heiko is responsible for the computer network of the institute.</p> | | | |

4.2. Frühere Mitarbeiter • Previous staff members

Tab. 5: Liste der ehemaligen Mitarbeiter (2009-2013) • Previous Staff (2009-2013)

| Name, Vorname Name, first name | Position Position | Finanzierung Funding | von from | bis to |
|---|--|--|---------------------|-------------------|
| Filippidis, Filippos | Gastwissenschaftler Guest Scientist | Own funding | 2013/07 | 2013/08 |
| Mashayamombe, Tabeth | Wissenschaftl. Hilfskraft Working student | Drittmittel Soft money | 2012/06 | 2013/07 |
| Gauglitz, Julia | Wissenschaftl. Hilfskraft Working student | Drittmittel Soft money | 2012/10 | 2013/01 |
| Rudolph, Elisabeth | Doktorandin Doctoral Student | Drittmittel Soft money | 2011 | 2013 |
| Lelii, Stefano | Wissenschaftl. Hilfskraft Working student | Drittmittel Soft money | 2012/07 | 2012/12 |
| Vuksanovic, Milena | Wissenschaftl. Hilfskraft Working student | Externes Stipendium External fellowship | 2012/10 | 2012/11 |
| Keib, Anna | Wissenschaftl. Hilfskraft Working student | Drittmittel Soft money | 2012/03 | 2012/09 |
| Wolf, Robert | Wissenschaftl. Hilfskraft Working student | Drittmittel Soft money | 2009/03 | 2012/07 |
| Becher, Jana | Wissenschaftl. Hilfskraft Working student | Drittmittel Soft money | 2012/06 | 2012/06 |
| Celik, Cihan | Wissenschaftl. Hilfskraft Working student | Drittmittel Soft money | 2012/02 | 2012/05 |
| Kama, Cigdem | Wissenschaftl. Hilfskraft Working student | Drittmittel Soft money | 2011/11 | 2012/05 |
| Kuhrs, Ema | Doktorandin Doctoral Student | Drittmittel Soft money | 2008/07 | 2012/04 |
| Aslanel, Firat | Wissenschaftl. Hilfskraft Working student | Drittmittel Soft money | 2012/01 | 2012/03 |
| Otte im Kampe, Eveline | Wissenschaftl. Hilfskraft Working student | Drittmittel Soft money | 2011/08 | 2012/02 |
| Civitelli, Giulia | Gastwissenschaftlerin Guest Scientist | Externes Stipendium External fellowship | 2011/02 | 2011/11 |
| Sonnberg, Susanne | Doktorandin Doctoral Student | Drittmittel Soft money | 2010/01 | 2011/08 |
| Louis, Valerie | Wissenschaftl. Mitarbeiterin Senior Scientist | Landesmittel Core budget | 2010/12 | 2011/01 |
| Rankin, Johanna | Bosch Stipendiatin Bosch fellow | Externes Stipendium External fellowship | 2010/10 | 2010/12 |
| Ssenono, Mark | Doktorand Doctoral Student | Drittmittel Soft money | 2009/02 | 2010/12 |
| Rosenberger, Kerstin | Doktorandin Doctoral Student | Drittmittel Soft money | 2006/08 | 2010/03 |
| Kattinger, Leszek | Wissenschaftl. Hilfskraft Working student | Drittmittel Soft money | 2009/01 | 2010/01 |
| Jänisch, Thomas | Wissenschaftl. Mitarbeiter Senior Scientist | Landesmittel Core budget | 2005/02 | 2009/04 |

4.3. Drittmittel • Grants

Gegenwärtig wird der Leiter der Sektion, ein Wissenschaftler (75%), eine Dokumentarin und eine Projektmanagerin / Sekretärin (50%) aus Haushaltsmitteln finanziert, alle anderen Mitarbeiter der Sektion werden durch Drittmittel finanziert.

In der folgenden Tabelle sind die Gesamtfördersummen aller Forschungsprojekte angegeben, die ganz oder teilweise in dem Berichtszeitraum 2009-2013 durchgeführt wurden.

At present, the head of the Unit, one scientist (75%), a database manager and a project manager / secretary (50%) is on institutional budget, all others are on soft money contracts.

The following table lists the total soft money funding within the last three years for all projects which were running completely or in parts in the time interval 2009-2013.

Tab. 6: **Drittmittel • Grants**

SFB-projekt Z2 within the SFB 544 „Data management and data analysis of the database from the CRSN, Nouna, Burkina Faso and statistical collaboration with research groups within the SFB 544“

Laufzeit 7/2008 - 6/2011
 Förderung: DFG
 PI: H. Becher
 Grant number: INST 35/435-4
 Funding: 334.200 €

An extended evaluation of malaria mortality and morbidity estimates in selected countries in sub-Saharan Africa (Projekt D1 within SFB 544).

Laufzeit 7/2008 - 6/2011
 Förderung: DFG / SFB 544 (Kontrolle Tropischer Infektionskrankheiten)
 PI: H. Becher
 Grant number: INST 35/440-4
 Funding: 191.600 €

Graduiertenkolleg (PhD program) 793 „Epidemiology of communicable and chronic, non-communicable diseases and their interrelationships“

Laufzeit 4/2002 - 3/2012
 Förderung: DFG
 Chairman: H. Becher
 Grant number: GRK 393
 Funding: 3.407.228 €

Inflammatory, genetic and socioeconomic determinants of ischemic stroke and their interdependence.

