German Medical Teaching Network (MDN): implementing national standards for teacher training

M. Lammerding-Köppel, T. Ebert, Anja Görlitz, G. Karsten, C. Nounla, S. Schmidt, C. Stosch, P. Dieter

Angaben zur Veröffentlichung / Publication details:

Lammerding-Köppel, M., T. Ebert, Anja Görlitz, G. Karsten, C. Nounla, S. Schmidt, C. Stosch, and P. Dieter. 2016. "German Medical Teaching Network (MDN): implementing national standards for teacher training." *Medical Teacher* 38 (4): 378–84. https://doi.org/10.3109/0142159x.2015.1047752.

German MedicalTeachingNetwork (MDN) implementing national standards for teacher training

M. LAMMERDING-KOEPPEL[1], T. EBERT[2], A. GOERLITZ[3], G. KARSTEN[4], C. NOUNLA[5], S. SCHMIDT[6], C. STOSCH[7] & P. DIETER[8]

[1]University of Tuebingen, Germany, [2]Goethe University Frankfurt/Main, Germany, [3]Institut fuer Didaktik und Ausbildungsforschung in der Medizin am Klinikum der Universitaet Muenchen, Germany, [4]Kiel University, Germany, [5]Technische Universitaet Braunschweig, Germany, [6]Charité – University Medicine Berlin, Germany, [7]University of Cologne, Germany, [8]German Association of Medical Faculties, Germany

Abstract

Background: An increasing demand for proof of professionalism in higher education strives for quality assurance (QA) and improvement in medical education. A wide range of teacher trainings is available to medical staff in Germany. Cross-institutional approval of individual certificates is usually a difficult and time consuming task for institutions. In case of non-acceptance it may hinder medical teachers in their professional mobility.

Aim: The faculties of medicine aimed to develop a comprehensive national framework, to promote standards for formal faculty development programmes across institutions and to foster professionalization of medical teaching.

Methods and results: Addressing the above challenges in a joint approach, the faculties set up the national MedicalTeacherNetwork (MDN). Great importance is attributed to work out nationally concerted standards for faculty development and an agreed-upon quality control process across Germany. Medical teachers benefit from these advantages due to portability of faculty development credentials from one faculty of medicine to another within the MDN system.

Conclusion: The report outlines the process of setting up the MDN and the national faculty development programme in Germany. Success factors, strengths and limitations are discussed from an institutional, individual and general perspective. Faculties engaged in similar developments might be encouraged to transfer the MDN concept to their countries.

Introduction

Medical professionals are expected to teach, yet many of them receive little or no formal educational training. Notably, there is an increasing political, public and scientific demand for proof of professionalism in higher education, aiming at quality assurance (QA) and development in medical education – in Germany as well as in other parts of the world (Ministerium fuer Wissenschaft, Forschung und Kunst Baden-Wuerttemberg 2001; Kultusministerkonferenz (KMK) 2005; McLean et al. 2008; Steinert 2012; Ross et al. 2014).

A wide and heterogeneous range of qualifications are in fact available to medical teaching staff in Germany (Lammerding-Koeppel et al. 2006a; Nikendei et al. 2009). Since the end of the 1990s, many of the German faculties of medicine have implemented basic teacher trainings. However, these vary in length, content, format and quality. They range from short, single courses through a locally offered range of two-day courses from which medical teachers can select, up to highly structured compulsory faculty development programmes. The highest academic qualification is achieved

Practice points

- The step-by-step process was an important and effective format for the development of a national framework on requirements for medical teacher training.
- National standards for medical teacher training were consented, allowing institutions to design and deliver individual teacher trainings.
- A quality assurance strategy agreed by all faculties of medicine fosters critical self-reflection; peer review offers recommendations for ongoing development of training.
- Mutual recognition of training programs facilitates professional mobility of medical teachers and offers broader opportunities to complete qualifications in Medical Didactics.
- Anchoring the MDN on a political and institutional level enhances significance of medical teaching and thus, supports professionalization of teaching.