Laufzeit 3/2009 - 2/2012
 Förderung: DFG
 PI: H. Becher, A. Grau, C. Grond-Ginsbach
 Grant number: BE 2056/8-1
 Funding: 334.200 €

Herz-Kreislauf-Krankheiten und Diabetes bei Aussiedlern: Kohortenstudie zur Identifizierung von Risikofaktoren und Erklärung spezieller Mortalitätsmuster

Laufzeit 1/2011 - 12/2013
 Förderung: DFG
 PI+AGmember: H. Becher, A. Deckert C. Meisinger, HE Wichmann,
 Funding: 151.700 €

Nationale Kohorte – Feasibility-Studien Teil 1

Projekt P1: Migrantenzugangserprobung
 Laufzeit 01.09.2010-30.04.2012
 Förderung: BMBF
 PI+AGmember: H. Becher, V. Winkler, H. Zimmermann, G. Stieglbauer
 Funding: 231.444 €

Optimising the impact and cost-effectiveness of child health intervention programmes of vaccines and micronutrients in low-income countries

Laufzeit 3/2011 - 2/2016
Förderung: EU
PI+AGmember: H. Becher, O. Müller, A. Schoeps (für Heidelberg)
Funding: 200.000 € (nur work package Heidelberg)

Generalisation of the Fractional Polynomial procedure for semi-continuous variables in epidemiology and clinical research

Laufzeit 8/2011 - 4/2015
Förderung: DFG
PI+AGmember: H. Becher, E. Lorenz, W. Sauerbrei, C. Jenkner
Funding: 107.425€ + 84.125 €

INDEPTH Training and Research Centres of Excellence

Laufzeit 9/2011 - 8/2014
Förderung: EU
PI+AGmember: H. Becher, H. Ramroth, N. Henschke (für Heidelberg)
Funding: 227.862 € (nur work package Heidelberg)

Nationale Kohorte – Feasibility-Studien Teil 2

Projekt PP9: Untersuchung der Responseraten bei Migranten unter besonderer Berücksichtigung von (i) türkei-stämmigen Probanden und (ii) Spätaussiedlern

Laufzeit 5/2012 - 6/2013
Förderung: BMBF
PI+AGmember: H. Becher, V. Winkler
Funding: 113.000 €

Schätzung der Anzahl der mit Rauchen assoziierten Todesfälle in Ländern mit unzureichenden Daten der Bevölkerungsstatistik: Theorie und Anwendung

Laufzeit 01/2009 - 11/2010
Förderung: DFG
PI: V. Winkler
Funding: 100.000 €

Schätzung der Anzahl der mit Rauchen assoziierten Todesfälle in Ländern mit unzureichenden Daten der Bevölkerungsstatistik: Theorie und Anwendung (Verlängerungsantrag)

Laufzeit 12/2010 - 03/2012
Förderung: DFG
PI: V. Winkler
Funding: 75.000 €

Schätzung von Überlebensraten bei Kehlkopfkrebs im Rhein-Neckar-Raum aufgrund klinisch-pathologischer, genetisch und epigenetischer sowie berufs- und lebensspezifischer Faktoren

Laufzeit 02/2011 - 12/2013
Förderung: Dietmar Hopp Stiftung
PI: H. Ramroth
Funding: 124.000 €

Nationale Kohorte, Hauptphase

Laufzeit 5/2013 - 4/2018
Förderung: BMBF
PI+AGmember: H. Becher, G. Stieglbauer, NN
Funding: 1.900.591 €

Cancer incidence, mortality and survival among migrants from the Former Soviet Union

Förderung: Deutsche Krebshilfe
PI: V. Winkler, H. Becher
Funding : in Antragsphase

Rahel Goitein-Straus salary support to conduct research on access to and quality of maternity care in Malawi and Zambia

Laufzeit: 06/2010-07/2011
Förderung: Med. Fakultät Heidelberg
PI: S. Gabrysch
Funding: 35.000 €

Postdoctoral fellowship supporting the project "Maternal and perinatal mortality in Ghana: The influence of distance to care and quality of care"

Laufzeit: 04/2011 - 12/2013
Förderung: Baden-Württemberg Stiftung
PI: S. Gabrysch
Funding : 80.000 €

Postdoctoral fellowship supporting the project "Maternal and perinatal mortality in Ghana: The influence of distance to care and quality of care"

Laufzeit: 01/2012 - 06/2014
Förderung: Daimler und Benz Stiftung
PI: S. Gabrysch
Funding: 40.000 €

Margarete von Wrangell-Habilitationsprogramm für Frauen

Laufzeit: 03/2012 – 08/2013
Förderung: Ministerium für Wissenschaft, Forschung und Kunst des Landes Baden-Württemberg und Europäischer Sozialfonds
PI: S. Gabrysch
Funding: ca. 90.000 €

Nachwuchsgruppe in Epidemiologie mit dem Projekt „Reduktion der Unterernährung bei Kleinkindern durch ein integriertes Landwirtschaftsprojekt mit Frauengruppen: Eine Gruppen-randomisierte Interventionsstudie im ländlichen Bangladesh“

Laufzeit: 09/2013 – 08/2019
Förderung: BMBF
PI: S. Gabrysch
Funding: 2.372.424 €

5. Publikationen und Hochschulschriften • Publications and Theses

5.1. Publikationen 2009-2013 • Publications 2009-2013

Die folgende Liste der Publikationen bezieht sich auf den Zeitraum seit 2009. Artikel von gegenwärtigen oder früheren Mitgliedern der Sektion, die während der Beschäftigungszeit entstanden, sind aufgenommen. Eingereichte Publikationen sind ebenfalls aufgeführt. Mitglieder der Sektion sind in den Autorenlisten fett gedruckt.

The following list of publications covers the period since 2009. Included are papers from present or former members of the unit which developed or appeared during the time of employment at the unit. Papers currently under review are also listed. Members of the unit are given in bold in the author lists.

2009

1. Grau AJ, Barth C, Geletneky B, Ling P, Palm F, Lichy C, **Becher H**, Buggle F (2009). Association between recent sport activity, sport activity in young adulthood and subtypes of stroke. *Stroke*; 40:426-3.
2. **Ott JJ, Paltiel AM, Becher H** (2009). Non-communicable disease mortality and life expectancy of migrants from the Former Soviet Union in Israel. A comparison between country of origin and host country. *Bull WHO* 2009; 87: 20-29.
3. **Becher H**, Khomski P, Kauermann G, Kouyaté B (2009). Using Penalized Splines to Model Age- and Season-of-Birth-Dependent Effects of Childhood Mortality Risk Factors in Rural Burkina Faso. *Biometrical Journal* 51:110-122.
4. Ronellenfitsch U, Kyobutungi C, **Ott JJ, Paltiel AM, Razum O, Schwarzbach M, Winkler V, Becher H** (2009): Stomach cancer mortality in two large cohorts of migrants from the former Soviet Union to Israel and Germany: are there implications for prevention? *Gastroenterology & Hepatology* 21:409-16.
5. Ng N, **Winkler V**, Van Minh H, Tesfaye F, Wall S, **Becher H** (2009). Predicting lung cancer Death in Africa and Asia: Differences with WHO estimates. *Cancer Causes Control* 20:721-30.
6. Abbasi R, **Ramroth H, Becher H**, Dietz A, Schmezer P, Popanda O (2009). Laryngeal cancer risk associated with smoking and alcohol consumption is modified by genetic polymorphisms in ERCC5, ERCC6, and RAD23B but not by polymorphisms in five other nucleotide excision repair genes. *Int J Cancer* 125:1431-1439.
7. **Winkler V, Ott JJ**, Holleczeck B, Stegmaier C, **Becher H**. (2009) Cancer profile of migrants from the Former Soviet Union in Germany: incidence and mortality. *Cancer Causes Control* 20: 1873-1879
8. **Ramroth H, Ndugwa RP**, Müller O, Yé Y, Sié A, Kouyaté B, **Becher H** (2009). Decreasing childhood mortality and increasing proportion of malaria deaths in rural Burkina Faso. *Global Health Action* 2.
9. **Becher H** (2009). Dying to count: mortality surveillance in resource-poor countries. by Edward Fottrell (Invited Commentary) *Global Health Action* 2, 2009.
10. **Winkler V, Ott JJ, Becher H** (2009). Reliability of Coding Causes of Death with ICD-10 in Germany. *Int J Public Health* 55:43-8
11. Grau AJ, Preusch MR, Palm F, Lichy C, **Becher H**, Buggle F (2009). Association of symptoms of chronic bronchitis and frequent flu-like illnesses with stroke. *Stroke* 40:3206-10.
12. **Becher H**, Kostev K, Schröder-Bernhardi D (2009). Validity and representativeness of the 'Disease Analyzer' patient database for use in pharmacoepidemiological and pharmaco-economic studies. *International Journal of Clinical Pharmacology and Therapeutics* 47:617-26.
13. Barniol J, Niemann S, Louis V, Brodhun B, Dreweck C, Richter E, **Becher H**, Haas W, Junghanss T (2009). Transmission dynamics of pulmonary tuberculosis between autochthonous and immigrant sub-populations. *BMC Infections* 4;9:197.
14. Hauer K, Tremmel AD, **Ramroth H**, Pfisterer M, Todd C, Oster P, Schuler M.

(2009). Repressive coping in geriatric patients' reports - Impact on fear of falling. *Z Gerontol Geriatr.* 42:137-44.

15. Seiler CM, **Deckert A**, Diener MK, Knaebel HP, Weigand MA, Victor N, Büchler MK (2009). Midline versus transverse incision in major abdominal surgery: a randomized, double-blind equivalence trial (POVATI: ISRCTN 60734227). *Ann Surg.* 249:913-20.