Correspondence: Dr. Maria Lammerding-Koeppel, Competence Centre for University Teaching in Medicine Baden-Wuerttemberg, University of Tuebingen, Elfriede-Aulhorn-Str. 10, D-72076 Tuebingen, Germany. Tel: 49 7071 297 7960; Fax: 49 7071 29 5218; E-mail: maria.lammerding@med.uni-tuebingen.de

with the recently established Habilitation in Medical Education. So far, a generally accepted and defined curriculum which formally prepares medical teachers for their educational tasks only exists at a small number of faculties of medicine (www.medizindidaktiknetz.de; Accessed 12 May 2015).

Over the last few years, the number of medical teachers requesting recognition of externally completed teacher training has increased, due to more demanding job requirements or the call for professional teaching portfolios in academic recruitment process (Belgium: EU High Level Group 2013). However, handling those requests takes up an unacceptable amount of time and resources at high level, because of insufficient transparency and comparability across institutions. This challenging situation called for efforts to solve this problem. Developing a comprehensive national framework of requirements for teacher training would be a substantial progress for medical education in Germany. It would promote standards of formal medical teacher training across institutions and foster common expectations for teacher performance and outcomes.

At the same time it has to be considered that in Germany education in general is determined by the 16 federal states autonomously. Although the content of undergraduate medical education is laid down by the Licensing Regulations for Doctors (German: *"Approbationsordnung fuer Aerzte"*), faculties of medicine have established diverse curricula to counter recent educational challenges. They range from traditional lecture-based to competency-based, learner-centred curricula; this may lead to different special requirements for teachers. Nevertheless, all students have to pass the national examinations. For this reason, acceptance of a national framework of requirements for medical teacher training could not be taken for granted.

The following outlines the process of setting up such a network with the aim of developing a national framework. It describes results, such as consented educational standards as well as the quality management process, and discusses success and risk factors.

Methods and results

The foundation process in a joint approach

Aiming for a national framework and considering the above-described challenges, a step-by-step process, involving all relevant key players, stakeholders and front-line teachers, was set up (Cummings et al. 2005). Initially a small group of experts from already existing regional networks for medical education (Baden-Wuerttemberg, North Rhine-Westphalia and Bavaria) discussed the best practice standards for medical teacher training. In November 2010, they founded, as a first result, the MedicalTeachingNetwork (German: *"MedizinDidaktikNetz"*, MDN) and developed an initial draft of the MDN conceptual framework which is described in more detail below.

In the following three years a consistently growing number of medical teachers and educationalists from German faculties of medicine have worked together in a sustained, consensus-based process. The group included representatives from diverse disciplines, institutions and administration, reaching from teaching staff up to dean position. In 2013, the MDN became an official task force of the German Association of Medical Faculties (German: *"Deutscher Medizinischer Fakultaetentag"*). Since then, all German faculties of medicine have joined the MDN.

In a participative approach, the MDN decided to focus on topics, such as common standards, for medical teacher training and a co-operational QA strategy, and to work these topics out step-by-step. The MDN committed itself to update working results continuously.

Consensus Statement on the Mutual Recognition of Medical Teacher Training

A tangible result is the "Consensus Statement on the Mutual Recognition of Medical Teacher Training". It is a continuously updated agreement on the quality standards for medical teacher training and on the procedure of mutual recognition. It explicitly does not intervene in local regulations of its participating universities.

In the consensus statement on mutual recognition of training (MRT), two aspects have been distinguished: Firstly, general principles; and secondly, quality, formal and structural standards. Thus, the basis for continuous cooperation of the faculties of medicine has been established.

General MDN principles: The MRT is intended as a recommendation for faculties of medicine. Those recommendations are based on the following core principles: (1) faculties decide autonomously whether and to what extent they offer medical teacher training; in any case they commit to the MRT; (2) medical teachers are free to choose between attending a comprehensive formal training or selecting several single courses; (3) promoting mobility, programme transparency and mutual recognition without additional effort facilitates the professionalization of medical teaching; (4) faculties of medicine apply QA and feedback to aid self-reflection, peer support and evaluation; (5) faculties of medicine commit to continuous development.

The MDN activities aim to define and implement national standards for medical teacher training at two levels (Table 1):

- Basic medical teacher training (Qualification in Medical Didactics I, MQ I): 120 units (one unit counts 45 min).
- Advanced medical teacher training (Qualification in Medical Didactics 2, MQ II): 80 units.

The basic training provides a reliably sound qualification. Starting from this, the advanced training offers good prospects of developing a professional profile by selecting courses according to specialized competencies for educators with additional programmatic roles. Thus, individuals can focus on specific fields of medical teaching (e.g. mentoring, programme and exam design and coordination, (digital) media didactics, programme planning, change management).

Quality, formal and structural standards: Medical teachers need a broad basic qualification in order to become efficient teachers (Steinert et al. 2006). Thus, the MDN defines standards in its MRT which are based upon the position paper of the "Committee for Staff and Organisational Development in Medical Teaching" (German: *"Ausschuss fuer Personal- und Organisationsentwicklung in der Lehre"*)

Table 1. Overview of MDN standards for medical teacher training.

Level of qualification	Objectives	Minimum content	Scope, format, methods	Notes
Basic medical teacher training (Qualification in Medical Didactics I, MQ I)	• Acquiring basic competencies for learning, teaching and assessing (knowledge, practical skills and attitudes) which are relevant in medical education • Acquiring adequate media competencies	• Learning theory • Planning of teaching sessions and curricula • Presentation, visualization and media (design and implementation) • (interactive) Didactics of various teaching and learning formats (incl. bedside teaching, skills labs) • Assessment: basics, formats, methods, quality criteria • Effective communication and feedback • Mentoring of students • E-learning, blended learning • Evaluation	120 units à 45 min • ≥50% face to face • practical parts for transferring theory into praxis (incl. documentation) Group size: depending on formats (e.g. microteaching max. 10 per trainer) Method mix, e.g. • microteaching • (peer) coaching • self-reflection	Training itself as example of good practice Adequate method mix Focus on medical context (incl. best practice examples) Trainer with qualification in medical or higher education Pre- and post-assignments
Advanced medical teacher training (Qualification in Medical Didactics II, MQ II)	• Developing an individual teaching profile • Adopting special roles and functions in teaching	Advanced courses for consolidating basic competences Individual choice out of optional courses, e.g. • curriculum planning and management • teaching portfolio • outlining a teaching project • clinical teaching • coordination of assessments • advanced peer coaching • contributions to (medical) educational research	80 units à 45 min Group size: depending on formats Method mix, e.g. • documented transfer of theory into praxis, • teaching portfolio • teaching projects	Selection of courses according to specialized educational roles Special focus on self-reflection and best evidence in medical education Pre- and post-assignments

The completion of MQ I and MQ II (in total 200 units) is documented in a final certificate in Medical Didactics.
Current efforts of the MDN aim at integrating the competence framework (Srinivasan et al. 2011), which have been adapted to the German context (Görlitz et al. 2015).

of the German Society of Medical Education (Lammerding-Koeppel et al. 2006b). The content of the courses should address concrete examples from medical teaching practice. At the same time, the training itself should be an example of good practice, with clear objectives and a suitable variety of methods. Medical teacher training thus supplies the participant not only with knowledge, but with an experience of how to teach and learn successfully. Additionally, high impetus is put on transfer into real teaching practice, accompanied by a (peer) coach.

Current efforts of the MDN aim at integrating the competence framework (Srinivasan et al. 2011) which has been adapted to the German context by the above committee (Görlitz et al. 2015).

Quality assurance strategy

The goal of the QA process is to ensure the quality of medical teacher training within the MDN, and the adherence to the standards stated in the MRT. It is based on PDCA cycle (Plan-Do-Check-Act) of Deming (1989). The key instrument of the QA process is a structured self-report with high emphasis on self-reflection. This ensures that it is helpful for both levels of QA involving internal and external perspectives.

Internal, self-directed QA: Every faculty of medicine is expected to continuously reflect and enhance its training programme. However, each faculty of medicine is free to choose the methods that fit their needs. Although learner satisfaction is an important aspect of quality, every medical faculty is encouraged to apply additional methods, e.g. mutual visitations or consultations to obtain feedback and support, learning from other teachers and programmes to gain new ideas, train-the-trainer workshops, analysing (long-term) training effects.