2010

16. **Becher H** (2010): Analyses of mortality clustering at member HDSSs within the INDEPTH Network - an important public health issue (Guest Editorial). *Global Health Action* Supplement 1: 2010.
17. **Jaenisch T**, Sullivan DJ, Dutta A, Deb S, Ramsan M, Othman MK, Gaczkowski R, Tielsch J, Sazawal S (2010): Malaria incidence and prevalence on Pemba Island before the onset of the successful control intervention on the Zanzibar Archipelago. *Malaria Journal* 9:32.
18. **Deckert A, Winkler V, Paltiel A**, Razum O, **Becher H**. (2010): Time trends in cardiovascular disease mortality in Russia and Germany from 1980 to 2007 - are there migration effects? *BMC Public Health* 10:488.
19. **Kynast-Wolf G**, Preuß M, Sié A, Kouyaté B, **Becher H** (2010): Seasonal patterns of cardiovascular disease mortality of adults in Burkina Faso, West Africa. *Trop Med Int Health* 15:1082-1089.
20. Mente J, Ferk S, Dreyhaupt J, **Deckert A**, Legner M, Staehle HJ (2010): Assessment of different dyes used in leakage studies. *Clin Oral Investig.*14:331-8.
21. Oster N, Rohrbach P, Sanchez S, Andrews K, Kammer J, Coulibaly B, **Stieglbauer G, Becher H**, Lanzer M (2010): Apparent bias for *P. falciparum* parasites carrying the wild-type pfcr1 allele in the placenta. *Parasitol Res.* 106:1065-70.
22. **Ott JJ, Paltiel AM, Winkler V, Becher H**. (2010): The impact of duration of residence on cause-specific mortality: a cohort study of migrants from the Former Soviet Union residing in Israel and Germany. *Health Place* 16:79-84.
23. Palm F, Urbanek Ch, Rose S, Buggle F, Bode B, Hennerici M, Schmieder K, Inselmann G, Reiter R, Fleischer R, Piplack KO, **Safer A, Becher H**, Grau AJ (2010): Stroke incidence and survival in Ludwigshafen a.Rh., Germany. The Ludwigshafen Stroke Study (LuSSt). *Stroke* 41:1865-70.
24. Royston P, Sauerbrei W, **Becher H** (2010): Modelling continuous exposures

with a 'spike' at zero: a new procedure based on fractional polynomials. *Statistics in Medicine* 29:1219-27.

25. Scovronick N, Dorey S, Häslér B, **Gabrysch S**, Salonen L, Alonso S. (2010): An EcoHealth Forum in London: Young Researchers Fill a Training Gap. *EcoHealth* 7:257-61
26. Sié A, Louis VR, Gbangou A, Müller O, Niamba L, **Stieglbauer G**, Yé M, Kouyaté B, Sauerborn R, **Becher H** (2010): The Health and Demographic Surveillance System (HDSS) in Nouna, Burkina Faso, 1993-2007. *Global Health Action* 3: 5284
27. **Sonnberg S**, Oliveira FA, Araújo de Melo IL, de Melo Soares MM, **Becher H**, Heukelbach J (2010): Ex Vivo Development of Eggs from Head Lice (*Pediculus humanus capitis*). *The Open Dermatology Journal* 4: 82-89.
28. **Winkler V, Becher H**. (2010): Global Cancer cases and Lung cancer in Sub-Saharan Africa. *BMJ*. rapid response 27/7/10; available at www.bmj.com/cgi/eletters/340/jun08_2/c3041
29. **Winkler V, Becher H**. (2010): Lung cancer in Sub-Saharan Africa. *Gesundheitswesen* 72:581.
30. Zanger P, Holzer J, Schleucher R, Scherbaum MD, Schitteck B, **Gabrysch S** (2010): Severity of *Staphylococcus aureus* Infection of the Skin is Associated with Inducibility of Human β -Defensin 3, but not Human β -Defensin 2. *Infection and Immunity*. 78:3112-7.

2011

31. **Becher H, Winkler V** (2011): Lung cancer mortality in Sub-Saharan Africa. *Int J Cancer* 129:1537-9.
32. Forßbohm M, Kropp R, Loytved G, Neher A, Simma M, Rabbow M, **Becher H** (2011): Tod an behandlungsbedürftiger Tuberkulose oder an Begleitkrankheiten? Ein Beitrag zur Letalität und Mortalität der Tuberkulose in Deutschland. *Pneumologie* 65:607-614.
33. **Gabrysch S**, Simushi V, Campbell OMR (2011): Availability and distribution of, and geographic access to emergency obstetric care in Zambia. *International Journal of Gynecology & Obstetrics*, 114: 174-179.
34. **Gabrysch S**, Zanger P, Seneviratne HR, Mbewe R, Campbell OMR (2011): Tracking progress towards safe motherhood: meeting the benchmark yet missing the goal? An appeal for better use of health-system output indicators with evidence from Zambia and Sri Lanka.

- Tropical Medicine and International Health*, 16:627-639.
35. **Gabrysch S**, Cousens S, Cox J, Campbell OMR (2011): The Influence of Distance and Level of Care on Delivery Place in Rural Zambia: A Study of Linked National Data in a Geographic Information System. *PLoS Medicine*, 8(1):
 36. Heukelbach J, **Sonnberg S**, **Becher H**, Mello I, Speare R, Oliveira FA (2011): Ovicidal efficacy of high concentration dimeticone: a new era of head lice treatment. *J Am Acad Dermatol* 64:e61-2.
 37. Fischer L, **Deckert A**, Diener MK, Zimmermann JB, Büchler MW, Seiler CM (2011): Ranking of patient and surgeons' perspectives for endpoints in randomized controlled trials—lessons learned from the POVATI trial [ISRCTN 60734227]. *Langenbecks Arch Surg.* 396:1061-6.
 38. **Ramroth H**, Dietz A, **Becher H** (2011): Intensity and inhalation of smoking in the aetiology of laryngeal cancer. *Int J Environ Res Public Health.* 8:976-84.
 39. **Ramroth H**, Ahrens W, Dietz A, **Becher H** (2011): Occupational asbestos exposure as a risk factor for laryngeal carcinoma in a population based case control study from German. *Am J Ind Med.* 54:510-4.
 40. **Ramroth H**, **Schoeps A**, **Rudolph E**, Dyckhoff G, Plinkert P, Lippert B, Feist K, Delank KW, Scheuermann K, Baier G, Ott I, **Chenouda S**, **Becher H**, Dietz A (2011): Factors predicting survival after diagnosis of laryngeal cancer. *Oral Oncol.* 47:1154-1158.
 41. **Rudolph E**, Dyckhoff G, **Becher H**, Dietz A, **Ramroth H** (2011): Effects of tumour stage, co-morbidity and therapy on survival of laryngeal cancer patients - a systematic review and a meta-analysis. *Eur Arch Otorhinolaryngol.* 268:165-179.
 42. **Schoeps A**, **Gabrysch S**, Niamba L, Sié A, **Becher H** (2011): The Effect of Distance to Health Care Facilities on Childhood Mortality in rural Burkina Faso. *Am J Epid* 173:492-498.
 43. **Volodina A**, Bertsche T, Kostev K, **Winkler V**, Haefeli WE, **Becher H** (2011): Drug utilization patterns and reported health status in ethnic German migrants (Aussiedler) in Germany: a cross-sectional study. *BMC Public Health* 11:509.
 44. **Winkler V**, Ng N, Tesfaye F **Becher H** (2011): Predicting lung cancer deaths from smoking prevalence data. *Lung Cancer* 74:170-7.
 45. Yé M, Diboulo E, Niamba L, Sié A, Coulibaly B, Bagagnan C, Dembélé J, **Ramroth H** (2011): An improved method for physician-certified verbal autopsy reduces the rate of discrepancy: experiences in the Nouna Health and Demographic Surveillance Site (NHDSS), Burkina Faso. *Popul Health Metr*; 9:34.
 46. Zanger P, Kötter I, Kremsner PG, **Gabrysch S** (2011): Tumor necrosis factor alpha antagonist drugs and leishmaniasis in Europe. *Clin Microbiol Infect.* 2012 Jul;18: 670-6
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47. **Becher H**, **Lorenz E**, Royston P, Sauerbrei W (2012): Analysing covariates with spike at zero: a modified FP procedure and conceptual issues. *Biom J*, 54:686-700.
 48. Beiersmann C, Bountogo M, Tiendrebeogo J, Louis VR, **Gabrysch S**, Ye M, Jahn A, Müller O (2012): Malnutrition in young children of rural Burkina Faso: comparison of survey data from 1999 with 2009. *Trop Med Int Health*, 17:715-721.
 49. Chuang SC, Jenab M, Heck JE, Bosetti C, Talamini R, Matsuo K, Castellsague X, Franceschi S, Herrero R, Winn DM, Vecchia CL, Morgenstern H, Zhang ZF, Levi F, Maso LD, Kelsey K, McClean MD, Vaughan T, Lazarus P, Muscat J, **Ramroth H**, Chen C, Schwartz SM, Eluf-Neto J, Hayes RB, Purdue M, Boccia S, Cadoni G, Zaridze D, Koifman S, Curado MP, Ahrens W, Benhamou S, Matos E, Laggiou P, Szeszenia-Dabrowska N, Olshan AF, Fernandez L, Menezes A, Agudo A, Daudt AW, Merletti F, Macfarlane GJ, Kjaerheim K, Mates D, Holcatova I, Schantz S, Yu GP, Simonato L, Brenner H, Mueller H, Conway DI, Thomson P, Fabianova E, Znaor A, Rudnai P, Healy CM, Ferro G, Brennan P, Boffetta P, Hashibe M. (2012): Diet and the risk of head and neck cancer: a pooled analysis in the INHANCE consortium. *Cancer Causes Control* 23:69-88.
 50. Collender G, **Gabrysch S**, Campbell OM (2012): Reducing maternal mortality: better monitoring, indicators and benchmarks needed to improve emergency obstetric care. Research summary for policymakers. *Trop Med Int Health*, 17:694-696.
 51. **Gabrysch S**, **Civitelli G**, Edmond KM, Mathai M, Ali M, Bhutta ZA, Campbell OM (2012): New signal functions to measure the ability of health facilities to provide routine and emergency newborn care. *PLoS Med*, 9(11):e1001340.
 52. **Gabrysch S**, Zanger P, Campbell OM (2012): Emergency obstetric care