External, peer-based, structured QA: Each faculty of medicine undergoes the external, peer-based QA every five years in a well-defined process. The procedure focuses on supporting each other in the continuous programme enhancement. The structured self-report is the key instrument in the evaluation process. Faculties of medicine are not only asked questions regarding the standards covered in the MRT, but also conduct a critical self-reflection. If the self-report fulfils the standards, the faculty receives feedback, recommendations for improvement and a certificate. In case of failure, a local visit may be conducted.

The external QA is coordinated by a permanent five-member review board, which is elected by the members of the MDN and affirmed by the German Association of Medical Faculties. The board is supported by a reviewer pool including peer experts from all faculties of medicine. The self-report of a faculty is reviewed independently by two peers of the reviewer pool and a member of the board. As efforts for the QA process are spread equally among the faculties, generally no extra costs are incurred.

An initial version of the structured self-report was piloted by 19 faculties and the results are currently under review. The structured feedback of the MDN members is used for the instrument's optimization.

The work of the MDN has already shown effects on different levels. Common standards for medical teaching have been accepted by all 37 faculties of medicine in Germany. Meanwhile, almost 50% of faculties of medicine have started to expand their faculty development programs. Nowadays more faculties have implemented mandatory didactical qualifications along academic career paths (Survey currently in process). The portability of credentials leads to an increasing number of medical teachers who choose to take teacher training courses at another institution within the MDN system. This is exemplified by the Competence Center in Tuebingen showing the following figures: 2011 – $n=3$ MQ participants from outside Baden-Wuerttemberg; 2012 – $n=12$; 2013 – $n=13$; 2014 – $n=25$. At the same time, the number of participants from outside, submitting equivalent course credits for easy recognition, increased from 12 to 35. These preliminary data may indicate the accessibility of training programmes as well as the increasing demand for professionalization of teaching on a faculty and national level.

Discussion

In Germany, all faculties of medicine have joined the MDN which has been established successfully within the last years. One of the most important benefits of the MDN is to ensure a general agreement on standards and minimal requirements of formal medical teacher training at national level. A structured QA strategy was defined and piloted as well. A national strategy focusing on professionalization of teaching was developed in a joint approach and agreed-upon by all MDN members. The extraordinary meaning of this development is illustrated by its official anchoring on two levels: firstly, on a national level with political impact by implementing the MDN as a task force of the German Association of Medical Faculties; and secondly, on a faculty level with a legal impact by regulating didactical prerequisites of academic career paths. The significance of teaching is strengthened nationwide and means substantial progress in medical education in Germany, supported by beneficial network activities between the faculties. Our results and experiences might be of special international interest, as they may be transferable to other countries. The identification of success factors might support the transfer.

Strengths and limitations

Through reflection on our experiences and by literature review (e.g. Price 2005; Lane 2007), several strengths and limitations come to light. In the following we discuss firstly the institutional, secondly the individual and finally the general perspective of professionalization in medical teaching.

Institutional perspective: Trust is the fundamental element which is highly valued by all faculties of medicine. Although faculties of medicine are given freedom in the design of their training programmes, they nevertheless have to participate in the QA process described above. The quality control being conducted in a peer-based and mutual process with peer reviewers not being paid extra, means an effective and cost-saving alternative to use third-party evaluators. The MDN aims

at its best to offer a neutral and protective area by avoiding political and financial constraints, competition and conflicts of interests. Thus, open communication, peer exchange and self-critical discussions are fostered during regular meetings. Trust and transparency are strengthened only if this challenge is met. This enables the faculties to learn from each other and ensures an overall continuous enhancement of training program development and internal QA. Furthermore, data collected by the MDN reveal the achievements of different faculties of medicine offering even stronger arguments in favour of faculty development. If the MDN is not perceived as a protected area for constructive exchange, it risks becoming a controlling authority rather than a supportive structure for its members.

Individual perspective: Medical teachers benefit from MDN as the framework provides portability of faculty development credentials for medical teachers who choose to move from one faculty of medicine to another within the MDN system or who wish to participate in the teacher training of another academic place in Germany. However, in consequence of the higher demand for professionalism in medical teaching, the input of more effort and resources is required by teachers, on top of their already high workload.