- availability: A critical assessment of the current indicator. *Tropical Medicine and International Health*, 17:2-8.
53. Grau AJ, Ling P, Palm F, Urbanek C, **Becher H**, Buggle F (2012): Childhood and adult social conditions and risk of stroke. *Cerebrovasc Dis*, 33:385-391.
 54. Hegge S, Uhrig K, Streichfuss M, **Kynast-Wolf G**, Matuschewski K, Spatz JP, Frischknecht F (2012): Direct manipulation of malaria parasites with optical tweezers reveals distinct functions of Plasmodium surface proteins. *ACS Nano*, 6:4648-4662.
 55. **Kuhrs E**, **Winkler V**, **Becher H** (2012): Risk factors for cardiovascular and cerebrovascular diseases among ethnic Germans from the former Soviet Union: results of a nested case-control study. *BMC Public Health*, 12:190.
 56. **Kyei NN**, Campbell OM, **Gabrysch S** (2012): The influence of distance and level of service provision on antenatal care use in rural Zambia. *PLoS One*, 7:e46475.
 57. **Kyei NN**, Chansa C, **Gabrysch S** (2012): Quality of antenatal care in Zambia: a national assessment. *BMC Pregnancy Childbirth*, 12:151.
 58. **Kynast-Wolf G**, Wakilzadeh W, Coulibaly B, Schnitzler P, Traore C, **Becher H**, Muller O (2012): ITN protection, MSP1 antibody levels and malaria episodes in young children of rural Burkina Faso. *Acta Trop*, 123:117-122.
 59. **Lohela TJ**, Campbell OM, **Gabrysch S** (2012): Distance to care, facility delivery and early neonatal mortality in Malawi and Zambia. *PLoS One*, 7:e52110.
 60. Louis VR, Bals J, Tiendrebéogo J, Bountogo M, **Ramroth H**, De Allegri M, Traoré C, Beiersmann C, Coulibaly B, Yé M, Jahn A, **Becher H**, Müller O. (2012): Long-term effects of malaria prevention with insecticide-treated mosquito nets on morbidity and mortality in African children: randomised controlled trial. *Trop Med Int Health*, 17:733-741.
 61. Luebbert J, Tweya H, Phiri S, Chaweza T, Mwafilaso J, Hosseinipour MC, **Ramroth H**, Schnitzler P, Neuhann F (2012):  Virological failure and drug resistance in patients on antiretroviral therapy after treatment interruption in Lilongwe, Malawi. *Clin Infect Dis*, 55:441-448.
 62. Palm F, Urbanek C, Wolf J, Buggle F, Kleemann T, Hennerici MG, Inselmann G, Hagar M, **Safer A**, **Becher H**, Grau AJ (2012): Etiology, Risk Factors and Sex Differences in Ischemic Stroke in the Ludwigshafen Stroke Study, a Population-Based Stroke Registry. *Cerebrovasc Dis*, 33:69-75.
 63. Parodi S, **Santi I**, Marani E, Casella C, Puppo A, Sola S, Fontana V, Stagnaro E (2012): Infectious diseases and risk of leukemia and non-Hodgkin's lymphoma: a case-control study. *Leuk Res*, 36:1354-1358.
 64. Prytherch H, Leshabari MT, Wiskow C, Aninanya GA, Kakoko DC, Kagone M, Burghardt J, **Kynast-Wolf G**, Marx M, Sauerborn R (2012): The challenges of developing an instrument to assess health provider motivation at primary care level in rural Burkina Faso, Ghana and Tanzania. *Glob Health Action*, 5:1-18.
 65. **Ramroth H**, **Lorenz E**, Rankin JC, Fottrell E, Ye M, Neuhann F, Ssenono M, Sie A, Byass P, **Becher H** (2012): Cause of death distribution with InterVA and physician coding in a rural area of Burkina Faso. *Trop Med Int Health*, 17:904-913.
 66. Rankin JC, **Lorenz E**, Neuhann F, Ye M, Sie A, **Becher H**, **Ramroth H** (2012):  Exploring the role narrative free-text plays in discrepancies between physician coding and the InterVA regarding determination of malaria as cause of death, in a malaria holo-endemic region. *Malar J*, 11:51.
 67. Rosendal C, Almammat Uulu K, De Simone R, Wolf I, **Deckert A**, Martin EO, Böttger BW, Rauch H (2012): Right ventricular function during orthotopic liver transplantation: Three-dimensional transesophageal echocardiography and thermodilution. *Ann Transplant*, 17: 21-30.
 68. **Winkler V**, Holleczeck B, Stegmaier C, **Becher H** (2012): Prostate cancer in Germany among migrants from the Former Soviet Union. *Glob Health Action*, 5:9135.
 69. Zanger P, Kotter I, Kreamsner PG, **Gabrysch S** (2012): Tumor necrosis factor alpha antagonist drugs and leishmaniasis in Europe. *Clin Microbiol Infect*, 18:670-676.
 70. Zanger P, Nurjadi D, Gaile M, **Gabrysch S**, Kreamsner PG (2012): Hormonal contraceptive use and persistent Staphylococcus aureus nasal carriage. *Clin Infect Dis*, 55:1625-1632.
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In press and selected submitted papers