General perspective: A key advantage of the MDN is the step-by-step process of foundation. A small number of regional networks decided to cooperate due to their positive experiences and established structures. Their joint success attracted other faculties of medicine. Together they are able to face challenges in medical teaching and therefore the MDN has gained more influence. However, as faculties of medicine are free to design their training, compromises have to be made to a certain extent. This leads to diversity which presents opportunities and risks at the same time. Linked to the German Association of Medical Faculties, the MDN is rooted at a political and institutional level. Thus, the professionalization of medical teaching is officially accepted as a necessity in medical education.

Factors for a successful implementation

As the work within the MDN is complex and politically challenging (e.g. autonomous federal systems of education, competitive performance-based funding), we have identified certain success factors to increase transferability. Considering these success factors might help initiatives in other countries engaging in similar development.

During the last 20 years, professionalization in medical teaching has developed significantly. In Germany, several driving forces and success factors can be identified:

- *Human resources*: Driven by the implementation of the Master of Medical Education in Switzerland in 1998, followed by Germany in 2004 (Fischer et al. 2006), multipliers and agents of educational change have significantly increased. As a consequence, most of the German faculties of medicine have developed medical teacher training since then.
- *Financial support*: Start-up funding by state ministries for establishing cross-university features of medical education such as "competence centres" in Baden-Wuerttemberg (starting in 2001, officially joined in the "competency network for medical education in Baden-Wuerttemberg" in 2006), the State Academy for Medical Education in North Rhine-Westphalia (LAMA 2003; in 2012 foundation of LAMA e.V.) or the "competency network for medical education in Bavaria" (Kompetenznetz Medizinlehre Bayern 2008) led to effective cooperation between faculties of medicine within a federal state.
- *Financial incentives*: Ministerial financial steering mechanisms, e.g. performance-based funding ("Leistungsorientierte Mittelvergabe", LOM) temporarily were effective incentives for faculties of medicine to invest in teacher training. These instruments were particularly designed to improve quality of medical education (Herzig et al. 2007).
- *Role modelling*: Primary networks have been successful role models for other federal states. The effectiveness of these networks led initially to cooperation on some inter-state level and finally to the foundation of the MDN.
- *Institutional support*: Early institutional anchoring of comprehensive faculty development programmes has been fostered to the point of no return and has subsequently seen acceptance by faculty. This has been achieved by stipulating the participation in defined medical teacher training depending on job requirements.
- *Personal incentives*: An official certificate that is given for the successful completion of teacher qualification by a high-level institution (e.g. a ministry) is highly appreciated by individuals. For example, since 2003, the ministerial "Baden-Wuerttemberg Certificate for University Teaching in Medicine" awards teachers having completed the comprehensive formal training programme. The ministerial certificate also attracts medical teachers from other federal states.
- *Up-linking to relevant organisations*: The German Association of Medical Faculties constitutes the institutional authority of the MDN. It is supported by the German Society of Medical Education (German: *"Gesellschaft fuer medizinische Ausbildung"*, *GMA*) and federal ministries as scientific and political references.
- *Scientific incentives*: The increasing network activities facilitate constructive exchange between faculties and cross-institutional research projects. As a result, we attain an evidenced-based database and stronger argumentative power.

A well-balanced consideration of the above-mentioned issues was crucial for the successful implementation of the MDN and its national framework.

Conclusion

The report presents the concept of the German MedicalTeachingNetwork (MDN) promoting a comprehensive national faculty development programme and underlining the importance of teaching and its professionalization. All German faculties of medicine address the challenge of developing a national framework for teaching staff development in a joint approach. Great importance is attributed to set nationally concerted standards for faculty development as well as to

develop an agreed-upon quality control process across Germany. This framework provides orientation, predictability and reliability. Medical teachers benefit from these advantages due to portability of faculty development credentials from one faculty of medicine to another within the MDN system. Preliminary data provide initial information on the usefulness and acceptance of the MDN concept. Systematic follow-up studies will be undertaken to evaluate the MDN short- and long-term on its acceptability by individuals as well as its impact on the relationships at an institutional level between faculties of medicine. Faculties engaged in similar developments might be encouraged to transfer the MDN concept to their countries.