94. **Winkler V**, Leitzmann M, Obi N, Ahrens W, Edinger T, Giani G, Löffler M, Michels K, Nöthlings U, Schipf S, Kluttig A, Wichmann HE, Hoffmann B, Jöckel KH, **Becher H** (2013) Differential response in epidemiological studies among individuals with and without a foreign background: which factors have an effect?" *International Journal of Public Health* (under revision)
95. **Winkler V**, Holleczeck B, Stegmaier C, **Becher H** (2013) Cancer incidence in ethnic German migrants from the Former Soviet Union in comparison to the host population. *Cancer Epidemiology* (in press)
96. **Schoeps A**, Ouédraogo N, Kagoné M, Sié A, Müller O, **Becher H** (2013) Socio-Demographic Determinants of Timely Adherence to BCG, Penta3, Measles, and Complete Vaccination Schedule in Burkina Faso. *Vaccine* (in press)
97. **Henschke N**, Harrison C, McKay D, Broderick C, Latimer J, Britt H, Maher C. Musculoskeletal conditions in children and adolescents managed in Australian primary care. Submitted to *Journal of Paediatrics and Child Health*.
98. **Henschke N**, Keuerleber J, Ferreira M, Maher CG, Verhagen AP. An overview of the methodological quality of diagnostic test accuracy studies for musculoskeletal conditions. Submitted to *Journal of Clinical Epidemiology*.
104. Swain MS, **Henschke N**, Kamper SJ, Downie A, Koes B, Maher CG. History and physical examination in the diagnosis of anterior cruciate ligament injury: a systematic review. Submitted to *British Journal of Medicine*.
105. Diercke K, **Zimmermann H**, Hellmann D, Kim TS, Fricke J, Kühnisch J, Schmitter M, **Becher H** (2013) Prevalence of TMD symptoms of Turkish and Russian migrants in comparison to a German group. *Journal of Orofacial Pain* (under revision).
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107. **Santi I**, Kroll LE, Dietz A, **Becher H**; **Ramroth H**: Occupation and educational inequalities in laryngeal cancer: the use of a job index (under revision)
108. **Santi I**, Kroll LE, Dietz A, **Becher H**, **Ramroth H**: How much of the association

- between educational inequality and laryngeal cancer is explained by smoking, alcohol consumption and occupational exposure? (submitted)
109. Bozorgmehr K, **Gabrysch S**, Müller O, Neuhann F, Jordan I, Knipper M, Razum O. (2013): Relationship between financial speculation and food prices or price volatility: Applying the principles of evidence-based medicine to current debates in Germany. *Globalization and Health* (in press).
 110. **Nesbitt RC**, Lohela TJ, Manu A, Vesel L, Okyere E, Edmond K, Owusu-Agyei S, Kirkwood B, **Gabrysch S**. (2013) Quality along the continuum: A health facility assessment of intrapartum and postnatal care in Ghana. *PLoS One*. (in press)
 111. Wolf J, Wöhrle JC, Palm F, Nix WA, Maschke M, **Safer A**, **Becher H**, Grau AJ for the ARRP Group. Epidemiology of amyotrophic lateral sclerosis in Germany – the ALS registry Rhineland-Palatinate (submitted)
 112. **Vuksanović M**, **Safer A**, Palm F, **Stieglbauer G**, Grau A, **Becher H**. Validity of self-reported BMI in older adults and an adjustment model (submitted).
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5.2. Hochschulschriften • Academic theses

Im Berichtszeitraum haben zwei Mitglieder der Sektion ihre Habilitation abgeschlossen bzw. ihre Habilitationsschrift eingereicht, ein weiterer Mitarbeiter steht kurz davor. Aus den Projekten der Sektion sind auch eine Reihe von Dissertationen hervorgegangen (Dr. sc. hum. oder Dr. med.). Darüber hinaus wurden auch zahlreiche Master- und Bachelorarbeiten betreut.

In the reporting period two members of the unit completed respectively submitted their "habilitation" and another member, will follow soon. A number of PhD theses resulted from the research projects (formal degree: Dr. sc. hum or Dr. med.). In addition, many bachelor and master theses have been supervised.

A. Habilitationen / Habilitation theses

Ramroth, Heribert, Dr. sc. hum., Habilitation in Epidemiology 2012

Betreuer: Prof. H. Becher

Thema: Epidemiologie und Raucher – wer braucht wen? Kehlkopfkrebs und andere Beispiele

Gabrysch, Sabine, Dr. med., Habilitation in Epidemiology (eingereicht 2013)

Betreuer: Prof. H. Becher

Thema: Accessibility and quality of obstetric care in low- and middle-income countries (Erreichbarkeit und Qualität von Geburtshilfe in Entwicklungsländern)

Winkler, Volker, Dr. sc. hum., Habilitation in Epidemiology (vorauss. 2014)

Betreuer: Prof. H. Becher

Lungenkrebs und andere tabakassoziierte Erkrankungen in Entwicklungsländern – ein unterschätztes Problem?