Glossary

Teacher training: Courses, seminars and/or programmes aiming at developing didactic, methodological and personal abilities of teaching, learning and assessment for teachers in higher education given by experts in these fields of expertise.

Notes on contributors

MARIA LAMMERDING-KOEPPEL, MD, anatomist with a Master degree in Medical Education by Bern University Switzerland, Director of the Competence Centre for University Teaching in Medicine Baden-Wuerttemberg, Tuebingen University. She is the chairwoman of the German *MedicalTeachingNetwork* (MDN).

THOMAS EBERT, DPhil, is a pedagogue and research associate in the Department for Medical Didactics at the Faculty of Medicine of the Goethe University Frankfurt am Main.

ANJA GOERLITZ, MD, is the coordinator of the workgroup "Faculty development" within the "Kompetenznetz Medizinlehre Bayern" and co-chairwoman of the working group "Committee for Staff and Organisational Development in Medical Teaching" within the GMA. Management of faculty development courses at the Medical Faculty of the LMU Munich.

GUDRUN KARSTEN, PhD, MME, is a biologist with a Master degree in Medical Education, Germany. She is head of the Centre for Medical Education at the Medical Faculty at Kiel University.

CLAUDIA NOUNLA, DPhil, is an adult educationalist and research associate and responsible for the Medical Teachers Training department at the Centre of Excellence in Lower Saxon Higher Education, Technische Universitaet Braunschweig, Germany.

SABINE SCHMIDT, MSc, is a psychologist and has also a degree in business information systems. As a research associate she is responsible for university teaching in the Dieter Scheffner Center for Medical Education and Educational Research at the Charité – Universitaetsmedizin, Berlin.

CHRISTOPH STOSCH, Dr. h.c. (RUS), is a trained nurse and physician with a master degree in Medical Education (University of Heidelberg, Germany). He is working as a medical educationalist at the University of Cologne and one of the founding members of the German MedicalTeachingNetwork (MDN).

PETER DIETER, PhD, is a Biochemist. He is the President of AMSE, a member of the Executive Board of AMEE, the Teaching Academy for Training in Academic Medicine of the German Association of Medical Faculties and the Scientific Advisory Board of University Teaching and Learning Centre of Saxony.

Acknowledgments

We would like to thank the members of the MDN who helped to set up and develop the national network and its standards for teacher training. We highly appreciate the excellent secretarial assistance by Pia Lachenmaier, Tuebingen, and the helpful native speaker support by Hannah Tame, Berlin.

Declaration of interest: The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

References

Belgium: EU High Level Group on modernisation of higher education – Train the Professors to Teach 2013. Mena Report. Al Bawaba (Middle East) Ltd. 2013. High Beam Research. [Accessed 17 November 2014] Available from http://www.highbeam.com.

Cummings R, Phillips R, Tilbrook R, Lowe K. 2005. Middle-out approaches to reform of university teaching and learning: Champions striding between the "top-down" and "bottom-up" approaches. Int Rev Res Open Dis Learn 6(1):8–25.

Deming WE. 1989. Out of the crisis. Cambridge, MA, USA: Massachusetts Institute of Technology.

Fischer MR, Juenger J, Duelli R, Putz R, Resch F. 2006. Konzeption und Erfahrungen mit dem deutschen Master of Medical Education (MME)-Studiengang des medizinischen Fakultaetentages (MFT) an der Medizinischen Fakultaet Heidelberg. [Design and experiences of the German Master of Medical Education (MME) degree programme of the Medical Faculty Association at the Medical Faculty Heidelberg]. GMS Z Med Ausbild 23(2):Doc 26.

Görlitz A, Ebert T, Bauer D, Grasl M, Hofer M, Lammerding-Köppel M, Fabry G. GMA Ausschuss Personal- und Organisationsentwicklung in der Lehre. 2015. Core competencies for medical teachers (KLM) – A position paper of the GMA Committee on Personal and Organizational Development in Teaching. GMS Z Med Ausbild 32(2):Doc23. DOI: 10.3205/zma000965.

Herzig S, Marschall B, Nast-Kolb D, Soboll S, Rump LC, Hilgers RD. 2007. Positionspapier der Nordrhein-Westfaelischen Studiendekane zur hochschulvergleichenden leistungsorientierten Mittelvergabe fuer die Lehre. [Distribution of government funds according to teaching performance: A position paper of the Associate Deans for Medical Education in North Rhine-Westphalia]. GMS Z Med Ausbild 24(2):Doc 109.

Kultusministerkonferenz (KMK). 2005. Qualitaetssicherung in der Lehre. [Accessed 12 May 2015] Available from http://www.kmk.org/wissenschaft-hochschule/qualitaetsentwicklung-akkreditierung-exzellenzfoerderung.html.

Lammerding-Koeppel M, Fabry G, Hofer M, Ochsendorf F, Schirlo C. 2006a. Hochschuldidaktische Qualifizierung in der Medizin: I. Bestandsaufnahme: Ein Positionspapier des GMA-Ausschusses "Personal- und Organisationsentwicklung fuer die medizinische Lehre" der Gesellschaft fuer Medizinische Ausbildung sowie des Kompetenzzentrums fuer Hochschuldidaktik in Medizin Baden-Wuerttemberg. [Faculty Development Initiatives in Medical Education in German-Speaking Countries: I. State of Affairs]. GMS Z Med Ausbild 23(4):Doc 73.

Lammerding-Koeppel M, Fabry G, Hofer M, Ochsendorf F, Schirlo C. 2006b. Hochschuldidaktische Qualifzierung in der Medizin: II. Anforderungsprofil der Qualifizierungsangebote: Ein Positionspapier des GMA-Ausschusses "Personal- und Organisationsentwicklung fuer die medizinische Lehre" der Gesellschaft fuer Medizinische Ausbildung sowie des Kompetenzzentrums fuer Hochschuldidaktik in Medizin Baden-Wuerttemberg. [Faculty development initiatives in medical education in German-speaking countries: II. Needs assessment and quality criteria]. GMS Z Med Ausbild 23(4):Doc 72.

Lane IF. 2007. Change in higher education: understanding and responding to individual and organizational resistance. J Vet Med Educ 34(2):85–92.

McLean M, Cilliers F, van Wyk JM. 2008. Faculty development: Yesterday, today and tomorrow. Med Teach 30:555–584.

Ministerium fuer Wissenschaft, Forschung und Kunst Baden-Wuerttemberg. 2001. Bericht der Sachverstaendigenkommission zur Bewertung der medizinischen Ausbildung (BeMA). Stuttgart: Ministerium fuer Wissenschaft, Forschung und Kunst Baden-Wuerttemberg. [Accessed 12 May 2015] Available from http://www.boa-bw.de/bsz307341615.html.

Nikendei C, Weyrich P, Juenger J, Schrauth M. 2009. Medical education in Germany. Med Teach 31(7):591–600.

Price D. 2005. Continuing medical education, quality improvement, and organizational change: Implications of recent theories for twenty-first-century CME. Med Teach 27(3):259–268.

Ross MT, Macrae C, Scott J, Renwick L, Moffat M, Needham G, Scott H, Irvine S. 2014. Core competencies in teaching and training for doctors in Scotland: A review of the literature and stakeholder survey. Med Teach 36(6):527–538.

Srinivasan M, Li ST, Meyers FJ, Pratt DD, Collins JB, Braddock C, Skeff KM, West DC, Henderson M, Hales RE, Hilty DM. 2011. "Teaching as a competency": Competencies for medical educators. Acad Med 86(10):1211–1220.

Steinert Y. 2012. Perspectives on faculty development: Aiming for 6/6 by 2020. Perspect Med Educ 1:31–42.

Steinert Y, Mann K, Centeno A, Dolmans D, Spencer J, Gelula M, Prideaux D. 2006. A systematic review of faculty development initiatives designed to improve teaching effectiveness in medical education: BEME Guide No. 8. Med Teach 28(6):497–526.