B. Doktorarbeiten / PhD theses

Kynast-Wolf, Gisela (2009)

Epidemiological study on mortality patterns and trends in a malaria endemic area of Burkina Faso, West Africa

Supervisor: Prof. Dr. H. Becher

Dr. sc. hum. (cum laude)

Rosenberger, Kerstin (2011)

Implementation and Parameter estimation of an intra-host model describing immune responses in falciparum malaria

Supervisor: Prof. Dr. H. Becher

Dr. sc. hum. (cum laude)

Sonnberg, Susanne (2012)

Promotionsthema: Ovizide Wirksamkeit von Produkten zur Behandlung der Infestation mit der Kopflaus (Pediculus capitis)

Supervisor: Prof. Dr. H. Becher

Dr. sc. hum. (magna cum laude)

Kuhrs, Ema (2012)

Risikofaktoren für kardiovaskuläre und zerebrovaskuläre Krankheiten von Migranten aus den Ländern der ehemaligen Sowjetunion in Deutschland

Supervisor: Prof. Dr. H. Becher

Dr. sc. hum. (cum laude)

Rudolph, Elisabeth (2012)

Überlebenszeitanalyse bei Larynxkarzinompatienten in Abhängigkeit von Faktoren des Lebensstils und klinischen Merkmalen

Supervisor: PD. Dr. H. Ramroth

Dr. med. (magna cum laude)

Deckert, Andreas (2013)

Myocardial infarction incidence, cardiovascular disease, and external cause mortality pattern among German repatriates: the impact of factual circumstances

Supervisor: Prof. Dr. H. Becher

Dr. sc. hum. (under review)

Santi, Irene (2013)

Determining the contribution of educational inequalities as risk factors for laryngeal cancer and analysing survival times including occupational, lifestyle and clinical factors

Supervisor: PD. Dr. H. Ramroth

Dr. sc. hum. (under review)

Paltiel, Ari (ongoing)

Mortality of migrants from Russia to Israel

Supervisor: Prof. Dr. H. Becher

Dr. sc. hum.

Zimmermann, Heiko (ongoing)

Oral health in the population of Germany: Identifying risk factors for periodontitis of Germans and migrants and comparative analyses

Posterpreis, Tagung der DGEpi, 2011

Supervisor: Prof. Dr. H. Becher

Dr. sc. hum.

Nesbitt, Robin (ongoing)

The influence of distance and quality of care on preventative and emergency use of health facilities for delivery and early neonatal mortality in the Brong Ahafo region of Ghana

Supervisor: Prof. Dr. H. Becher / Dr. S. Gabrysch

Dr. sc. hum.

Lorenz, Eva (ongoing)

Generalisation of the Fractional Polynomial procedure for semicontinuous variables in epidemiology and clinical research (working title)

Supervisor: Prof. Dr. H. Becher

Dr. sc. hum.

Veile, Annette (ongoing)

Tinnitus und Rauchen: Ein systematischer Review und Meta-Analyse (working title)

Supervisor: Prof. Dr. H. Becher

Dr. med.

Schoeps, Anja (ongoing)

Determinants of child mortality and morbidity effects including vaccination in rural and semi-urban Burkina Faso

Supervisor: Prof. Dr. H. Becher

Dr. sc. hum.

Chenouda, Sami (ongoing, anticipated completion 2014)

The impact of comorbidities on survival of laryngeal cancer patients

Supervisor: PD Dr. H. Ramroth

Dr. med.

Bortz, Martin (ongoing, anticipated completion 2014)
Intra-urban health inequalities in Rio de Janeiro
Supervisor: PD Dr. H. Ramroth
Dr. med.

Fix, Mario (ongoing, anticipated completion 2014)
Stroke Epidemiology in Brunei (working title)
Supervisor: Prof. Dr. H. Becher
Dr. med.

C. Master- und Bachelorarbeiten / Master and Bachelor theses

Otte in Kampe, Eveline (BSc Gesundheitswissenschaften, 2011)
Seasonal Patterns of All-Cause & Malaria Mortality in Rural Burkina Faso 1998-2007
Bachelor Thesis
Supervisor: Prof. Dr. H. Becher

Schoeps, Anja (BSc Gesundheitswissenschaften, 2009)
The Impact of Spatial Accessibility of the Closest Health Facility on Infant and Child Mortality
- In the Context of a Demographic Surveillance System in Rural Burkina Faso
Supervisor: Prof. Dr. H. Becher

Lohela, Terhi (MSc International Health, TropED 2010-2011)
Influence of distance to delivery facility and level of delivery services on neonatal mortality in rural Malawi
Master Thesis
Supervisor: Dr. S. Gabrysch

Kyei, Nicholas (MSc International Health, 2011):
Influence of distance and quality of care on antenatal and postnatal care service utilization in rural Zambia
Master Thesis
Supervisor: Dr. S. Gabrysch

Lan, Yong (MSc International Health, 2013)
A review on smoking prevention policies in West African countries, and an analysis on smoking prevalence
Master Thesis
Supervisor: Prof. Dr. H. Becher

Okyere, Eunice (MSc International Health, 2013)
Retention of health workers in rural Ghana – A study in five districts in the Brong Ahafo Region
Master Thesis
Supervisor: Dr. S. Gabrysch

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